				LEM	LDW390-21014	LTA-1(11)	1				
				LEM	LSK390-21014	ESI	1	LEM	LDW390-28014	LTA-8(18)	1
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO. LDW390-21721-3		GAEC SCH NO. 43		PART NO. LDW390-21721-1		GAEC SCH NO. 43	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH																			
SHEET		SEE SHEET 1.010																	
REV																			
SHEET																			
REV																			
SHEET																			
REV																			

LAST SECT LTR USED		GRUMMAN REL INFO A	
LAST DASH NO. USED	-3	PRIM NO. 434	
		(E(608) MP12 A	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
— — —

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS 9-1100		LINE ITEM 08	DOCUMENTATION TYPE II
DRAWN BY	A. RACITI, 10-22-65		GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE, L. I., NEW YORK
LAYOUT BY	A. RACITI, 10-22-65		
CHECKED BY	R. RANTALA 11-18-65		HARNESS SUB-ASSY ELECTRICAL-W210
GROUP LDR	C. F. Schmidt 16 NOV 1965		
ELECT PWR S.S.	R. Rudney 11/19/65		
Rel	H. W. Wilcox 11/19/65	PROJ ENGR	
		REL GROUP	Raymond 11/20/65

SIZE	CODE IDENT NO.		
B	26512	LDW390-21721	A
SCALE NONE		SHEET 1.000 OF 10	

ENG 77.1 9-64

01

NAS 9-1100

SHEET REVISION STATUS

CHG LTR	SHEET NUMBER	CHG LTR	SHEET NUMBER	CHG LTR	SHEET NUMBER	CHG LTR	SHEET NUMBER	CHG LTR	SHEET NUMBER
A	1.000	A	2.000	A	3.000	A	4.000	A	5.000
A	1.010			A	3.001				
A	1.100								
A	1.200								

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW390-21721	A
SCALE NONE			SHEET 1.010

ENG 77.4 5-64

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	NOTED						LED390-1	FOR REMAINDER OF REVISION SEE SHEET 1.200	NOTED	NOT REQD		C. BOOKBINDER 6 APR 66		
	2							LED390-2	SUPERSEDED BY EO A3.	NOT REQD					
	3	3.000 & 3.001						LED390-4	SUPERSEDES EO A2 REMOVED CHECK MARK (V) FROM NOTE 19. NOTE 16 ADDED "EXCEPT AS NOTED". NOTE 21 LSP14-0011 WAS LSP14-009. NOTE 20 ADDED "(GRUMMAN) LPC-19-3, (VENDOR)" NOTE 14B ADDED "CLEANLINESS LEVEL FOR ALL LSS390 TYPE WIRE IS "C". ADDED NOTE 23	NOTED	✓				
		4.000							ADDED "CLEANLINESS LEVEL" TO HOT STAMP NOTE						
	4	NOTED						EO A4	FOR REMAINDER OF REVISION SEE SHEET 1.200						
		1.000							IN-1 MODEL BLOCK REMOVED LEM-1(31), LEM-2(32) AND LEM-3(33) EFFECTIVITIES.			✓			
		3.000							DELETED NOTE 11		✓				
	5	3.000						LED390-14	NOTE 14B CLEANLINES LEVEL FOR DASH ONE (-1) WAS "C".						
		4.000							CLEANLINESS LEVEL "CL-B" WAS "CL-C".		NOT REQD				
		1.000							SHEET 1.000 OF 10 WAS SHEET 1.000 OF 8.						
		NOTED							ADDED SHEETS 1.100 & 1.200						
	6	4.000							W210 WAS W210-AA.						
	7	1.000							DOCUMENTATION TYPE II WAS III	NOT REQD	NOT REQD				
	8	4.000							"STAGING NUT QUAD 1" WAS "DESCENT STAGE (STAGING NUTS)."	NOTED					
	9	3.000							REMOVED NOTE 2		✓				
	10	NOTED							FOR REMAINDER OF REVISION SEE SHEET 1.200						

NOTED

FOR CONTINUATION OF REVISIONS SEE SHEET _____

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW390-21721	A
SCALE NONE			SHEET 1.100

ENG 77.3 5-65

01

NAS 9-1100

LEM R AND D VEHICLES — HARNESS ASSY — DATE 04/26/66

SUMMARY OF REVISIONS

********** REVISIONS TO THE LIST OF MATERIAL **********

QTY	ITEM	REFERENCE DESIGNATION	PART NO/SPECIFICATION	VENDOR CODE IDENT	NAME	I AND T CODE	MATERIAL/STOCK SIZE/REMARKS	PROCESS SYMBOL	FINISH NUMBER	
SHT 2.000										
DATA LINES CHANGED - WAS - IS										
W 1	2	P419B	LSC390-102-1121		CONNECTOR	S-	OPT TO POT IN RIG NOTE 15			A
I 1	2	P419B	LSC390-102-1141		CONNECTOR	S-	NOTE 15			
W 1	3	P447	LSC390-102-1062		CONNECTOR	S-	OPT TO POT IN RIG NOTE 15			A
I 1	3	P447	LSC390-102-1062		CONNECTOR	S-	NOTE 15			
DATA LINES DELETED										
A/R	6		90L0F13A	00768	LACING TAPE	E-				

********** REVISIONS TO THE SHOP WIRE AND PARTS LIST **********

FROM TERMINATION HARDWARE	SHLD/ TWIST CODE	END PREP CODE	WIRE NUMBER	TO TERMINATION HARDWARE	SHLD/ TWIST CODE	END PREP CODE	WIRE TYPE CODE	LENGTH	WIRE COLOR	WIRE FUNCTION REMARKS	EMI, SIGNAL, ROUTING CODE	
SHT 5.000												
DATA LINES ADDED												
P419B-A	B-A	ST	WB30A20	*P447-A	B-A	PC	X		NAT		E2	A
P419B-B	B-A	ST	WB33A20	*P447-B	B-A	PC	X		BLK		E2	A
DATA LINES DELETED												
										NOTE 11		
P419B-C										NOTE 11		
P419B-D										NOTE 11		
P419B-A	B-A	SC	WB30A20	*P447-A	B-A	PC	X		NAT		F2	
P419B-B	B-A	SC	WB33A20	*P447-B	B-A	PC	X		BLK		F2	

********** REVISIONS TO THE CUTTING AND MARKING LIST **********

CONNECTOR	WIRE NO.	COLOR	SHLD/ TWIST CODE	END PREP CODE	LENGTH	REMARKS	WIRE TYPE CODE		
SHT 6.000									
DATA LINES ADDED									
P419B-A	WB30A20	NAT	B-A	ST			X		A
P419B-B	WB33A20	BLK	B-A	ST			X		A
DATA LINES DELETED									
P419B-A	WB30A20	NAT	B-A	SC			X		
P419B-B	WB33A20	BLK	B-A	SC			X		

GRUMMAN AIRCRAFT ENGRG CORP CODE IDENT NO. 26512

DWG NO. LDW390-21721[redacted]
REVISION A
SHEET 1.200

01

NAS 9-1100

LEM R AND D VEHICLES
LIST OF MATERIAL

HARNESS ASSY
PART NO. LDW390-21721-1

DATE 04/26/66

QTY	ITEM	REFERENCE DESIGNATION	PART NO/SPECIFICATION	VENDOR CODE IDENT	NAME	I AND T CODE	MATERIAL/STOCK SIZE/REMARKS	PROCESS SYMBOL	FINISH NUMBER	
	1	W210	LDW390-21721-1		HARNESS ASSY	S-				
1	2	P419B	LSC390-102-1141		CONNECTOR	S-	NOTE 15			A
1	3	P447	LSC390-102-1062		CONNECTOR	S-	NOTE 15			A
A/P	4		LSS390-1361-1202		WIRE	L-	NOTE 15			
A/R	5		GS830G		SLEEVE	E-	GRUMMAN STD NOTE 5			

GRUMMAN AIRCRAFT ENGRG CORP CODE IDENT NO. 26512

DWG.NO. LDW390-21721
REVISION A
SHEET 2.000

01

NAS 9-1100

	NOTES CHECKED ✓ APPLY TO THIS DRAWING
✓	1. CONNECTORS NEED NOT BE INSTALLED ON CABLE UNTIL INSTALLATION IN VEHICLE.
	2. POT ALL CONNECTORS ON DASH ONE (-1) ASSEMBLY IN ACCORDANCE WITH LSP 14-14201. NO POTTING REQUIRED FOR DASH THREE (-3) ASSEMBLY. INSTALL PIN IN CONNECTOR ON DASH THREE (-3) ASSEMBLY WHEN A SPARE WIRE (TERMINATING IN AN END CAP) IS USED ON DASH ONE (-1) ASSEMBLY.
	3. PLAIN CUT & STOW WIRES FOR INSTALLATION AT A LATER DATE.
✓	4. WIRE TYPE CODE: (FOR APPROPRIATE PART NO. SEE LM) E=MIL-W-16878 TYPE E PRETREATED, X=FLUOROCARBON POLYIMIDE INSULATED, C=CHROMEL AND A=ALUMEL.
✓	5. WIRE & CABLE LENGTHS NOT SPECIFI ED, SLEEVE AND/OR SHIELDED BRAID SIZES, AND LENGTHS TO BE DETERMINED AT FABRICATION AND/OR INSTALLATION AND WILL BE ADDED TO THE DRAWING AT A LATER DATE. SLEEVING TO BE CLEAR EXCEPT AS NOTED, BREAKOUT LENGTHS TO BE ADDED AT A LATER DATE.
✓	6. SEE LMA 390-001 FOR INSTRUCTION ON AUTOMATED WIRE SHEETS.
	7. FABRICATE CONDUCTORS INDICATED PER LSP 14-13307. IDENTIFY CONDUCTORS WITH GS830C SLEEVING (WHITE) HOT STAMPED WITH IDENTIFICATION PER LSP 390-002 PARA. 3.3.5. DO NOT COVER THIS IDENTIFICATION SLEEVING WITH OUTER SLEEVE. SLEEVING & SHIELDED BRAID SIZE AND LENGTH TO BE DETERMINED AT FABRICATION AND/OR INSTALLATION AND WILL BE ADDED TO THE DRAWING AT A LATER DATE.
	8. TWIST CONDUCTORS INDICATED PER TABLE III OF LSP 390-002. FABRICATE CONDUCTORS INDICATED PER LSP 14-13307. IDENTIFY CONDUCTORS WITH GS830C SLEEVING (WHITE) HOT STAMPED WITH IDENTIFICATION PER LSP 390-002 PARA. 3.3.5. DO NOT COVER THIS IDENTIFICATION SLEEVING WITH OUTER SLEEVE. SLEEVING & SHIELDED BRAID SIZE AND LENGTH TO BE DETERMINED AT FABRICATION AND/OR INSTALLATION AND WILL BE ADDED TO THE DRAWING AT A LATER DATE.
	9. INSTALL SPLICES AND/OR SHIELD RETURNS PER LSP14-13308.
	10. TWIST CONDUCTORS INDICATED PER LSP 390-002 TABLE III.
	11. ON CONNECTOR CONTACT DESIGNATIONS INDICATED, CONNECTOR TO BE POTTED WITHOUT SPARE PINS INSERTED.
	12. WIRES INDICATED ARE PART OF THE ASSEMBLY INDICATED IN THE "FROM" TERMINATION COLUMN.
✓	13. SPLICES TO BE INSTALLED AND/OR WIRE RUNS TERMINATED AT INSTALLATION IN VEHICLE.
✓	14. DASH ONE (-1) AND DASH THREE (-3) ASSEMBLY ARE IDENTICAL EXCEPT FOR ALLOWABLE DIFFERENCES LISTED BELOW: A. I & T CODE FOR DASH THREE (-3) IS "E" B. CLEANINESS LEVEL FOR DASH ONE (-1) IS "B". CLEANINESS LEVEL IS NOT REQUIRED FOR DASH THREE (-3). CLEANLINESS LEVEL FOR ALL LSS390 TYPE WIRE IS "C." C. FOR ALL HARDWARE DIFFERENCES, AND IMPLEMENTATION OF, FOR DASH THREE (-3) SEE LDW 390-10134.
✓	15. FOR COMMERCIAL PART-SEE SPECIFICATION CONTROL DRAWING OR SPECIFICATION SHEET, BEFORE ORDERING.
✓	16. FABRICATE PER LSP 390-002, EXCEPT AS NOTED.
	17. COAXIAL AND SHIELDED CABLE FERRULES TO BE INSTALLED PER LSP 14-13300.
	18. TERMINAL LUGS AND SPLICES, CRIMP TYPE TO BE INSTALLED PER LSP 14-13301.
	19. STRIPPING OF ELECTRICAL WIRE AND CABLE PER LSP 14-13306.

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW390-21721	A
SCALE NONE		SHEET 3.000	

ENG 72.1 6-64

01

NAS 9-1100

NOTES CHECKED ✓ APPLY TO THIS DRAWING	
✓	20. IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH LPC-19-2 (GRUMMAN), LPC-19-3 (VENDOR).
✓	21. CLEANLINESS LEVEL PER LSP 14-0011.
✓	22. ABBREVIATION: A/R STANDS FOR, AS REQUIRED.
✓	23. CLEAN PER LSP 14-7072.

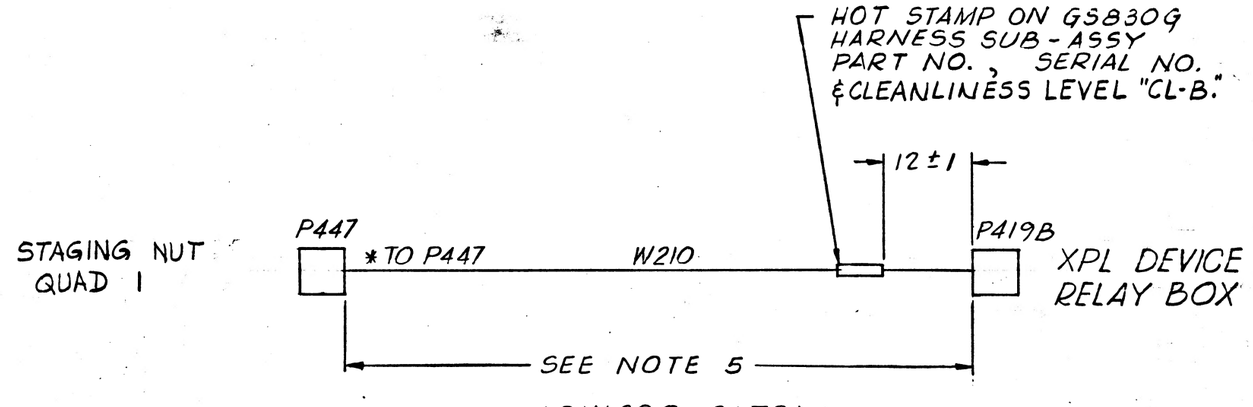
GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW390-21721	A
SCALE NONE		SHEET 3.001	

SMS 713.1 6-64

01

NAS 9-1100



LDW390-21721-1

* SEE NOTE 13

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW390-21721	A
SCALE NONE		SHEET 4.000	

ENG 72.1 6-64

NAS 9-1100

LEM R AND D VEHICLES — HARNESS ASSY — DATE 04/26/66

SHOP WIRE AND PARTS LIST — PART NO. LDW390-21721-1

FROM TERMINATION HARDWARE	SHLD/ TWIST CODE	END PREP CODE	WIRE NUMBER	TO TERMINATION HARDWARE	SHLD/ TWIST CODE	END PREP CODE	WIRE TYPE CODE	LENGTH	WIRE COLOR	WIRE FUNCTION REMARKS	EMI, SIGNAL, ROUTING CODE	
P447-C												
P447-D												
P419B-A	B-A	ST	WB30A20	*P447-A	B-A	PC	X		NAT		E2	A
P419B-B	B-A	ST	WB33A20	*P447-B	B-A	PC	X		BLK		E2	A

GRUMMAN AIRCRAFT ENGRG CORP CODE IDENT NO. 26512

DWG.NO. LDW390-21721
REVISION A
SHEET 5.000

01

NAS 9-1100

LEM R AND D VEHICLES
WIRE CUTTING AND MARKING LIST

HARNESS ASSY
PART NO. LDW390-21721-1

DATE 04/26/66

CONNECTOR	WIRE NO.	COLOR	SHLD/ TWIST CODE	END PREP CODE	LENGTH	REMARKS	WIRE TYPE CODE	
P419B-A	WB30A20	NAT	B-A	ST			X	A
P419B-B	WB33A20	BLK	B-A	ST			X	A

GRUMMAN AIRCRAFT ENGRG CORP CODE IDENT NO. 26512

DWG.NO. LDW390-21721
REVISION A
SHEET 6.000

CONTRACTOR DRAWING
NOT A GRUMMAN DRAWING

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW420-11430		EO NO. A1
CONTROL INFO NO. SLM 33-1895		

ON -1 SHT 4.00
IN FIELD OF DWG & B/M:

FOR J17 DESIGNATION, CONNECTOR NO. GC 801AY-20-6PS (1)
(WAS) GC 801AY-A20-6PS (1)

FOR J40 DESIGNATION, CONNECTOR NO. GC801AY-24-7APS (1)
(WAS) GC 801AYA24-7APS (1)

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	INTERFACE NOT AFFECTED - NO LOD CHANGE REQ'D. NI

REASON FOR EO: ELECTRICAL REQUIREMENTS CHANGE

-1 DESCRIPTION OF EO:
J17 CONNECTOR GC 801AY-20-6PS (1)(WAS) GC801AY-A20-6PS
J40 CONNECTOR GC 801AY-24-7APS(1)(WAS) GC 801AYA24-7APS

(R) GAEC EO RELEASE: H

MODEL	EFFECTIVITY: END ~~PROCURING SERIES NO.~~	ITEM SER ~~DASC UNIT NO~~ NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY										
										RD		T.O.	AR					
								DATE		9-27-66		9-28-66	9/28/66			10-3-66	10-5-66	
LM	LDW420-11430	1 & SUB Q		✓		✓	/	9-27-66			SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ. ENGRG	~~QUAL~~ ECL
				PRIORITY: C		DRAWING TITLE: DOOR-DOCKING HATCH							DRAWING NO.: LDW420-11430				EO NO.: A1	

LIAISON
ISSUED BY W. McCAFFREY X 1161, 9-27-66 SECTION H&T, GSE GROUP NO. 420 PL 25

01

NAS 9-1100

H.G.

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG. NO. LDW420-13500 | EO NO. C2
CONTROL INFO NO. SLEM-2-142

OD-3 IN BILL OF MATERIALS ON SHEET 2.01:
DELETE: (6) 3T1A REFLECTOR
(4) 3T1R REFLECTOR
(TO AGREE WITH FIELD OF DRAWING)

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG		INTERFACE NOT AFFECTED: NO LDDCH ANGE REQ'D N'G/O
REASON FOR EO: FIELD IN DISAGREEMENT WITH BILL OF MATERIALS.						DESCRIPTION OF EO: IN B/M ON -3 DELETED (6) 3T1A & (4) 3T1R REFLECTORS

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
	END ITEM	SER. NO.	
LM	LDW420-13500	183	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: NOT REWORK	REQD SCRAP	APPROVED BY	DATE	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
✓		NOT	REQD		9-9-66	9-30-66		9-30-66	9-26-66	10-10-66	9-26-66

PRIORITY: C2 | DRAWING TITLE: TRANSPORTER DESCENT STAGE | DRAWING NO.: LDW420-13500 | EO NO.: C2

ISSUED BY LIAISON G.MARTELL X3604 SECTION HANDLING & TRAILS GROUP NO. 256 PL 25

01

NAS 9-1100

LFM

LDW200M10001

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LFM-4	LDW200-54003	SEE NOTE 4	(2EA) SEE NOTE 5
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW200M10001-11, -12		GAEC SCH NO. 50	

WORK PKG FUNCTION NO. 111 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00		2.00	3.00					
REV									
SHEET									
REV									
SHEET									
REV									

		GRUMMAN REL INFO	
LAST SECT LTR USED	—	PRIM NO.	HF-012
LAST DASH NO. USED	-12	207	MP-1½ 12/3/68

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES ±1/64 ±.010 ±0°30'

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 879 CCA 575	

CONTRACT NO. NAS9-1100 LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	E. INSLEY 1/9/68	WEIGHTS	
LAYOUT BY	G. HANSMAN	RELIABILITY	
CHECKED BY	GP Post 1-12-68 W		
GRP LEADER	J.T. Murphy 1-12-68		
VEH DES INT	J. Fusaro 2/8/68		
STRUCTURES	[signature] 2/16/68	PROJ ENGR	J. Fusaro 2/8/68
STRUCTURES	[signature] 2/14/68	REL GROUP	[signature] 2-13-68

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

FITTING
DESCENT STAGE, S.EQ. BAY, MASS REP, FWD SUPT LFM-4

SIZE	CODE IDENT NO.	
B	26512	LDW200M10001

SCALE NONE SHEET 1.00 OF 3

CDR 2-16-68

ENG 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
					SEE NOTE * 1						
		LDW200M10001-12	E	FITTING	AL ALLOY	QQ-A-200/3,225/6	2024-T3511/T351	2x2 1/4x3 1/8	FP	88	
		LDW200M10001-11	E	FITTING	AL ALLOY	QQ-A-200/3,225/6	2024-T3511/T351	2x2 1/4x3 1/8	FP	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
FP	ZYGLO	MIL-I-6866
88	ANODIZE	LSP-14-9030

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

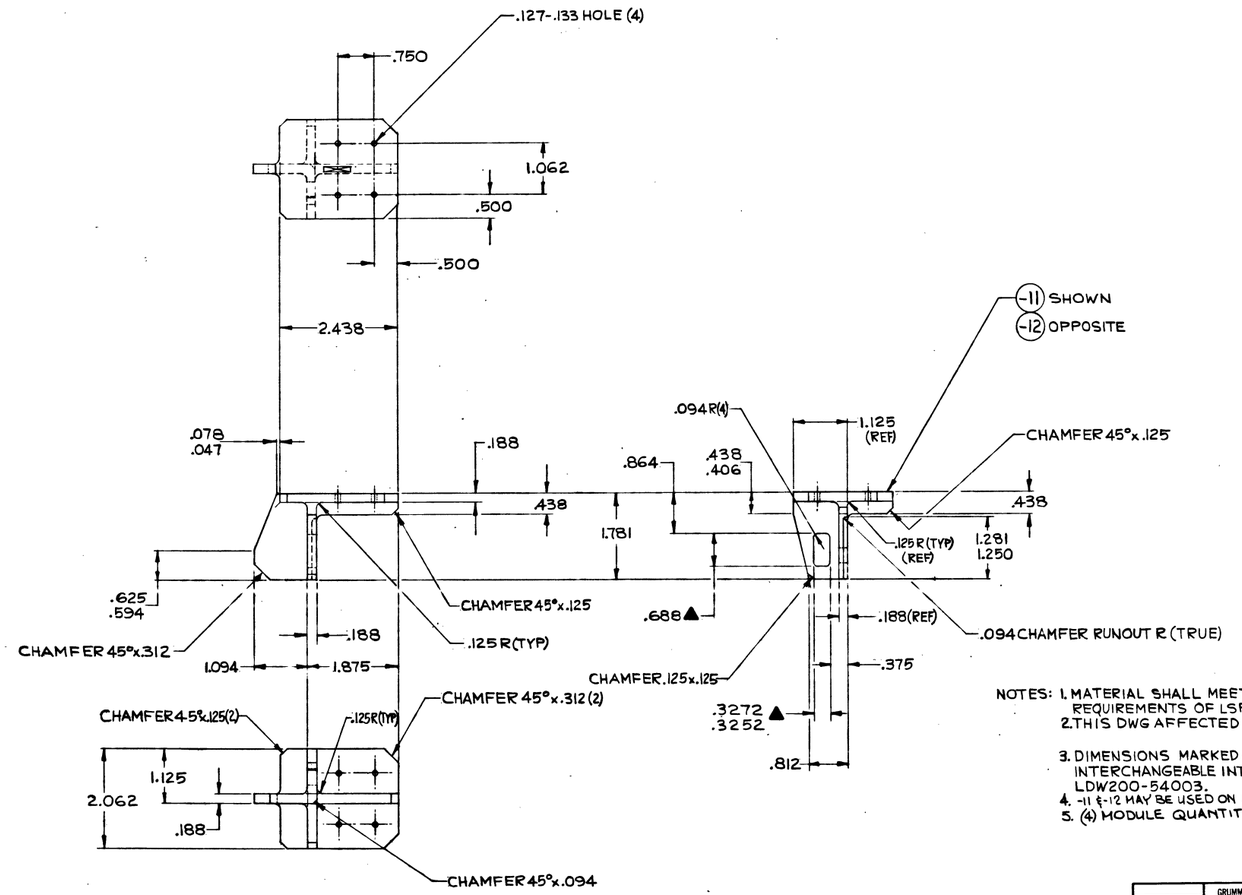
SIZE	CODE IDENT NO.	
B	26512	LDW200M10001

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010; .063R TO .250R ± .015; OVER .250R ± .020	✓
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2.5 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROMIA PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS PER MIL STD 10	✓
250 FOR ALL HOLES	✓
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	✓
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED [illegible]	
LENGTHS OF AR, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

NOTES: 1. MATERIAL SHALL MEET THE ULTRASONIC REQUIREMENTS OF LSP-14-16100, TABLE II.
2. THIS DWG AFFECTED BY LFM-4.
3. DIMENSIONS MARKED ▲ FORMS PART OF AN INTERCHANGEABLE INTERFACE AS SHOWN ON LDW200-54003.
4. -11 & -12 MAY BE USED ON LM-4(34) THRU LM-15 (45).
5. (4) MODULE QUANTITIES REQUIRED PER LFM-4.

	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK		
LM	SIZE D	CODE IDENT NO. 26512	LDW200M10001
MODEL OR END ITEM	SCALE FULL		SHEET 3.00

NAS 9-1100

LFM

LDW2COM10003

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM-1	LDW200-54003	SEE NOTE 2	(8) SEE NOTE 3
PART NO. LDW200M10003-11		GAEC SCH NO. 50	

WORK PKG FUNCTION NO. 111 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00		2.00	3.00						
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED	—
LAST DASH NO. USED	-11

GRUMMAN REL INFO

PRIM NO.	H.F0.2		
207	MP-16- 3/13/68		

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES, ± 1/64 ± .010 ± 0°30'

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 879 CCA575	

CONTRACT NO. NAS 9-1100 LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	R.MERKEL 1/18/68	WEIGHTS	
LAYOUT BY	G.HANSMANN 2/21/68	RELIABILITY	
CHECKED BY	G.P. YOST 1-23-68		
GRP LEADER	L.J. WARREND 2-6-68		
VEH DES INT	J. Carastro 2/6/68		
STRUCTURES	[signature] 2/12/68	PROJ ENGR	J. Carastro 2/6/68
STRUCTURES	[signature] FEB 2/12/68	REL GROUP	[signature] 2-13-68

GRUMMAN AIRCRAFT ENGRG CORP (2)
BETHPAGE, L. I., NEW YORK

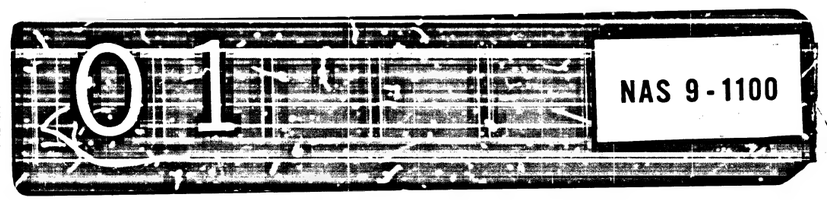
TRACK
DESCENT STAGE-SEQ MASS REPRESENTATION-LFM-4

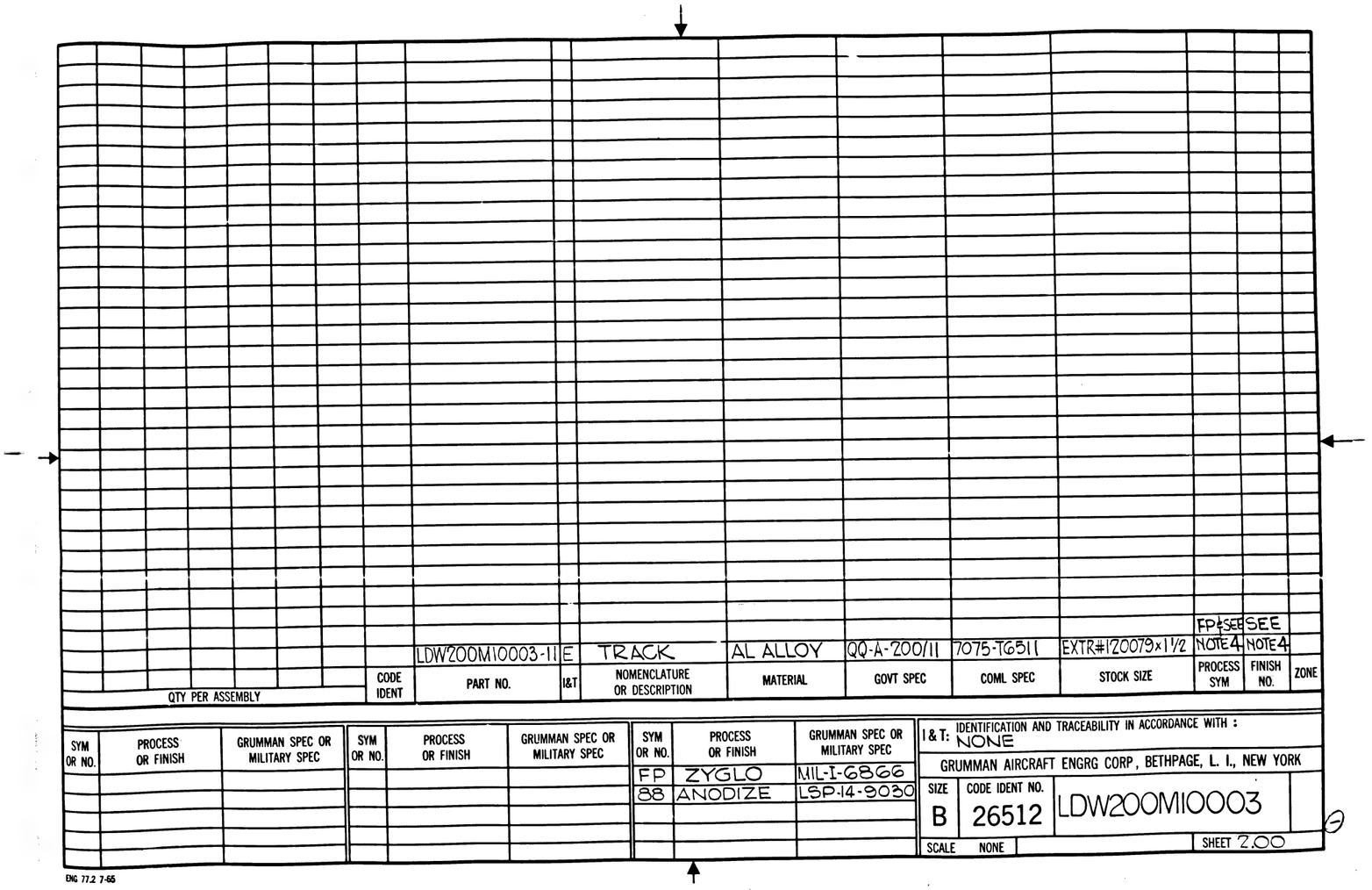
SIZE	CODE IDENT NO.	
B	26512	LDW200M10003 (7)

SCALE NONE SHEET 1.00 OF 3

CDR 2-23-68

ENG 77.1 12-65





QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW200M10003-11	E	TRACK	AL ALLOY	QQ-A-200/11	7075-T6511	EXTR#120079x1 1/2	FP‡SEE NOTE 4	SEE NOTE 4	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
FP	ZYGLO	MIL-I-6866
88	ANODIZE	LSP-14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

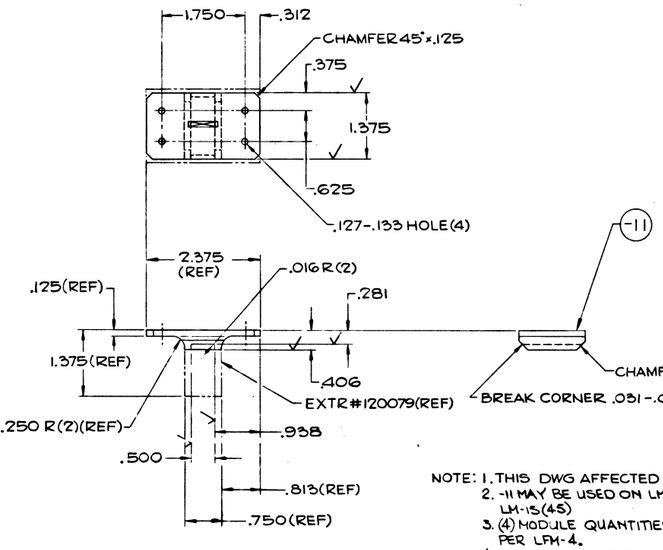
SIZE	CODE IDENT NO.	
B	26512	LDW200M10003

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



NOTE: 1. THIS DWG AFFECTED BY LFM-4.
2. -11 MAY BE USED ON LM-4 (54) THRU LM-13 (4-5)
3. (4) MODULE QUANTITIES REQUIRED PER LFM-4.
4. APPLY ANODIZE FINISH #85 IN T6511 CONDITION. THEN AGE T6511 TO T73511 TEMPER BY AGING 6 TO 8 HOURS AT 350°F ±10°F.

MACHINED FROM EXTR #120079

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

GRUMMAN STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .030; .063R TO .250R ± .015; OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS PER MIL-STD-10	√
300 √ FOR ALL HOLES	√
REMOVE ALL BURRS BREAK ALL EDGES .005-.031	√
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	√
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	LDW200M10003
C	26512	

LM — MODEL OR END ITEM — SCALE FULL — SHEET 3.00

LDW200M10003

LDW200-10001

LFM

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM 36	LDW310-52005	LM-2 (32)	1
LFM 36	LDW310-51005	LM-1 (31)	1
PART NO. LDW200-10001-11		GAEC SCH NO. 35	

WORK PACKAGE FUNCTION NO. 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00		2.00						
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO		
LAST DASH NO. USED	-11	PRIM NO.	LK(01)	
		920	MP-16 9/9/67	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS -- ANGLES

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD1279	

CONTRACT NO. LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	G. CAVIRIS 9/8/67		
LAYOUT BY			
CHECKED BY			
GR. LEADER	L. Harbino		
RCS	for OSW 9/8/67	PROJ ENGR	JC McCloskey 9/9/67
		REL GROUP	Fred 9/9/67

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

TUBE
RCS TANKAGE MODULE ASSY

SIZE	CODE IDENT NO.	
B	26512	LDW200-10001

SCALE NONE SHEET 1.00 OF 2

ENG 77.1 12-65

01

NAS 9-1100

TUBE LDW200-10001-11 IS IDENTICAL TO TUBE LDW310-28005-11RCH4 EXCEPT THAT EACH END IS TO BE ONE INCH LONGER. SEE NOTES 2 AND 3.

NOTES:

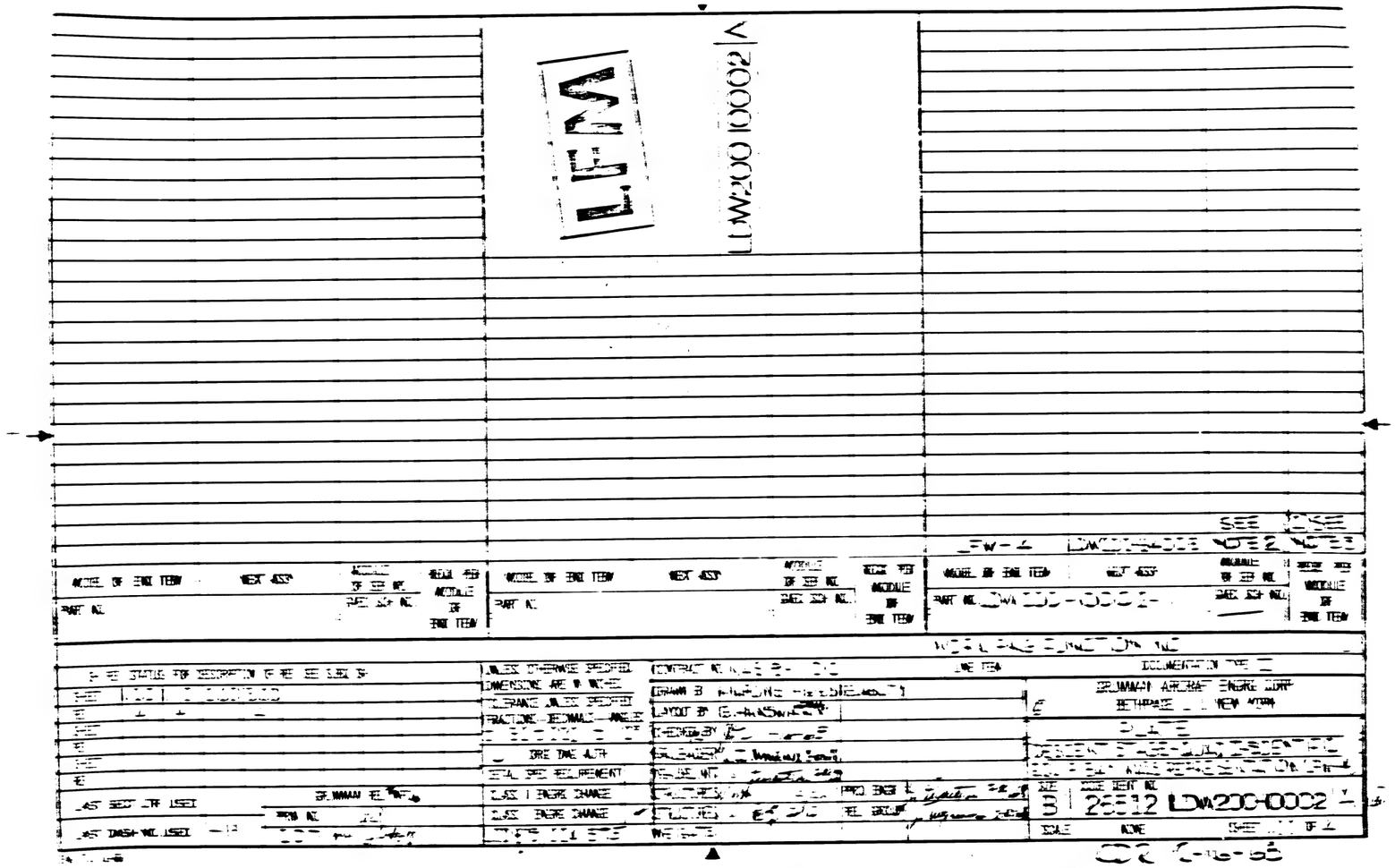
1. THIS DRAWING IS USED TO FABRICATE PARTS FOR LM FIELD MODIFICATION 36 ONLY.
2. TUBE LDW200-10001-11 IS TO BE TRIMMED UPON INSTALLATION.
3. CLEANLINESS LEVEL OF TUBE LDW200-1000-11 IS TO BE "N" PER LSP14-0011.

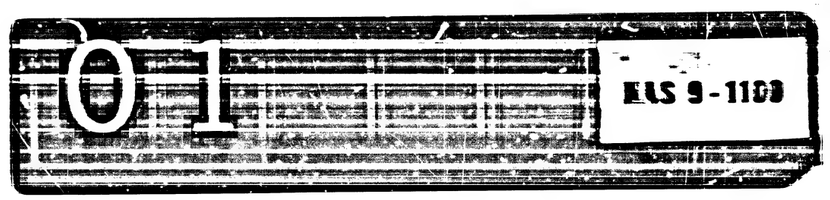
GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW200-10001	
SCALE		SHEET 2.00	

ENG 72.1 6-64

01

NAS 9-1100


LEMA
LDW200 0002 A
SEE
LDW200-0002
B 25512 LDW200-0002


01
ELS 9-1109

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GRUMMAN APPD
A	1						✓	Ⓐ	ADDED SECT TO -11, DWG ERROR CORRECTION, ADDED SH 1.10	SEE NOTE 2	NOT	REQD	A 3-27-68 SUMMARIES		

CHG APPROVED	LTR	GROUP LDR	VEH DES INT	STRUCT	STRUCT	WEIGHTS	RELIABILITY					
	A	3/28/68	3/29/68	3/28 4/1/68								

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW200-10002	A Ⓐ

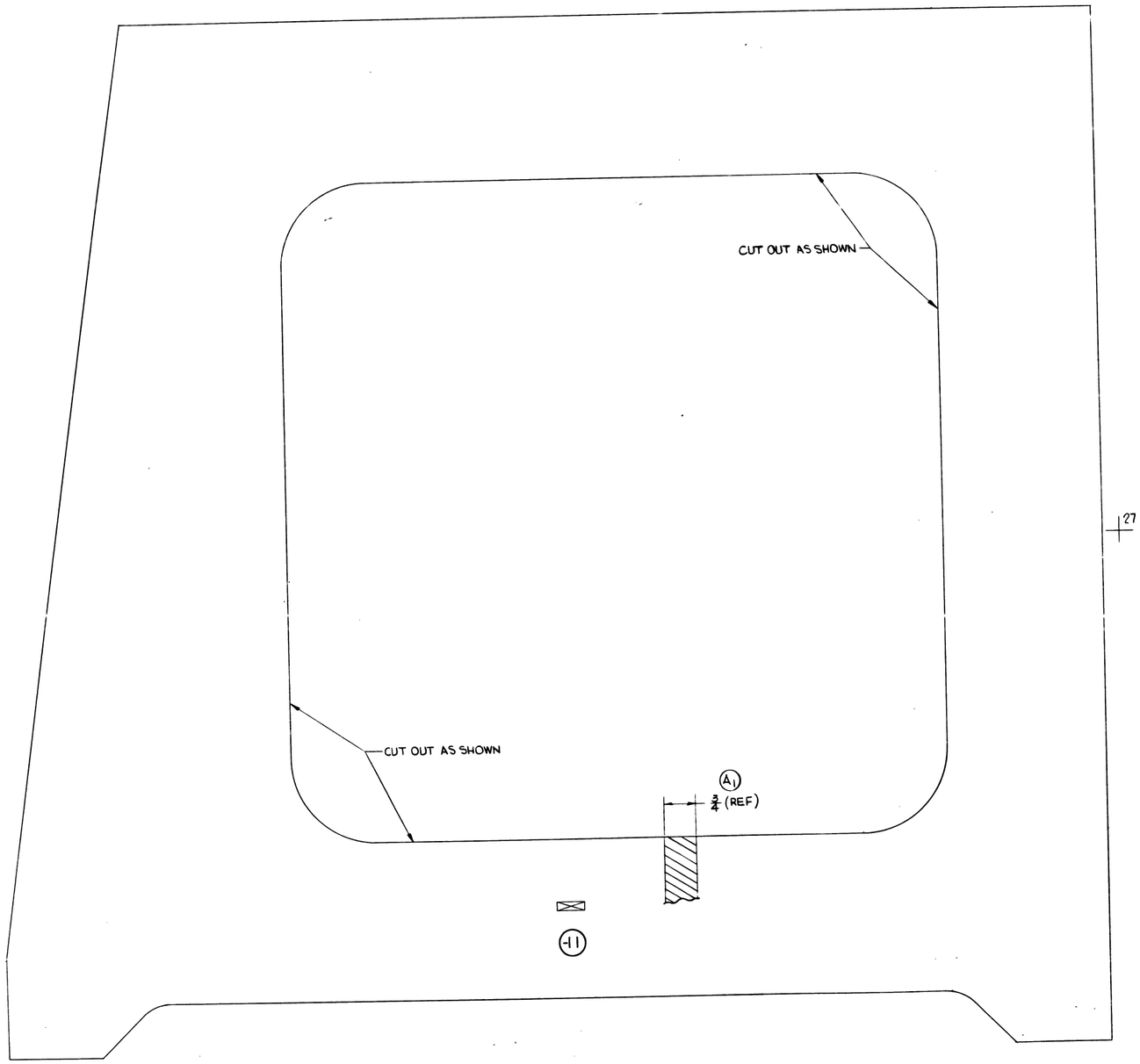
SCALE NONE SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

NOTES:
1. THIS DWG AFFECTED BY LFM-4.
2. LDW200-10002-11 MAY BE USED FOR REWORK ON LM-4(34) THRU LM-15(45).
3. (4) MODULE QUANTITIES REQUIRED PER LFM-4.



MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ~~USE BOTH SIDES IF NECESSARY.~~	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL $\sqrt{}^{3}$ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

01

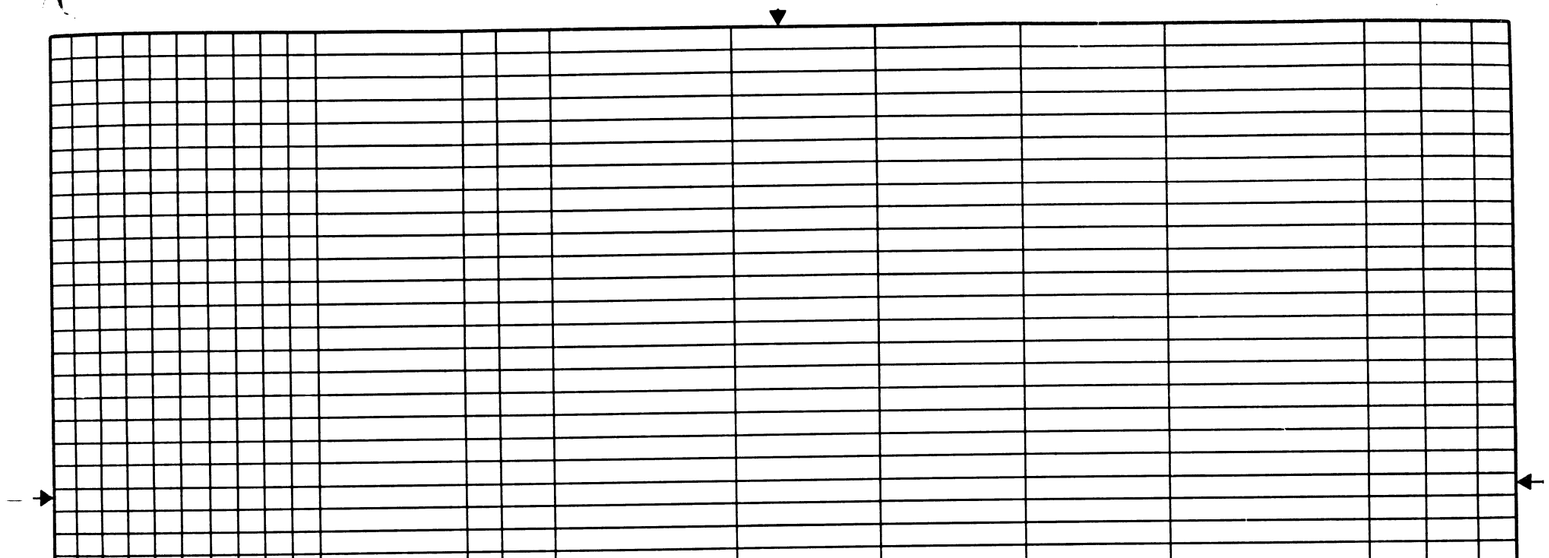
NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
E	26512	LDW200-10002	A
LM MODEL OR END ITEM	SCALE FULL		SHEET 3.00

FOR PHOTO REPRODUCTION

K2



QTY PER ASSEMBLY	PART NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
	LDW200-10002-11	E		PLATE	AL ALLOY PLATE	QQ-A-250/4	2024-T351	3/4 x 25 x 27	NONE	88	

SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC
88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH NONE

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-10002

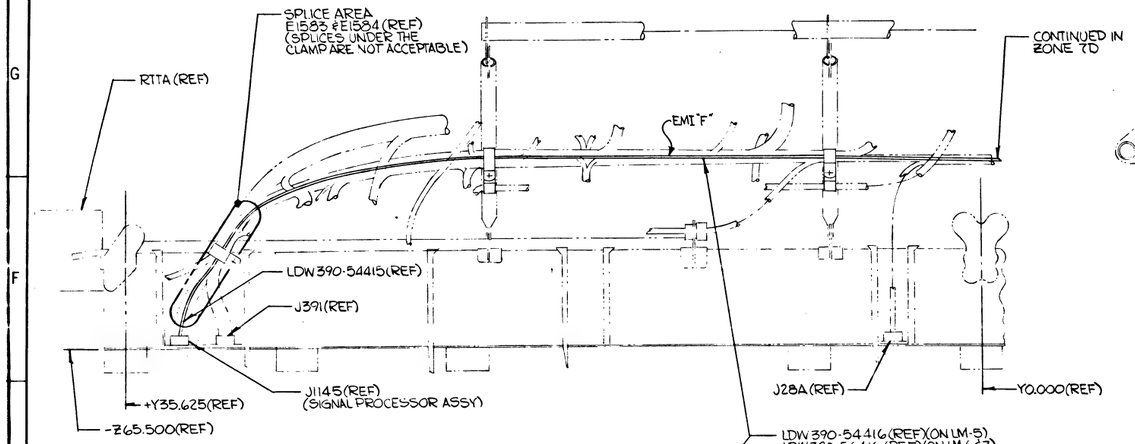
SCALE NONE SHEET 2.00

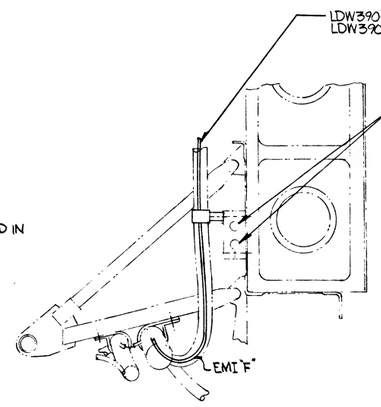
ENG 77.2 5-64

01

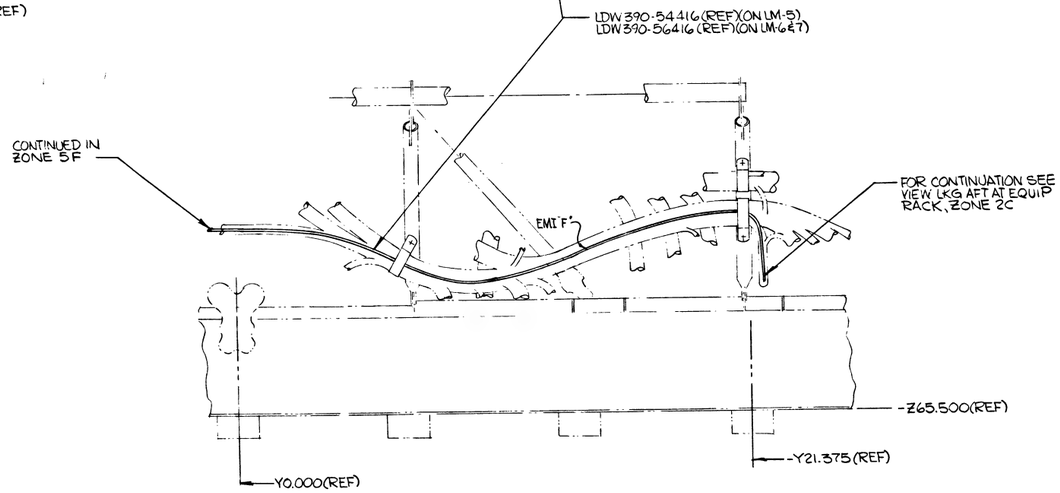
NAS 9-1100

NOTES
1. WIRES INSTALLED ON THIS DWG SHALL BE IN ACCORDANCE WITH LSP390-002 & LPC280-23.
2. LDW390-54416/-56416 EMI "F" IS TO ROUTED IN EXISTING WIRE BUNDLES AS SHOWN.



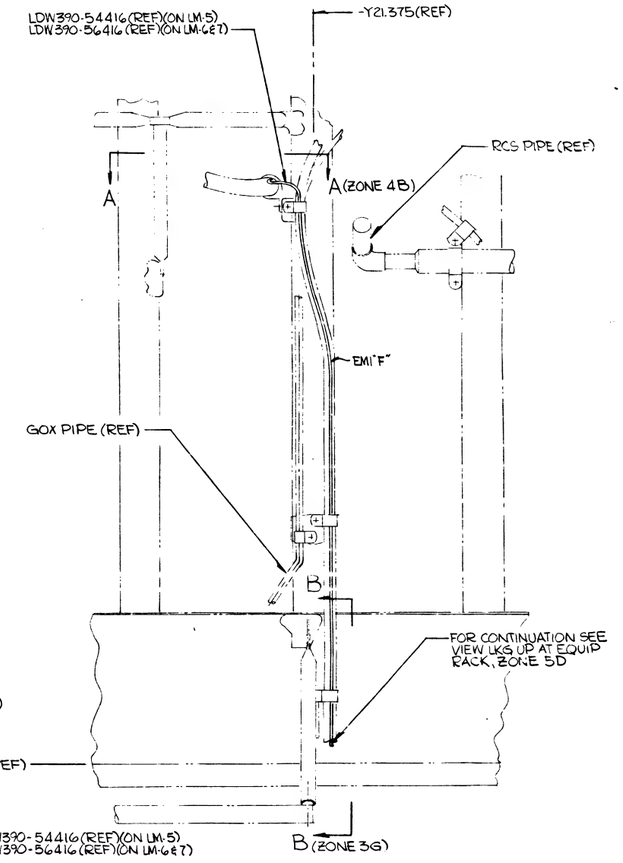


SECT B-B
(ZONE 2C)

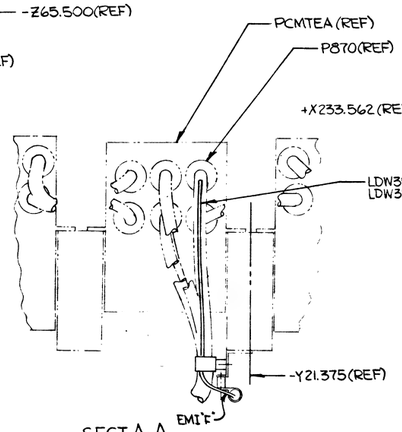


VIEW LKG UP AT EQUIP. RACK
(DIVIDED AT Y0.000)

LDW200-55014-1 INSTL



VIEW LKG AFT AT EQUIP RACK



SECT A-A
(ZONE 2F)

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK
SIZE E | CODE IDENT NO. 26512 | LDW200-55014
SCALE - ALF | SHEET 3.00

LDW200-53973

LFM

QTY PER ASSEMBLY		CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
16	16		NAS1329-C04-60	E	NUT-BLIND RIVET	STD PART						
			MS20470B4		RIVET	STD PART						
30	30		GW10S-10K51A		WASHER	GRUMMAN STD	SEE NOTE 7					
16	16		GS550K-04-5		SCREW							
14	14		GS550K-04-1		SCREW		SEE NOTE 7					
2	2		GS26B-17		STANDOFF							
3	3		GS26B-15		STANDOFF	GRUMMAN STD						
1	1		LDW280-12116-16		BRACKET	SEE DWG						5C
1	1		LDW280-12116-15		BRACKET							9C
1	1		LDW280-12116-13		BRACKET							4D
1	1		LDW280-12116-12		BRACKET							4D
1	1		LDW280-12116-11		BRACKET							3B
1	1		LDW280-12115-15		DOUBLER							13C
1			LDW280-12115-13		SHIELD							13C
	1		LDW280-12115-11		SHIELD	SEE DWG						13C
			LDW200-53973-3		SHIELD INSTL					NONE	NONE	13A
			LDW200-53973-1	E	SHIELD INSTL					NONE	NONE	13A
-3	-1											

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-53973

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NAS 9-1100

SECTION G-G
(ZONE 12C)

LDW280-53547(REF)
GW10S-10KS1A(REF)
NAS1325-C04-6O(REF)
G55SOK-04-5(REF)
LDW280-12115-15(REF)
LDW280-12115-11(REF)

VIEW F-F
(ZONE 14A)

LDW280-11712-11(REF)
LDW280-28242(REF)
LDW280-11711-15(REF)

.374-.381(⊕3/8 DRILL)THRU
LDW280-11712-13⊄
LDW280-11711-15(REF)
GR11C-1(REF)
G526B-31(REF)
(ADD)G555OK-04-1
GW10S-10KS1A
(REMOVE)LDW280-14344-1

LDW280-28242(REF)
LDW280-11712-13(REF)

.374-.381(⊕3/8 DRILL)THRU
LDW280-11712-13⊄
LDW280-11711-15(REF)
GR11C-1(REF)
G526B-31(REF)
(ADD)G555OK-04-1
GW10S-10KS1A
(REMOVE)LDW280-14344-1

LDW280-11711-15(REF)

.374-.381(⊕3/8 DRILL)THRU
LDW280-11712-13⊄
LDW280-11711-15(REF)
GR11C-1(REF)
G526B-31(REF)
(ADD)G555OK-04-1
GW10S-10KS1A
(REMOVE)LDW280-14344-1

LDW280-52839(REF)
Y16,750(REF)

(ADD).374-.381(⊕3/8 DRILL)
LDW280-11712-15,
⊄LDW280-12115-11(ON-1)
LDW280-12115-15
G526B-17
G555OK-04-1
GW10S-10KS1A
GR11C-1(REF)
(REMOVE)LDW280-14344-1
G526B-11
(SEE NOTE 11)

.374-.381(⊕3/8 DRILL)THRU
LDW280-11712-11⊄LDW280-
GR11C-1(REF)
G526B-31(REF)
(ADD)G555OK-04-1
GW10S-10KS1A
(REMOVE)LDW280-14344-1

LDW280-54051 FOR LM-3 (REF)
LDW280-54051 FOR LM-4 LM-5 (REF)

+Z62.375(REF)
+Z67.750(REF)
+Z73.330(REF)
+Z78.887(REF)

COOK DOCKET NO	DWG NO	SHEET
26512	LDW200-53973	3

FRAME 1 FRAME 2

14 13 12 11

+Z55.375(REF) +Z51.687(REF) +Z42.437(REF) +Z33.188(REF)

LDW280-53051 FOR LM-3(REF)
LDW280-54051 FOR LM-4 & LM-5(REF)

-Y12.400(REF)

+Z37.022(REF)

+Z31.500(REF)

-Y15.400(REF)

.374-.381(*3/8 DRILL) THRU
LDW280-11711-11 & LDW280-11712-13(REF)
GR11C-1(REF)
GS26B-31(REF)
(ADD) GS550K-04-1
GW10S-10KS1A
(REMOVE) LDW280-14344-1

.374-.381(*3/8 DRILL) THRU
LDW280-11711-11 & LDW280-11712-13(REF)
GR11C-1(REF)
(ADD) GS26B-15
GS550K-04-1
GW10S-10KS1A
(REMOVE) LDW280-14344-1
GS26B-33
PICK UP EXISTING LOCATION

LDW280-11711-11(REF)

LDW280-53499(REF)

.374-.381(*3/8 DRILL) THRU
LDW280-11712-13 & LDW280-11711-13(REF)
GR11C-3(REF)
GS26B-19(REF)
LDW280P11321-13 BOND TO NS OF
LDW280-11711-13 (SEE NOTE 3)(REF)
(ADD) GS10SK-04-1
GW10S-10KS1A
(REMOVE) LDW280-14344-1

TRIM LDW280-53347(EFF LM-3 & LM-4)
& LDW280-54347(EFF LM-5) TO
MATCH LDW280-12115-15

(ADD).374-.381(*3/8 DRILL) 2HOLES
THRU LDW280-11712-13,
LDW280-12115-11(ON-1),-13(ON-3)
& LDW280-12115-15
GS26B-15(2)
GW10S-10KS1A(2)
GS55BK-04-1(2)
GR11C-1(2)(REF)
(REMOVE) GS26B-13(2)
LDW280-14344-1(2)
(SEE NOTE 11)

(ADD) LDW280-12115-11(ON-1)
-13(ON-3)
(REMOVE) LDW280-11309-15

2½(TRUE) E 2½(TRUE)

E(ZONE 10A) 2½(TRUE)

LDW280-11711-13(REF)

(ADD) LDW280-12115-15

(ZONE 17A) G ⅜(TRUE)TYP

G

LDW280-11712-13(REF)

.374-.381(*3/8 DRILL) THRU
LDW280-11712-13, LDW280-11711-13(REF)
GR11C-9(REF)
GS26B-19(REF)
LDW280P11321-13 BOND TO NS OF
LDW280-11711-13 (SEE NOTE 3)(REF)
(ADD) GS550K-04-1
GW10S-10KS1A
(REMOVE) LDW280-14344-1

NAS1329-C04-60(16)
GW10S-10KS1A(16)
GS550K-04-5(16)

D(ZONE 5B)

.374-.381(*3/8 DRILL) THRU
LDW280-11712-11 & -13(REF)
GR11C-1(REF)
GS26B-31(REF)
(ADD) GS550K-04-1
GW10S-10KS1A
(REMOVE) LDW280-14344-1

C(FOR-3 ONLY)
(ZONE 7B)

B(FOR-1 ONLY)
(ZONE 4B)

LDW280-11712-11(REF)

-Y36.497(REF)

.374-.381(*3/8 DRILL) THRU
LDW280-11712-11 & LDW280-11711-17(REF)
GR11C-1(REF)
GS26B-31(REF)
(ADD) GS550K-04-1
GW10S-10KS1A
(REMOVE) LDW280-14344-1

LDW280-28294(REF)

LDW280-28243(REF)

F(ZONE 16A)

LDW280-11711-17(REF)

LDW280-53096(REF)

+Z51.500(RER)

A

LDW280-11712-13(REF)

LDW280-12115

+Z52.250(REF)

LDW200-53973-1 INSTL
-3 INSTL(IDENTICAL TO -1 EXCEPT AS SHOWN)
VIEW LOOKING DOWN

NAS 9-1100

02/05

73 SHEET 3

FRAME 1 FRAME 2 14 13 12 11 FRAME 2 FRAME 3

CODE IDENT NO 26512 DWG NO LDW200-53973 SHEET 3

SECTION A-A

SECTION E-E (ZONE 11C)

SECTION C-C (ZONE 13B)

LDW280-53096(REF)
LDW280PI1321-13(REF)
LDW280-12115-15(REF)
LDW280-12115-11(REF)(ON-1)
LDW280-12115-13(REF)(ON-3)
LDW280-12115-13(REF)(ON-3)
LDW280-12115-15(REF)
LDW280-12115-15(REF)
LDW280-12115-15(REF)
+232.660(REF)
LDW280-53952(REF)(ON-1)
LDW280-53952(REF)(ON-3)
+242.437(REF)
LDW280PI1321-11(REF)
LDW280-11712-11(REF)
LDW280PI1321-13(REF)
LDW280-11711-13(REF)
LDW280-11710-12(REF)
LDW280-11712-13(REF)
LDW280-12115-15(REF)
LDW280-12115-13(REF)
LDW280-53952(REF)
.139-.145(Ø.28 DRILL) 2 HOLES (ADD)
GB511U-06-1(2)(REF)
AN960C6(2)(REF)
-Y15.400(REF)
LDW280-53499(REF)
(ADD)LDW280-12116-15
(REMOVE)LDW280-11710-15
(ADD)LDW280-12116-12
(REMOVE)LDW280-11710-14
(SEE NOTE II)
M520410B4(2)(ADD)
LDW280-12115-15(REF)
LDW280-11711-11(REF)
-Y12.400(REF)
FFB REF PLANE
PICK UP EXISTING LOCATION
LDW280-11710-11(REF)
LDW280-11711-11(REF)
-Y12.400(REF)
LDW280-53499(REF)
(ADD)LDW280-11711-13
(REMOVE)LDW280-11712-13
(SEE NOTE II)
M520410B4(2)(ADD)
PICK UP EXISTING LOCATION
.139-.145(Ø.28 DRILL)
GB511U-06-1(REF)
AN960C6(REF)
2 1/2
FFB REF LINE
-Y15.400(REF)
-Y12.400(REF)
LDW280-11711-11(REF)
LDW280-53499(REF)
(ADD).374-.381(Ø 3/8 DRILL)
THRU LDW280-11712-13,
LDW280-12115-11(ON-1),-13(ON-3)
LDW280-12115-15
GS556K-04-1
GW10S-10K3IA
GS26B-17(REF)
GR11C-1(REF)
(REMOVE)LDW280-14344-1
(SEE NOTE II)
LDW280PI1321-13(REF)
LDW280-11710-11(REF)
M520410B4(2)(ADD)
PICK UP EXISTING LOCATION
.139-.145(Ø.28 DRILL)
GB511U-06-1(REF)
AN960C6(REF)
2 1/2
LDW280-53952(REF)
LDW280-12115-13(REF)
LDW280-12115-13/(DEF)
2 1/2 TYP 3 PLCS
M520410B4(2)(ADD)
LDW280-12115-15(REF)
LDW280-11712-13(REF)
LDW280-11712-11(REF)
LDW280-53499(REF)
-Y15.400(REF)
LDW280-11

NAS 9-1100

0470405
NAS 9-1100

CODE IDENT NO 26512 | DWG NO LDW200-53973 | SHEET 3

SECTION D-D
(ZONE 14B)

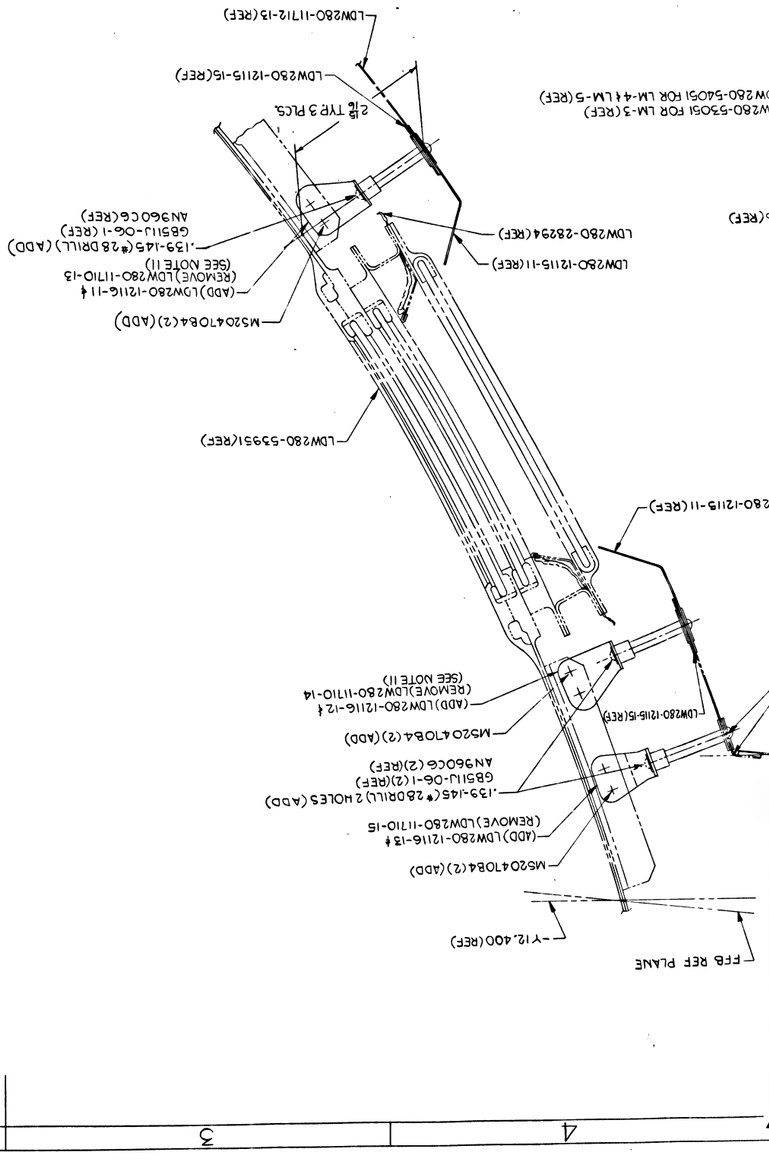
SECTION B-B (FOR -1 ONLY)
(ZONE 13B)

-C (FOR -3 ONLY)

LDW280-11712-11(REF)
LDW280-11712-13(REF)
LDW280-12115-15(REF)
2 PLCS TYP 3 PLCS
LDW280-28294(REF)
LDW280-12115-11(REF)
.139-.145(#28 DRILL)(ADD)
GB511J-06-1(REF)
AN960C6(REF)
(ADD)LDW280-12116-14
(REMOVE)LDW280-11710-13
(SEE NOTE 11)
MS20470B4(2)(ADD)
LDW280-53951(REF)
LDW280-12115-11(REF)
PICKUP EXISTING LOCATION
(ADD)LDW280-12116-12
(REMOVE)LDW280-11710-14
(SEE NOTE 11)
LDW280-12115-15(REF)
MS20470B4(2)(ADD)
.139-.145(#28 DRILL) 2 HOLES (ADD)
GB511J-06-1(2)(REF)
AN960C6(2)(REF)
(ADD)LDW280-12116-13
(REMOVE)LDW280-11710-15
MS20470B4(2)(ADD)
LDW280-11711-11(REF)
LDW280-53499(REF)
-Y15.400(REF)
-Y12.400(REF)
FFB REF PLANE

LDW280-11712-11(REF)
LDW280-11712-13(REF)
LDW280-53051 FOR LM-3(REF)
LDW280-54051 FOR LM-4 LM-5(REF)
LDW280-11710-15(REF)
LDW280-12115-11(REF)
2 PLCS
WINDOW
.139-.145(#28 DRILL)(ADD)
GB511J-06-1(REF)
AN960CL(REF)
LDW280-12115-15(REF)
(ADD)LDW280-12116-16
(REMOVE)LDW280-11710-17-19
(SEE NOTE 11)
MS20470B4(2)(ADD)
PICK UP EXISTING LOCATION
LDW280-11711-11(REF)
LDW280-11710-16(REF)
-Y15.400(REF)
LDW280-53499(REF)
-Y12.400(REF)
FFB REF PLANE

6 5 4 3



NOTES:
1. ALL RIVETS TO BE SQUEEZED
2. INSTALL FASTENERS PER LSP14-15302 # LSP14-15304.
3. ON-I- 3 INSTL. ON INSTALLATION OF STANDOFFS, ADD TO INSERTS PP2404C FLOUROCARON GREASE AS PER LSN14-6004A. ONE DROP IS SUFFICIENT.
4. IT IS PERMISSIBLE TO VARY STANDOFF ANGULARITY UP TO 5° MAXIMUM. PROVIDING SKIN MOUNTING END OF STANDOFF DOES NOT CHANGE.
5. THE SIZE OF ALL G5268 STANDOFF ASSYS MAY BE VARIED ± 3 SIZES FROM EXISTING DRAWING CALLOUTS.
6. INSTALLATION PROCEDURE LM THERMAL SHIELD STANDOFFS PER LPC280-38.
7. LDW280-14344-1 (SCREW ASSY) IS AN ACCEPTABLE ALTERNATE FOR AND MAY BE USED IN PLACE OF G5550K-04-1 # GW105-10K51A AT STANDOFF LOCATIONS.
8. FOR EFF LM-3, LDW200-53973 MAY BE MADE BY REWORKING LDW280-55115 IN THE AREA DEFINED BY SHIELD INSTL LDW280-55341-1.
9. FOR EFF LM-4, LDW200-53973 MAY BE MADE BY REWORKING LDW280-54173 IN THE AREA DEFINED BY SHIELD INSTL
10. FOR EFF LM-5, LDW200-53973 MAY MADE BY REWORKING LDW280-55341-1-1. LDW280-54173 IN THE AREA DEFINED BY SHIELD INSTL LDW280-54341-1.
11. LOCATION OF LDW280-12116-12, G5268-15 LDW280-12116-11, G5268-15, LDW280-12116-16, G5268-17, LDW280-12116-17 # G5268-17 TO BE COORDINATED WITH LDW280-12115-15.

SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTE CHECKED ✓ APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USED FOR BOTH SIDES IF NECESSARY	
LENGTHS OF .XX INCH & .XXX INCH TOLS. MAY NOT SPECIFIED NOT SPECIFIED TO BE LESS THAN 1 INCH ARE	✓
INSTALL RIVETS IN ACCORDANCE WITH	

PRINTING DATE 08/1
SIZE SEE SHEET 1
FULL SIZE SHEET AREA IN SF FULL=11.2 SQ FT
WT SEE SHEET AREA IN SF FULL=44.9 SQ FT

GRUMMAN AIRCRAFT ENGNG CORP. BETHPAGE L.I., NEW YORK		
SIZE K	CODE IDENT NO 26512	LDW200-53973
SCALE 1 /ULL	SHEET 5 OF	

CODE IDENT NO	DWG NO	SHEET
26512	LDW200-53973	3

FRAME 4 FRAME 5

5 FR

NAS 9-1100

LDW200-54001

LFM

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LFM-4	LDW280-54508	SEE NOTE #2	1
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW200-54001-1		GAEC SCH NO. 50	

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00		2.00		3.00					
REV										
SHEET										
REV										
SHEET										
REV										
LAST SECT LTR USED	A		GRUMMAN REL'G INFO							
LAST DASH NO. USED	-3		PRIM NO. 207							

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/16 ±.020 ±1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE ✓
LCD8'9 /CCA 575

CONTRACT NO. NAS 9-1100 | LINE ITEM 1 | DOCUMENTATION TYPE II

DRAWN BY	E. WICK 9-10-67	WEIGHTS	
LAYOUT BY	G. HANSMANN 11/9/67	RELIABILITY	
CHECKED	9-12-67	THERMO	
GR LEADER	F. Marino 12-6-67		
VEH. DESINT	12/16/67		
STRUCTURE	12/1	PROJ ENGR	12/16/67
STRUCTURE	12/1	REL GROUP	12/16/67

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

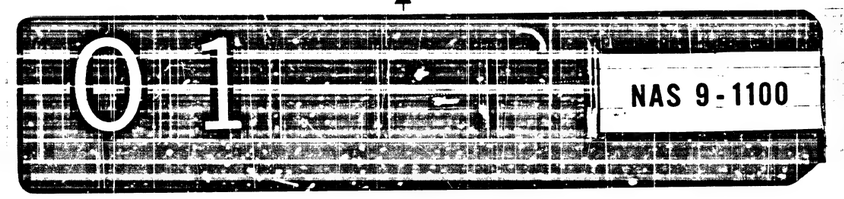
MODIFICATION KIT INSTL-
DESCENT STAGE-RAD THERMAL GEN. SPT TRUSS
REMOVAL-REWORK OF LDW280-54508 (LFM-4)

SIZE	CODE IDENT NO.	
B	26512	LDW200-54001

SCALE NONE | SHEET 1.00 OF 3

CDR 12-9-67

ENG 77.1 12-65



QTY PER ASSEMBLY			CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
	AS REQD			GT835P-8	E	TAPE	GRUMMANSTD						
8				GW10H-3	E	WASHER	GRUMMAN STD						
8				GR11B-1	E	RIVET	GRUMMANSTD						
	1			LDW280P18282-15	E	BLANKET ASSY	SEE DWG						
1				LDW200P18282-3	E	BLANKET ASSY	SEE DWG						
	1			LDW200-54001-3	E	BLANKET ASSY					NONE	NONE	
				LDW200-54001-1	E	MOD KIT INSTL					NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

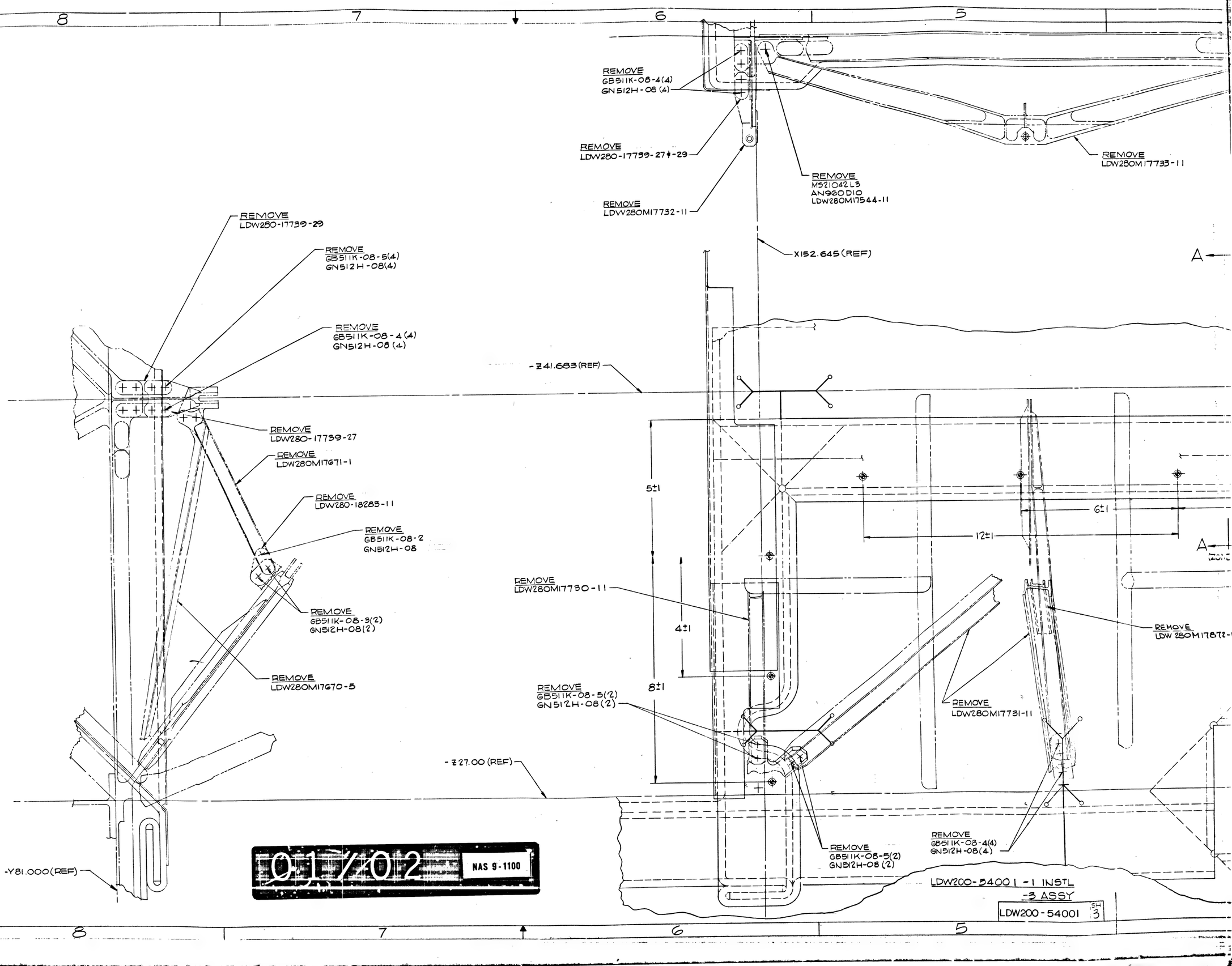
SIZE	CODE IDENT NO.	
B	26512	LDW200 - 54001

SCALE NONE SHEET 2.00

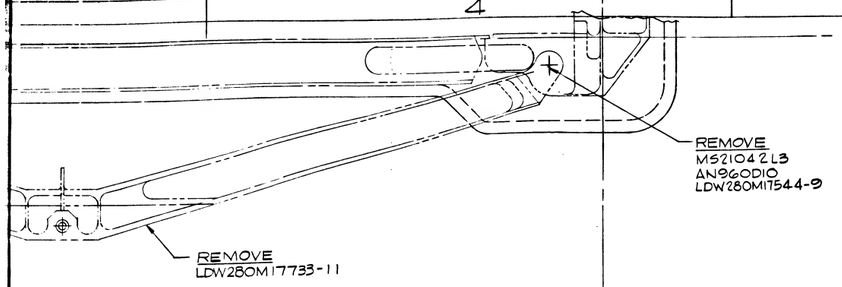
ENG 77.2 7-65

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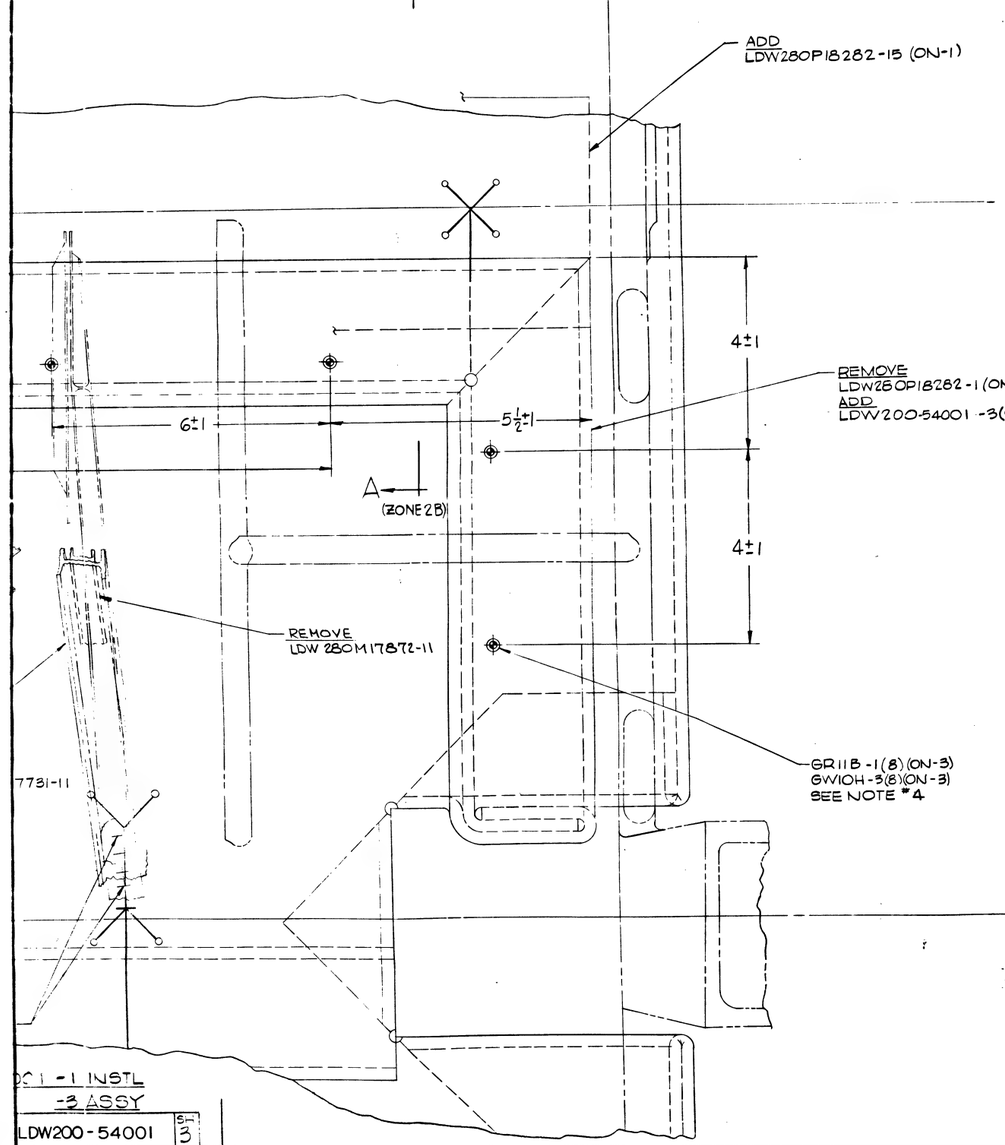
NAS 9-1100

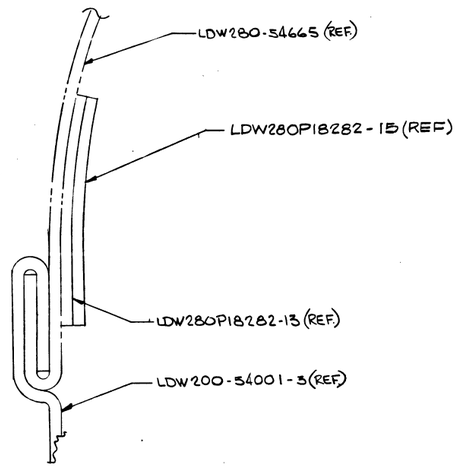


01/02 NAS 9-1100



NOTES:
1- THIS DWG WHEN USED FOR DELIVERED LM VEHICLES IS AFFECTED BY LFM #4.
2- LDW200-54001-1 MAY BE USED FOR REWORK ON LM-4(34) THRU LM-15(45).
3- (4)-3 BLANKET ASSY'S REQ'D PER LFM #4.
4- FOR -3 MODIFICATION KIT BLANKET ASSY COORDINATE GR11B-1 AND GW10W-3 LOCATIONS WITH LDW280-54665.





SECTION AA (ZONE 4B)

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY.
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
SURFACE ROUGHNESS 125 INCLUDING REAMED HOLES PER MIL-STD-10
250 FOR ALL DRILLED HOLES
REMOVE ALL BURRS. BREAK ALL E. GES .015-.031
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
SYMBOL ✓ DENOTES SURFACE TO BE MACHINED
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
LENGTHS OF AN, MAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
TOLERANCE ON LOFTED DELINEATIONS IS

DWG SIZE IS X 65

22.5in ft.
5.5in ft.

PRINTING INTO ONLY
FULL SIZE SHEET AREA ON X 90°
1/2 SIZE SHEET AREA (1/4 OF FULL)

PRINT TRIM LINE

02/02 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK		
LM	SIZE J	CODE IDENT NO. 26512
MODEL OR END ITEM	SCALE FULL	SHEET 3.00

LDW200-54001

2FR

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200-54001		EO NO. A1
CONTROL INFO NO. LM5-21294		

NOW: REMOVE
LDW280-54665-13 (LM-4 & LM-5) (ON-1)
LDW280-56665-11 (LM-6 THRU LM-15) (ON-1)

WAS: REMOVE
LDW280P18282-1 (ON-1)

LFM

REF: E.O. LDW280P18282 A10 FOR CANCELLATION OF LDW280P18282-1 PER LCD 1433/CCA 586.

NOTE: THIS CHANGE DOES NOT EFFECT DELIVERED VEHICLES.

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD 1433 CCA 586 (5)

REASON FOR EO: VEHICLE BLANKET PART # IS REIDENTIFIED FOR SUBSEQUENT LM's.

DESCRIPTION OF EO: REMOVED LDW280-54665-13 (LM-4 & LM-5) ON-1 & LDW280-56665-11 (LM-6 THRU LM-15) ON-1 WAS REMOVED LDW 280P18282-1 (ON-1).

GAEC EO RELEASE 1/9

MODEL	EFFECTIVITY LM-5 RCS		DRAWING CHANGE REQD		DISPOSITION OF PARTS	APPROVED BY								
	EI ~~PROCURING ACTIVITY~~	GAEC UNIT NO.	SUB CONTR UNIT NO.	REVISE DWG	RECORD EO		DATE							
LM	LFM-4	LM-4 (34)					1/9/69				1/6/69	1-4-69	1469	1/10/69
		THRU						VDI	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
		LM-15 (45)		PRIORITY C	DRAWING TITLE: HOD KIT INSTL ~ D.S. ~ RTG TRUSS INSTL REMOVAL ~ RWK OF LDW280-54508						DRAWING NO. LDW200-54001			EO NO. A1

ISSUED BY LIAISON HANSMANN 86755 SECTION VDI GROUP NO. 335 PL 25

01

NAS 9-1100

LFM

LDW200-54003

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM-4	LDW280-54508	SEE NOTE 2	(1) SEE NOTE 3
PART NO. LDW200-54003-1		GAEC SCH NO. 50	

WORK PKG FUNCTION NO. 111 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00		2.00	3.00					
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO	
LAST DASH NO. USED	-5	PRIM NO. 207	UK (07Z) MP.16-3/10/68

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.010 ±1/2°

U	ORIG DWG AUTH
	DETAIL SPEC REQUIREMENT
	CLASS II ENGRG CHANGE
✓	CLASS I ENGRG CHANGE
LCD879 (CCA 575)	

CONTRACT NO. NAS9-1100 LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	V. NARONIS 1-16-68	RELIABILITY	
LAYOUT BY	G. HANSMANN 1-16-68		
CHECKED BY	H. BERNSTEIN 1-16-68		
GP LEADER	L.J. MARINO 2-6-68		
VEH DESINT	J. Fusaro 2/8/68		
STRUCTURES	2/12/68	PROJ ENGR	J. Fusaro 2/8/68
STRUCTURES	Feb 2/12/68	REL GROUP	J. Gagliano 2/15/68
WEIGHTS			

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

PLATE INSTALLATION -
DESCENT STAGE - QUAD II - SCIENTIFIC EQUIP BAY - MASS REPRESENTATION (LFM-4)

SIZE	CODE IDENT NO.		
B	26512	LDW200-54003	1
SCALE NONE		SHEET 1.00 OF 3	

CDR 3-1-68

EMC 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY			CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
32	32			AN960D10	E	WASHER	STD PART						
16	16			MS27039-1-23		SCREW	STD PART						
8	8			NAS1304-15		BOLT	STD PART						
8	8			MS21042L4		NUT							
16	16			MS21042L3		NUT							
8	8			AN960D416L		WASHER							
16	16			AN960D10L		WASHER	STD PART						
1	1			LDW200M10001-12		FITTING	SEE DWG						5A
1	1			LDW200M10001-11		FITTING	SEE DWG						7A
4	4			LDW200M10003-11		TRACK	SEE DWG						6A
1	1			LDW200-10002-11		PLATE	SEE DWG						3A
		1		LDW200-54003-5		PLATE ASSY					NONE	NONE	3A
		1		LDW200-54003-3		PLATE ASSY					NONE	NONE	6A
				LDW200-54003-1	E	PLATE INSTL					NONE	NONE	5A
-5	-3	-1											

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

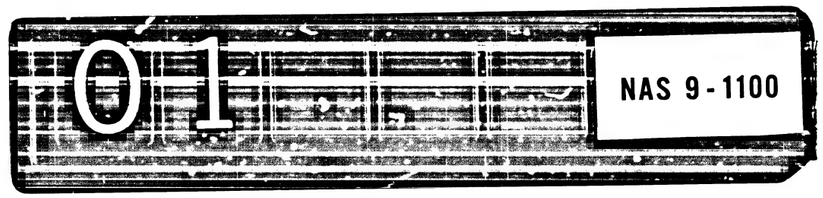
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

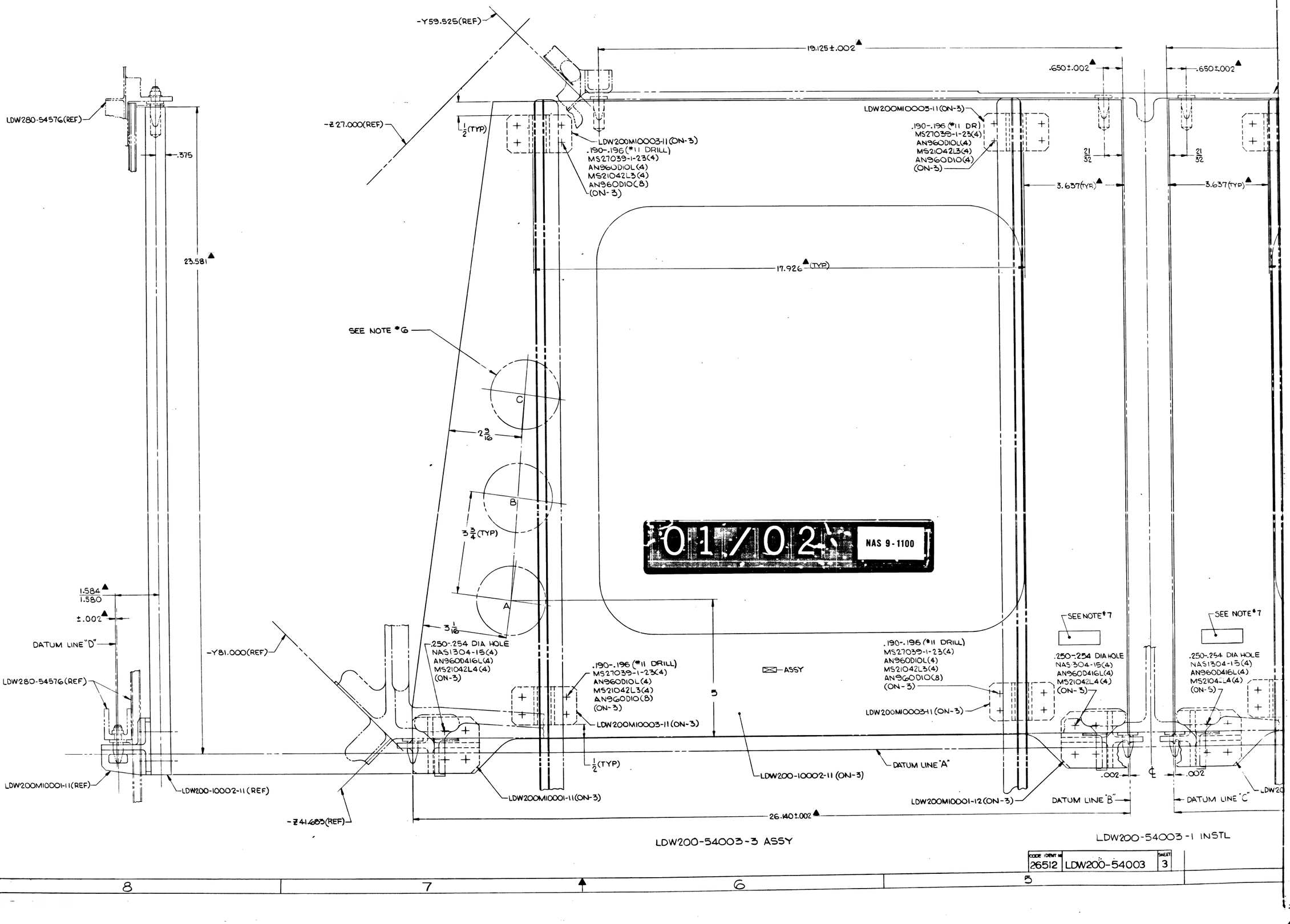
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-54003

SCALE NONE SHEET 2.0C

MB 77.2 7-65



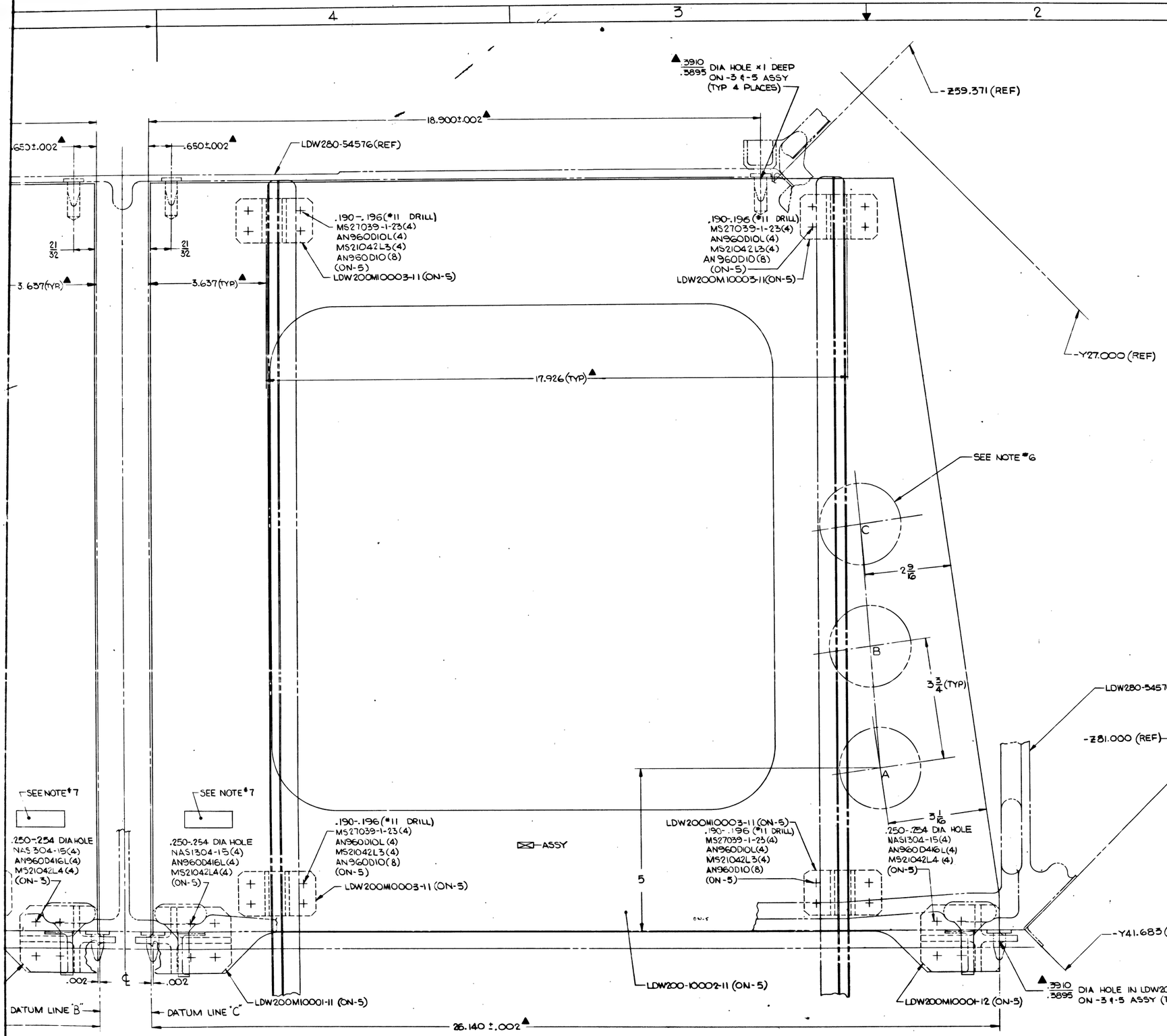


01/02 NAS 9-1100

LDW200-54003-3 ASSY

LDW200-54003-1 INSTL

CODE IDENT NO		SHEET
26512	LDW200-54003	3



LDW200-54003-1 INSTL

LDW200-54003-5 ASSY

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY.	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL STD-10	
250 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ∜ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, MAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

NOTES:

1. THIS DRAWING AFFECTED BY LFM-4.
2. LDW200-54003-1 INSTL MAY BE USED FOR REWORK ON LM-4(34) THRU LM-15(45)
3. (4) MODULE QUANTITIES OF -1 REQUIRED PER LFM-4.
4. HOLES & DIMENSIONS MARKED ▲ FORM PART OF AN INTERCHANGEABLE INTERFACE AS SHOWN ON LDW280-54576
5. WEIGHT OF -3 & -5 ASSY TO BE 25.5 LBS ± .5 LBS EACH
6. WEIGHT OF -3 & -5 ASSY MAYBE DECREASED BY DRILLING 2 ½ DIA HOLES AS REQD IN THE AREA INDICATED. (3) HOLES MAX PER ASSY STARTING AT "A"
7. WEIGHT OF EACH ASSY TO BE STEEL STAMP IN AREA INDICATED

02/02 NAS 9-1100

DWG SIZE 34 X 46
PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X 48)= 24.5 SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL)= 6.5 SQ. FT.
PRINT TRIM LINE

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE J	CODE IDENT NO. 26512	LDW200-54003	
LM	SCALE FULL	SHEET 3.00	2FR
MODEL OR END ITEM			K2

NOT FOR PHOTO REPRODUCTION

ENT NO.		SHEET
12	LDW200-54003	3

B LDW200-54003
A LDW200-54003

LDW200-55001

LFM

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM#357	LDW280-54001	LM-5(35)	1
PART NO. LDW200-55001-1		GAEC SCH NO. 357	

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH			
SHEET	1.00	2.00	3.00
REV			
SHEET			
REV			
SHEET			
REV			

LAST SECT LTR USED	F
LAST DASH NO. USED	-1

GRUMMAN REL INFO

PRIM NO. VC(627) 215 PTE-16 1/30/69

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.015 ±½°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD #3775	

CONTRACT NO. NAS 9-1100 LINE ITEM I DOCUMENTATION TYPE II

DRAWN BY	W. PAIUK 1/29/69		
LAYOUT BY	W. PAIUK		
CHECKED BY			
GR. LDR	W. Pajuk 1-29-69		
VDI	J. Lusatzi 1/29/69		
STRUCT	[illegible] 1-27	PROJ ENGR	C. Lusatzi 1/29/69
STRUCT		REL GROUP	G. Marsh 1/30/69

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

FITTING INSTL-A/S CABIN AND MID-SECT
REWORK OF LDW280-54001
LFM # 357

SIZE	CODE IDENT NO.	
B	26512	LDW200-55001

SCALE NONE SHEET 1 OF 3

ENG 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
-1											
14		GN512AM-6W	E	NUT	GRUMMAN STD						
2		GB511K-3-11	E	BOLT (SEE NOTE *4)	GRUMMAN STD						
4		GB511K-3-9	E	BOLT (SEE NOTE *4)	GRUMMAN STD						
8		GB511K-3-8	E	BOLT (SEE NOTE *4)	GRUMMAN STD						
6		GF510A-6-2	E	RIVET (SEE NOTE *4)	GRUMMAN STD						
10		GF510A-5-3	E	RIVET (SEE NOTE *4)	GRUMMAN STD						
4		GF510A-5-2	E	RIVET (SEE NOTE *4)	GRUMMAN STD						
4		GS12E-060-A-05-B-02	E	SHIM	GRUMMAN STD						
2		LDW280-12144-11	E	PLATE	SEE DWG						
2		LDW280M11499-14	E	PLATE							
2		LDW280M11499-13	E	PLATE							
1		LDW280M10947-5	E	FITTING							
1		LDW280M10845-3	E	FITTING							
1		LDW280M10843-5	E	FITTING	SEE DWG.						
		LDW200-55001-1	E	FITTING INSTL.							

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
76	ALODINE	LSP-14-9010

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

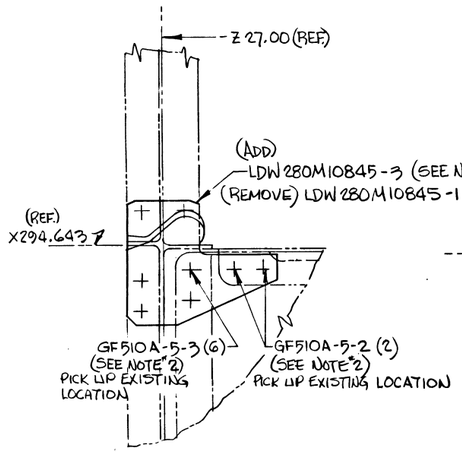
SIZE	CODE IDENT NO.	
B	26512	LDW200-55001

SCALE NONE SHEET 2

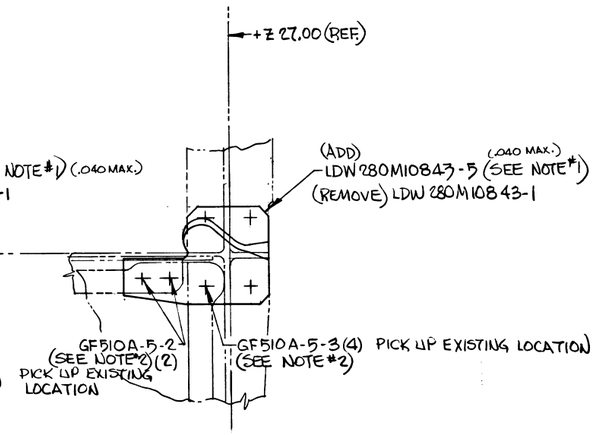
ENG 77.2 7-65

01

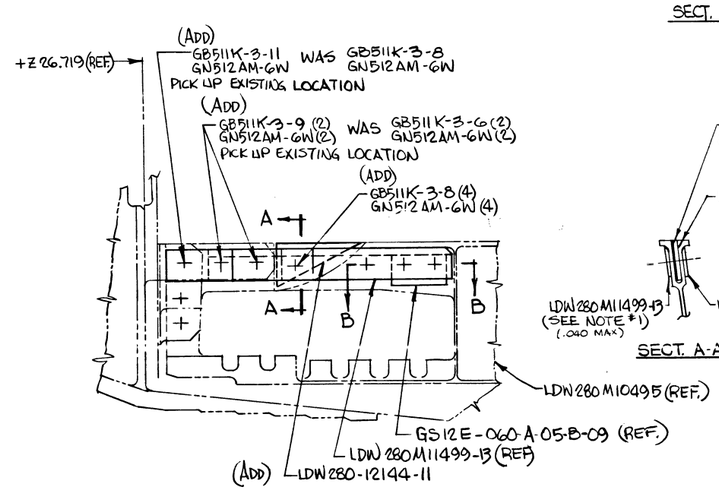
NAS 9-1100



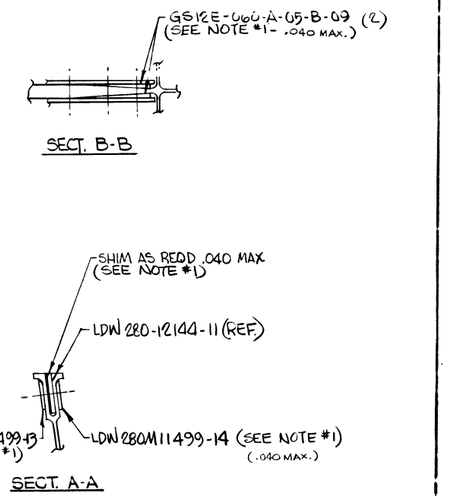
DETAIL E
VIEW LOOKING INBD R.H. SIDE
(SEE NOTE 4)

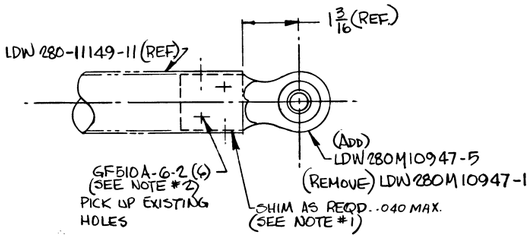


DETAIL D
VIEW LOOKING INBD R.H. SIDE
(SEE NOTE 4)

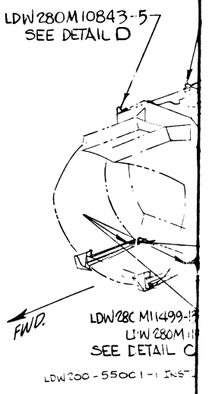


DETAIL C
VIEW LOOKING OUTBOARD L.H. SIDE
(SEE NOTE 4)



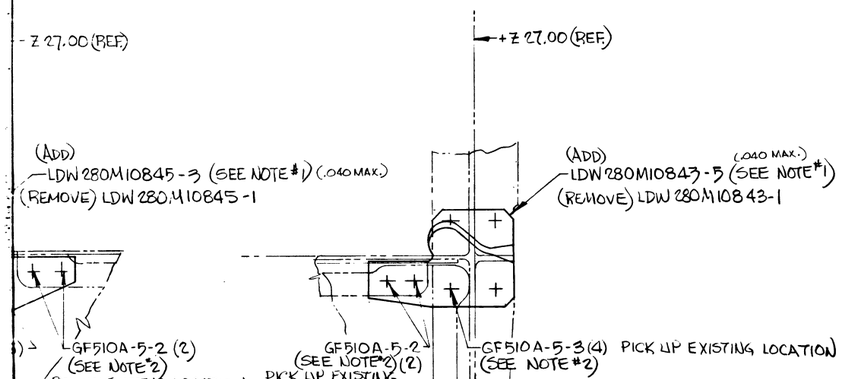


DETAIL F
VIEW LOOKING AFT



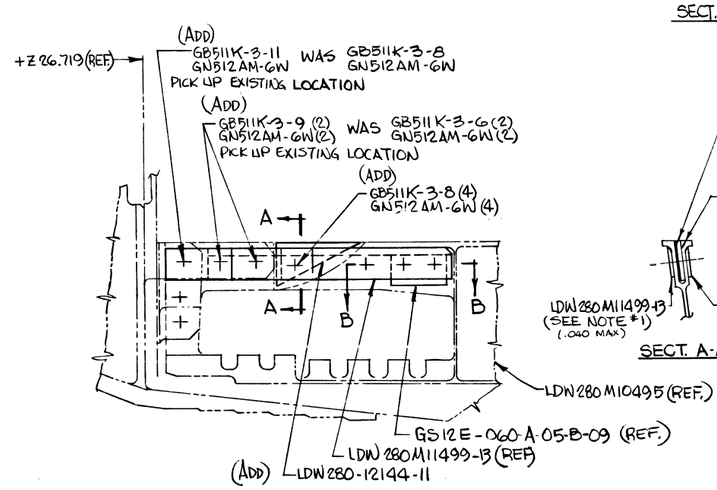
01/02 NAS 9-1100

NOTES:
1. SHIM IN ACCORDANCE WITH LPC280-53.
2. INSTALL RIVETS AS PER LSP14-15304
3. INSTALL GB511K FASTENER PER LSP-14-15306.
4. TO INSURE PROPER GRIP LENGTH ON FASTENERS IT IS PERMISSIBLE TO USE ONE GRIP LENGTH SMALLER OR LARGER OF THE SAME TYPE & DIAMETER FASTENER.

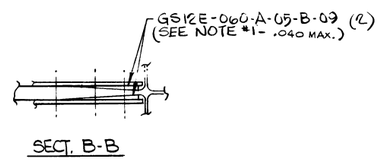


D RH SIDE

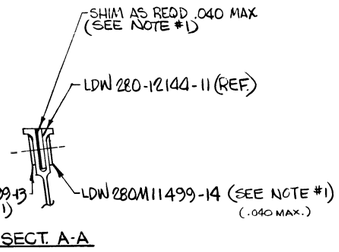
DETAIL D
VIEW LOOKING INBD R.H. SIDE
(SEE NOTE 4)



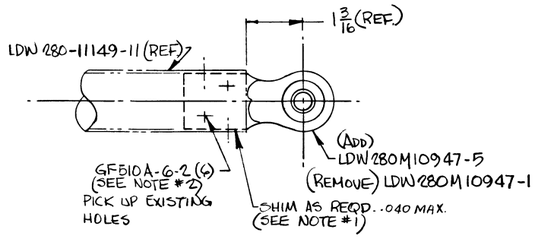
DETAIL C
VIEW LOOKING OUTBOARD L.H. SIDE
(SEE NOTE 4)



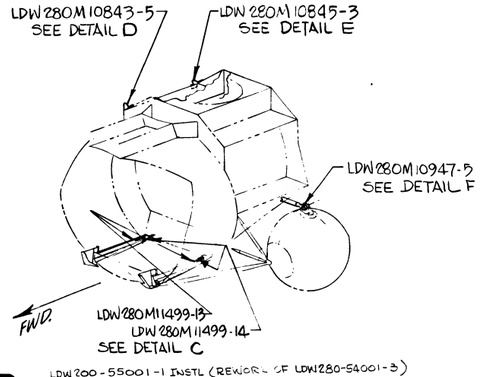
SECT. B-B



SECT. A-A



DETAIL F
VIEW LOOKING AFT



LDW200-55001-1 INSTL (REWORK OF LDW280-54001-3)

02/02 NAS 9-1100

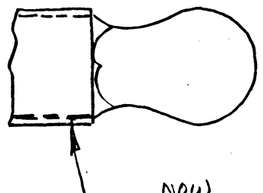
GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I. NEW YORK
SIZE CODE IDENT NO. 26512 LDW200-55001
SCALE FULL SHEET 3

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65 **ENGINEERING ORDER**

DWG NO. LDW200-55001 | EO NO. A1
CONTROL INFO NO. LDW280B7029

REVISE DETAIL "F" AS SHOWN AND ADD NOTE *



DETAIL F

NOW
SHIM AS REQ'D. (SEE NOTE *) .040 MAX
WAS:
SHIM AS REQ'D .040 MAX
(SEE NOTE #1)

ADD NOTE *
SHIM AS PER LPC280-55

LFM

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓ LCD 3775

REASON FOR EO: TO ADD ROD END SHIMMING SPEC.

DESCRIPTION OF EO: ON-1 DETAIL F REMOVED SHIM AS REQ'D .040 MAX (SEE NOTE 1)

GAEC EO RELEASE: 3/1/69

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: NOT REWORK	REQD SCRAP
LM	LFM 357	LM-5(35)		✓			

APPROVED BY / DATE: VDI 1/31/69 | SUPPORT | RELIAB GROUP | GROUP LEADER: FDR/DW 1/6/69 | STRESS GROUP: CW 1/31/69 | LIA SOM ENGRG | PROJ ENGR: 1/31/69

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	FITTING INSTL-A/S CABIN & MID SECT REWORK OF LDW280-54001 LFM #357	LDW200-55001	A1

1-31-69 ISSUED BY VALENTINE 1/30/69 x86048 SECTION V.D.I. GROUP NO. 335 PL 25

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 200 | EO NO. 1
CONTROL INFO NO. LDW280B7027

ADD NOTE AS FOLLOWS TO DRAWINGS LISTED
NOTE * MINIMUM PERMISSIBLE AVERAGE FASTENER EDGE DISTANCE IS 1½ DIA. UNLESS OTHERWISE SPECIFIED

DWG #	TITLE	E.O.*
LDW200-55001	FITTING INST'L - A/S CABIN REWORK OF LDW280-54001	A2
LDW200-55002	FITTING INST'L - A/S A=B REWORK OF LDW280-54001	A1
LDW200-55003	FITTING INST'L A/S M/S THERMAL SHIELD LWR. REWORK OF LDW280-54001	A4

LFM

ASSIGN NEXT AVAILABLE NOTE * TO NOTE *

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | LCD 3115 FIG 12 | (5)

REASON FOR EO: STRESS CORROSION.

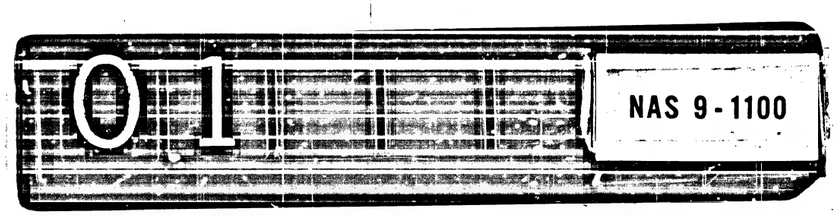
DESCRIPTION OF EO: ADDED NOTE *

GAEC EO RELEASE: JK 2/3/69

MODEL	EFFECTIVITY	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD	DISPOSITION OF PARTS	APPROVED BY	DATE	FOR (N)	LW	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	EO NO.
LM	LFM 857	LMS(3S)		✓ REVISE DWG	NOT REQ'D REWORK		1/30/69	1-31				2/3/69	2-3-69	1
				RECORD EO	SCRAP	VDI								

PRIORITY: C | DRAWING TITLE: SEE ABOVE | DRAWING NO.: LEO-200

1-31-69 ISSUED BY P. WOOSLIFF x86048 SECTION VDI GROUP NO. 335 PL 25



LDW200-55002

EFM

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW200-55002-1	LFM #357	GAEC SCH NO. 357	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM #357	LDW280-54001	LM-5(35)	1

WORK PACKAGE FUNCTION III (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	2.00	2.01	3.00					
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	G
LAST DASH NO. USED	-1

GRUMMAN REL INFO
PRIM NO. (X)027) 215 ME-16 1/20/69

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ±.010 ± 1/2°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
	LCD 3775

CONTRACT NO. NAS9-1100 LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	DALY 1-29-69	RELIABILITY	
LAYOUT BY	DALY 1-29-69		
CHECKED BY			
GR. LEADER	D. Rapisarda 1-29-69		
VEH. DES. INT	L. Lusatera 1/29/69		
STRUCTURES		PROJ ENGR	J. Lusatera 1/29
STRUCTURES	Apr 1-29	REL GROUP	E. Marsh 1/29/69
WEIGHTS			

(B) GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

FITTING INSTL ~ A/S AEB
REWORK OF LDW280-54001
LFM #357

SIZE	CODE IDENT NO.	
B	26512	LDW200-55002

SCALE NONE SHEET 1 OF 4

ENG 77.1 12-65

CRD 1129169

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
9		GB511K08-5	E	PIN (NOTE 2)	GRUMMAN STD						
2		5R500A4J		RIVET							
4		GR500A5E		RIVET							
28		GR500B4-2C		RIVET							
6		GR500B5-4C		RIVET							
2		GR500B4-4C		RIVET							
4		GR500A5H	E	RIVET (NOTE 2)	GRUMMAN STD						
1		LDW280M14852-1-1	E	FITTING	SEE DWG.						
1		LDW280M14849-1-1									
1		LDW280M14076-4									
1		LDW280M14076-3									
1		LDW280M14075-4									
1		LDW280M14075-3									
1		LDW280M14074-2-1									
1		LDW280M14074-1-1									
1		LDW280M14054-2-1									
1		LDW280M14054-1-1									
1		LDW280M14043-5	E	FITTING	SEE DWG						
-1		LDW200-55002-1	E	FITTING INSTL							

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55002

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
10		NAS1132V3	E	BOLT	STD PART						
5		NAS1131V3		BOLT	STD PART						
10		MS21042L08		NUT	STD. PART						
5		MS21042L06		NUT							
10		AN960D6L		WASHER							
20		AN960D8L		WASHER							
AR		MS20470AD4		RIVET	STD PART						
12		GN512H08	1	COLLAR	GRUMMAN STD						
3		GB511K08-4	E	PIN (NOTE 2)	GRUMMAN STD						
-1											

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

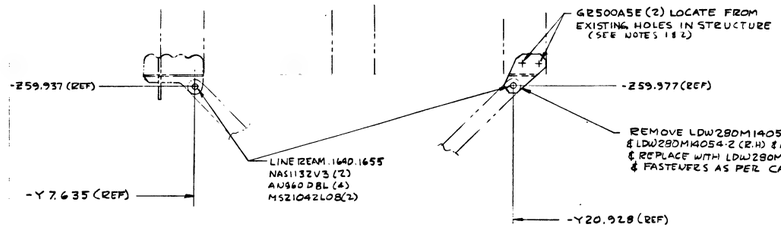
SIZE	CODE IDENT NO.	
B	26512	LDW200-55002

SCALE NONE SHEET 2.01

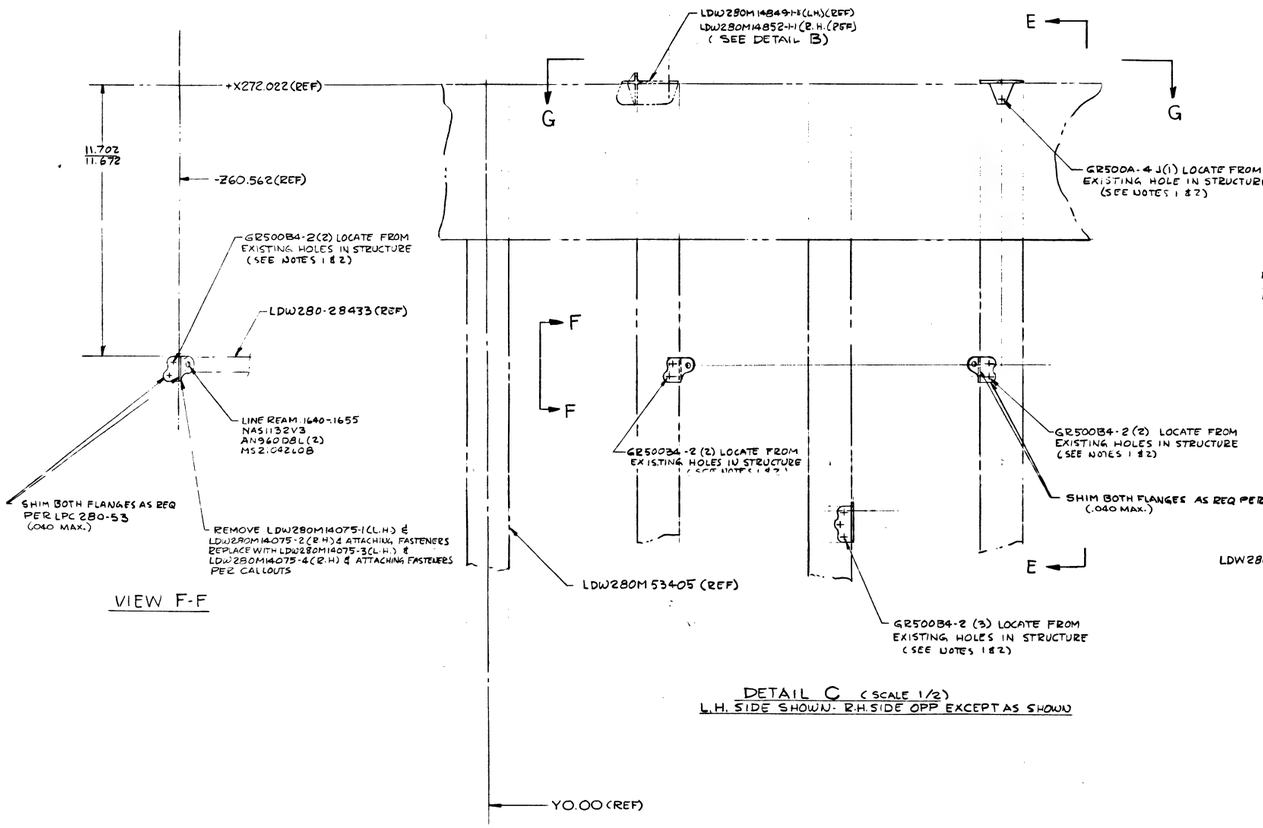
ENG 77.2 7-65

01

NAS 9-1100

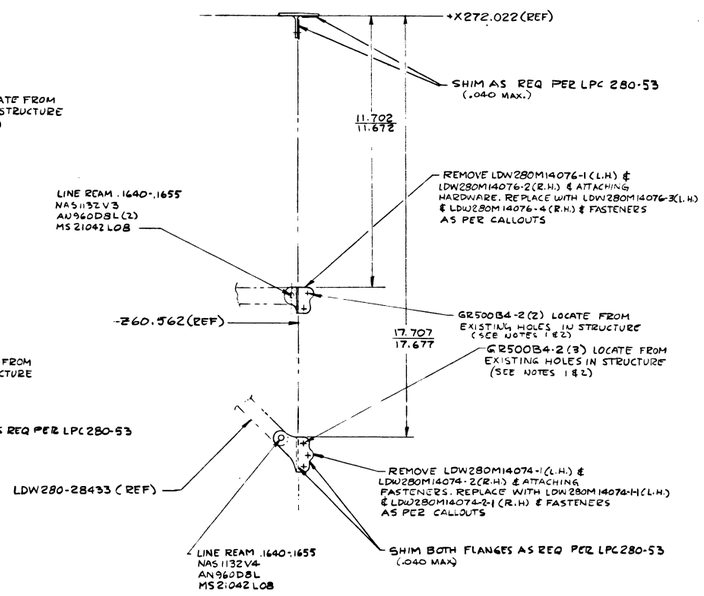


VIEW G-G

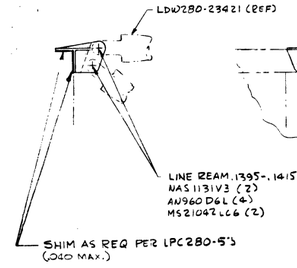


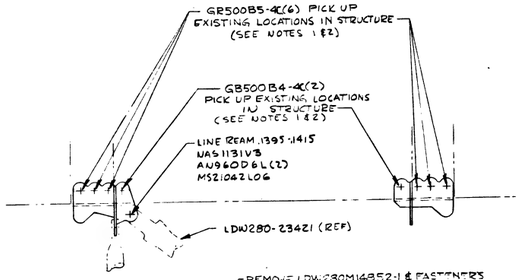
VIEW F-F

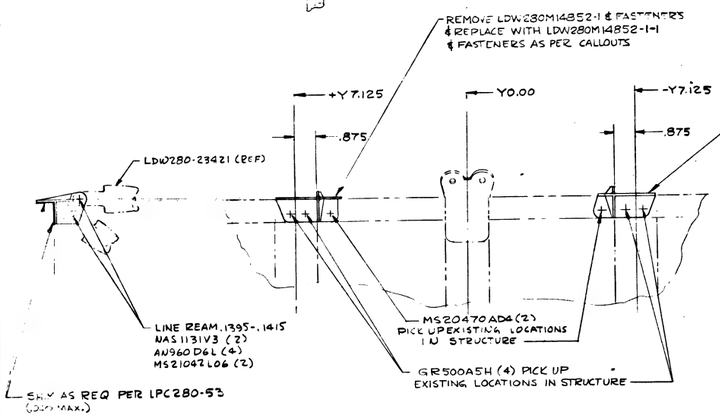
DETAIL C (SCALE 1/2)
L.H. SIDE SHOWN: R.H. SIDE OPP EXCEPT AS SHOWN



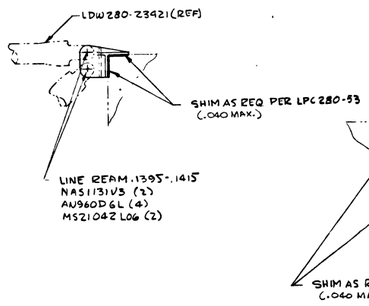
VIEW E-E

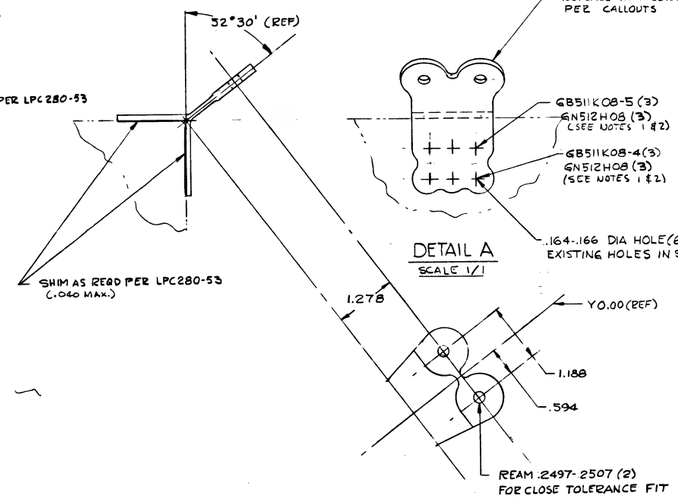


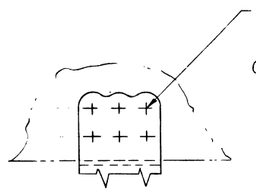




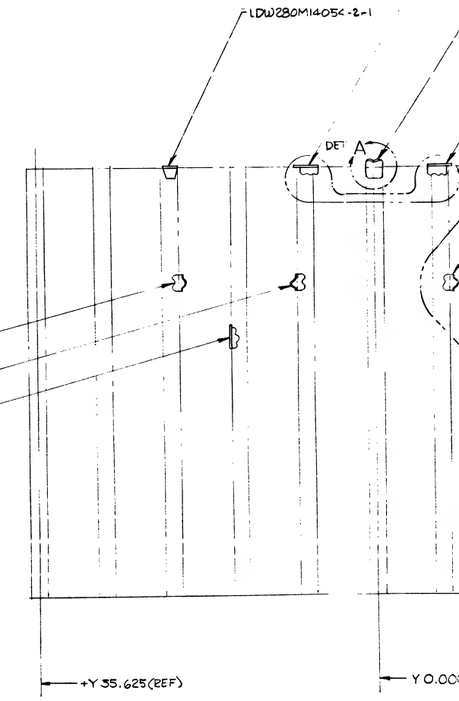
DETAIL B
SCALE 1/2





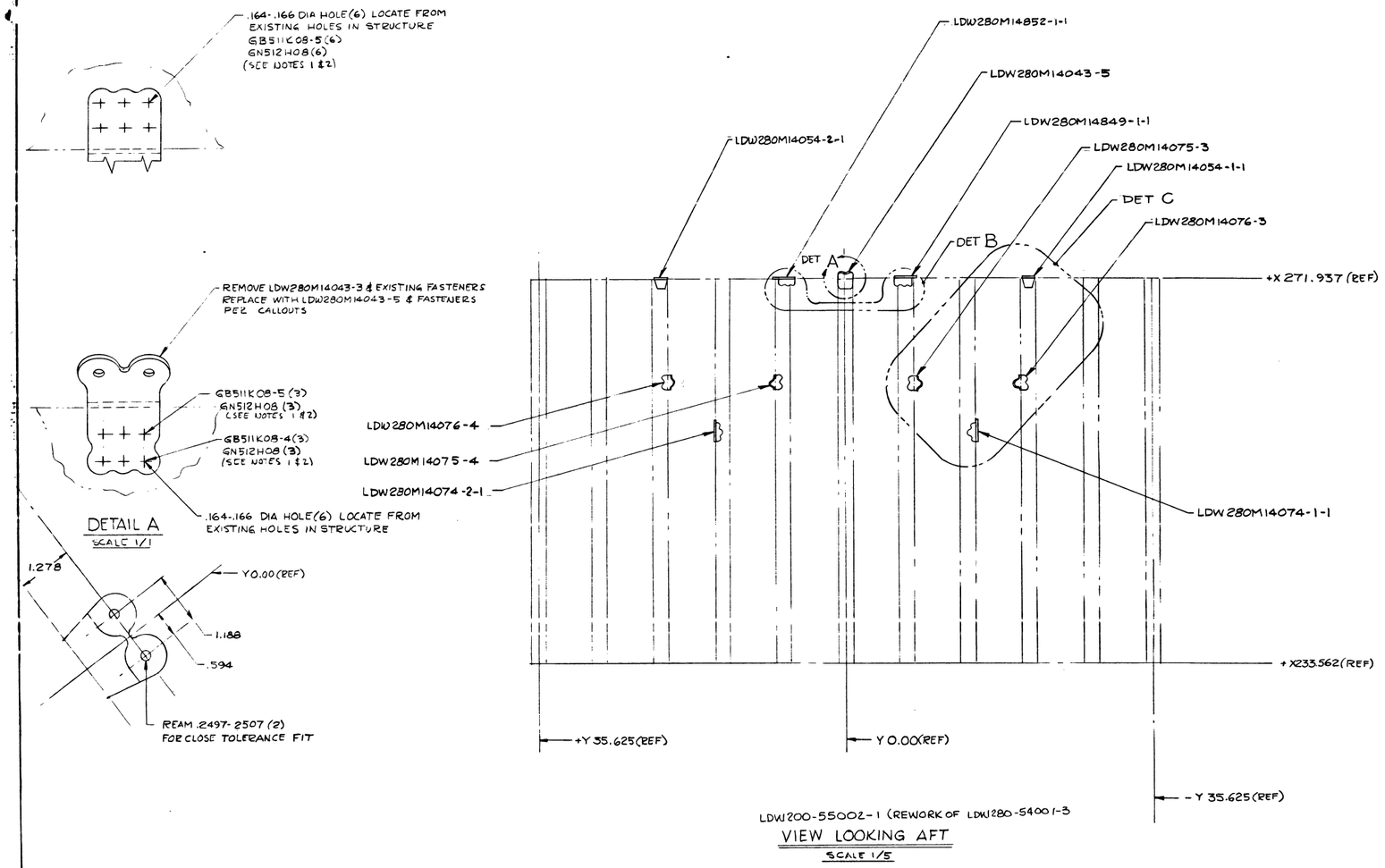


DETAIL A
SCALE 1/1



LDW200-55002-1 (REW
VIEW LOOKING
SCALE 1/5

02403 NAS 9-1100



LDW200-55002-1 (REWORK OF LDW280-54001-3

VIEW LOOKING AFT

SCALE 1/5

NOTES

1. INSTALL GR500A & GR500B PER LSP14-15303 AND GB511K PER LPC14-15306
2. TO INSURE PROPER GRIP LENGTHS IT IS PERMISSIBLE TO USE GRIP LENGTH ONE SIZE SMALLER OR ONE SIZE LONGER OF THE SAME FASTENER TYPE

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY.	
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	U
200 FOR ALL DRILLED HOLES	√
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ⚡ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

DWG SIZE 28 X 17.0

PRINTING INTO UNIT: FULL SIZE SHEET AREA (29.0 X 17.7) 1/2 SIZE SHEET AREA (1/4 OF FULL)= 27.5 SQ. FT. 6.9 SQ. FT.

PRINT TRIM LINE

LDW200-55002

LDW200-55002

037/03

NAS 9-1100

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK		
LM MODEL OR END ITEM	SIZE H	CODE IDENT NO. 26512	LDW200-55002
	SCALE NOTED		SHEET 3.00

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LEO 200 | EO NO. 1

CONTROL INFO NO. LDW280B7027

ADD NOTE AS FOLLOWS TO DRAWINGS LISTED
NOTE * MINIMUM PERMISSIBLE AVERAGE FASTENER EDGE DISTANCE IS 1½ DIA. UNLESS OTHERWISE SPECIFIED

DWG #	TITLE	E.O.*
LDW200-55001	FITTING INST'L - A/S CABIN REWORK OF LDW280-54001	A2
LDW200-55002	FITTING INST'L - A/S A&B REWORK OF LDW280-54001	A1
LDW200-55003	FITTING INST'L A/S M/S THERMAL SHIELD LWR. REWORK OF LDW280-54001	A4

LFM

ASSIGN NEXT AVAILABLE NOTE * TO NOTE *

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD 3775 PKG 12

REASON FOR EO: STRESS CORROSION.

DESCRIPTION OF EO: ADDED NOTE *

(5)

GAEC EO RELEASE: JK 2/3/69

MODEL	EFFECTIVITY: EI	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 357	LMS(3S)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: NOT REWORK | REQ'D SCRAP

APPROVED BY: DATE 1/30/69 VDI | SUPPORT | RELIAB GROUP | FDR(S) 1/30/69 | GROUP LEADER | 1-31 STRESS GROUP | LIAISON ENGRG | 2/3/69 PROJ ENGRG | 2-3-69 QUAL

PRIORITY: C

DRAWING TITLE: SEE ABOVE

DRAWING NO.: LEO-200

EO NO. 1

1-31-69 ISSUED BY P. WEISSLITE x46048 SECTION VD1 GROUP NO. 335 PL 25

01

NAS 9-1100

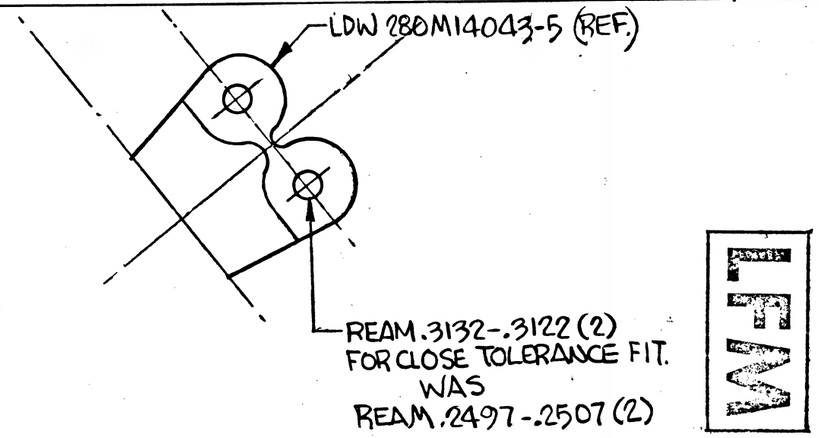
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 22.1 REV 3-65

ENGINEERING ORDER

DWG NO. LDW200-55002 | EO NO. A2

CONTROL INFO NO. LDW280B-7190



LAST

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | WCCD 3775 PKG 12

REASON FOR EO: CORRECTED HOLE CALL-OUT

DESCRIPTION OF EO: REAM .3132-.3122 (2) WAS REAM .2497-.2507 (2)

MODEL	EFFECTIVITY: PRODUCING COMPANY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM #357	LM-5(35)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: REWORK ✓ | SCRAP

PRIORITY: C

DRAWING TITLE: FITTING INSTL ~ A/5 AEB REWORK OF LDW280-54001 ~ LFM #357

DRAWING NO.: LDW200-55002

ED NO.: A2

APPROVED BY	DATE	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	WORK PLC
[illegible]	2/26/69	UD1		FOR/IN 2/18/69	CL 2/19/69		2/19/69	2-22-69

3-5-69 ISSUED BY W. PAIUK SECTION VEH. DES. INT. GROUP NO. 335 PL. 25

01

NAS 9-1100

LDW 200-55003

LFM

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM # 357	LDW 280-54001	LM-5 (35)	1
PART NO. LDW 200-55003-1		GAEC SCH NO. 357	

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	2.00	2.01	3.00					
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	M
LAST DASH NO. USED	-1

GRUMMAN REL INFO

PRIM NO.	(K1027)	
215	11E-16-1/21/69	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
$\pm 1/32$ $\pm .016$ $\pm 1/2°$

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD # 3775	

CONTRACT NO. NAS 9-1100 LINE ITEM I DOCUMENTATION TYPE II

DRAWN BY	A. PROKOPETZ	RELIABILITY	—
LAYOUT BY	—		
CHECKED BY	—		
GR LDR	J. Wojcieszek 1-29		
VEH. DES. INT	J. Pisatera 1/29		
STRUCT.		PROJ ENGR	J. Pisatera 1/29/69
STRUCT		REL GROUP	J. Marsh 1/29/69
WEIGHTS	—		

(8) GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

FITTING INSTL - A/S - M/S
THERMAL SHIELD LWR - REWORK OF LDW280-54001
LFM # 357

SIZE	CODE IDENT NO.	
B	26512	LDW 200-55003

SCALE NONE SHEET 1.00 OF 4

ENG 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
-1											
1		LDW 280-12142-13	E	SHIM	SEE DWG						
1		LDW 280-12142-11	E	SHIM	SEE DWG						
1		LDW 280-12141-11	E	PLATE	SEE DWG						
1		LDW 280-12140-15	E	ANGLE	SEE DWG						
1		-13	E	ANGLE	↕						
1		LDW 280-12140-11	E	PLATE	SEE DWG						
1		LDW 280-12138-21	E	SHIM	SEE DWG						
1		-19	↑	SHIM	↑						
1		-17	|	SHIM	|						
1		-15	|	PLATE	|						
1		-13	↓	PLATE	↓						
1		LDW 280-12138-11	E	PLATE	SEE DWG						
1		LDW 280-12137-11	E	CLIP	SEE DWG						
1		LDW 280-12136-15	E	RADIUS BLOCK	SEE DWG						
1		-13	E	ZEE	↕						
1		LDW 280-12136-11	E	ZEE	SEE DWG						
		LDW 200-55003-1	E	REWORK OF LDW 280-54001, LFM #357							

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW 200-55003

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
2		NAS 697 C08	E	NUT PLATE							
4		NAS1097AD3	E	RIVET	SEE NOTE 4						
2		MS21043-3	E	NUT							
5		GB510A-08-7	E	PIN	SEE NOTE 4						
2		GB511J-08-8	E	BOLT	↕						
1		NAS1133 V7	E	BOLT	↕						
1		NAS1133V4	E	BOLT	SEE NOTE 4						
3		MS 20470 DD5	E	RIVET	SEE NOTE 4						
5		AN 960 D10 L	E	WASHER							
1		AN 960 D10	E	WASHER							
10		GR 500B-4-5	E	RIVET	SEE NOTE 4						
10		GR 500B-4-4	E	RIVET	SEE NOTE 4						
56		GN 512 H-08	E	COLLAR							
2		GB 511K-08-8	E	PIN	SEE NOTE 4						
8		GB 511K-08-7	↕	↕	↕						
8		GB 511K-08-6									
13		GB 511K-08-5									
12		GB 511K-08-4									
9		GB 511K-08-3	↕	↕	↕						
5		GB 511K-08-2	E	PIN	SEE NOTE 4						
-1											

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

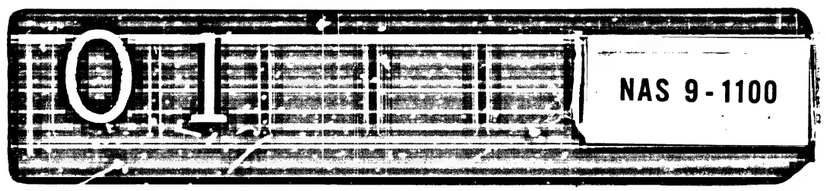
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

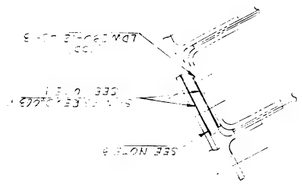
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

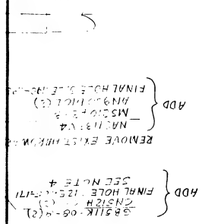
SIZE	CODE IDENT NO.	
B	26512	LDW 200-55003

SCALE NONE SHEET 2.01

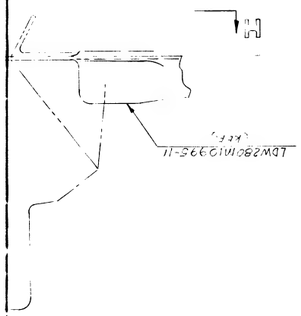
ENG 77.2 7-65

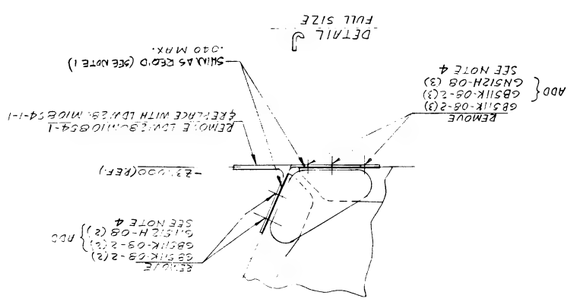


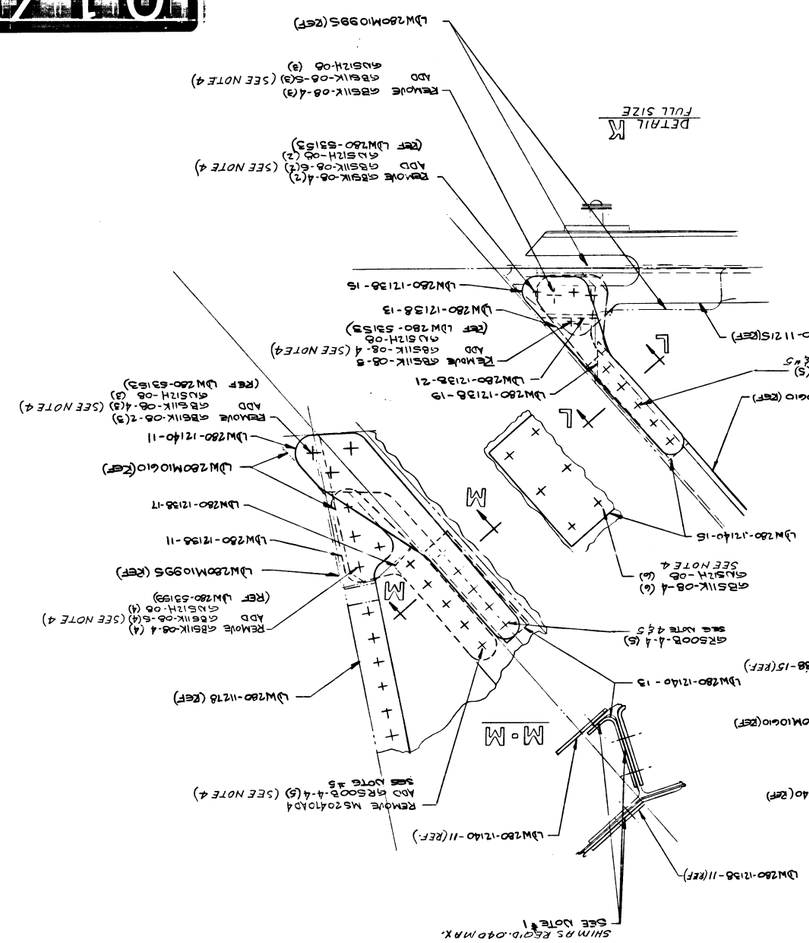


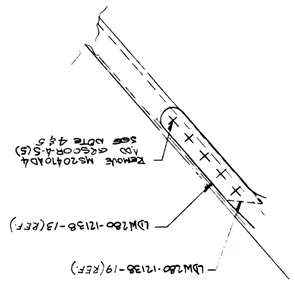


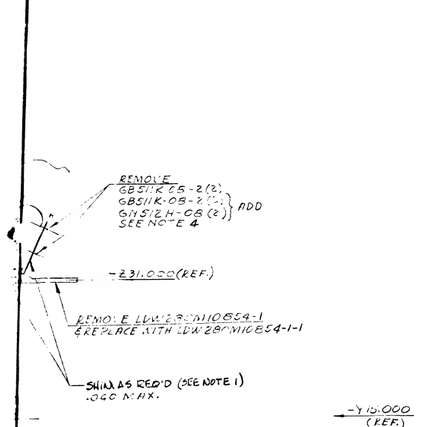


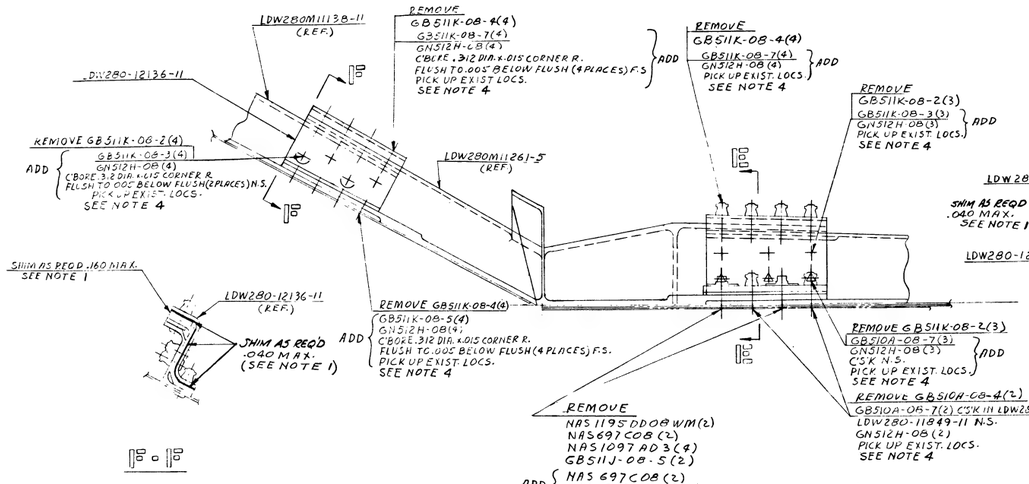


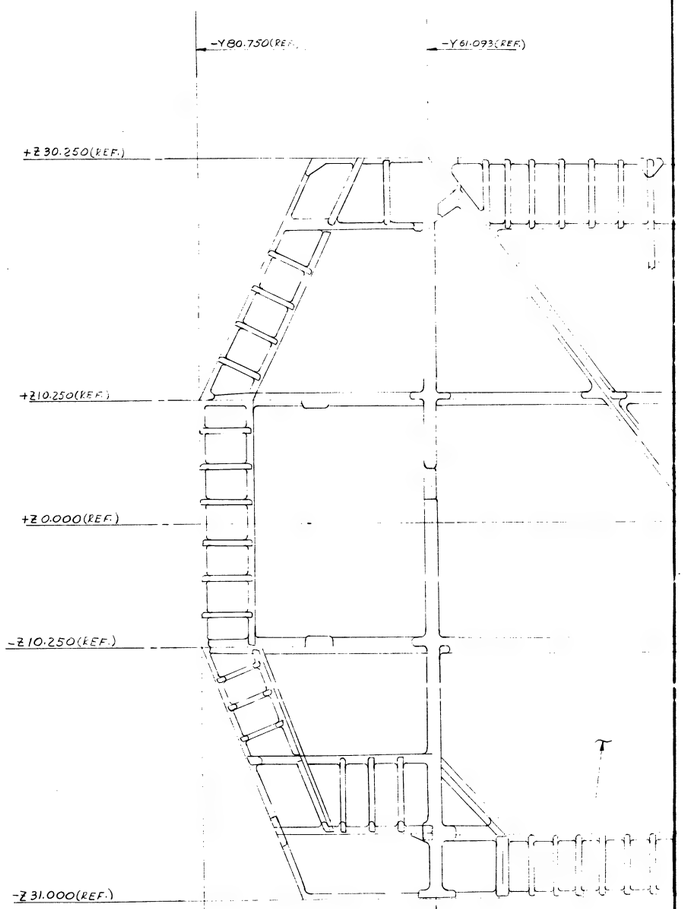


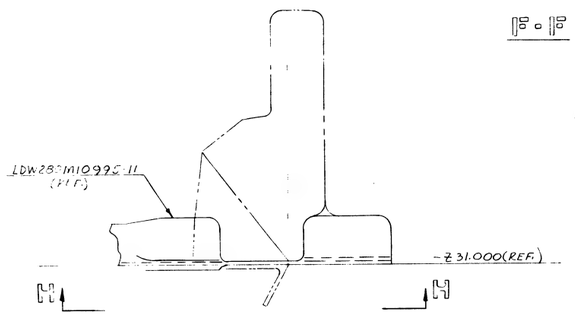


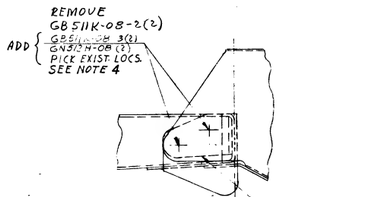


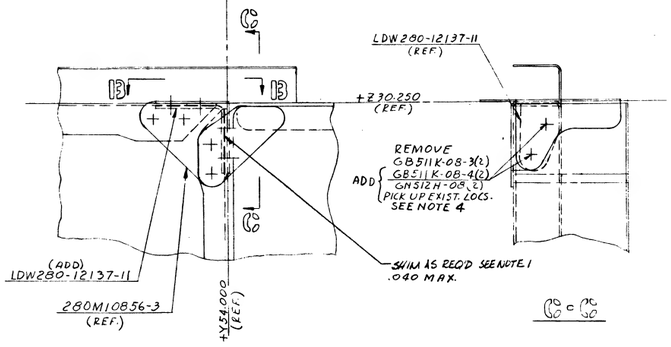

REMOVE
GB511K-08-2(2)
GB511K-08-3(2)
GN512H-08(2)
SEE NOTE 4
ADD
-Z31.000(REF.)
REMOVE LDW280M110554-1
&REPLACE WITH LDW280M110554-1-1
SHIM AS REQ'D (SEE NOTE 1)
.040 MAX.

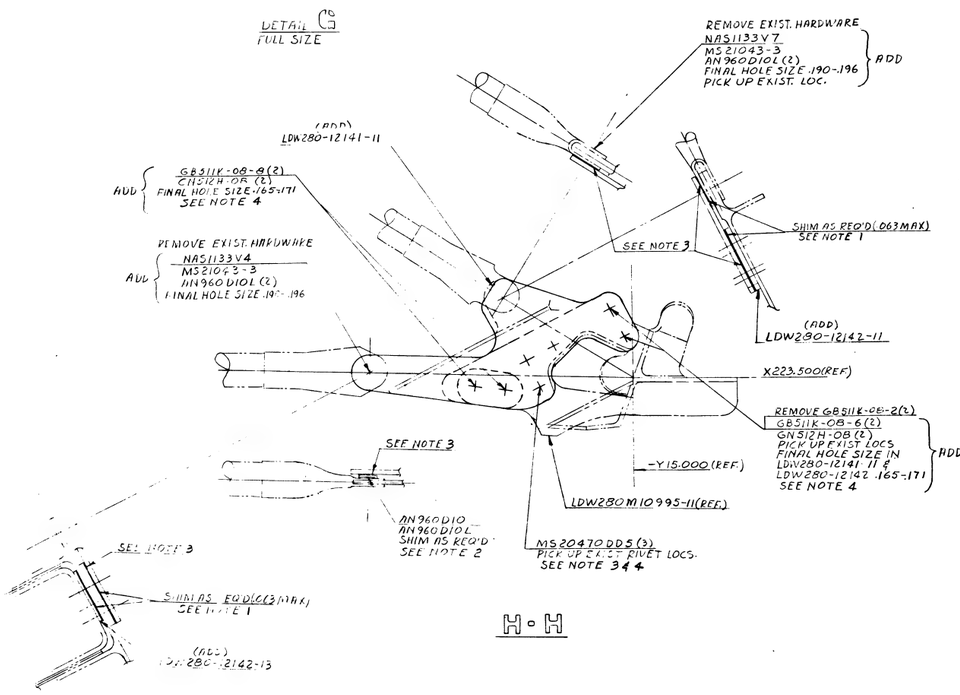

LDW280M111138-11
(REF.)
REMOVE
GB511K-08-4(4)
GB511K-08-7(4)
GN512H-08(4)
CBORE .312 DIA x.015 CORNER R.
FLUSH TO .005" BELOW FLUSH (4 PLACES) F.S.
PICK UP EXIST LOCS.
SEE NOTE 4
ADD
LDW280-12136-11
REMOVE GB511K-08-2(4)
ADD GB511K-08-3(4)
GN512H-08(4)
CBORE .312 DIA x.015 CORNER R.
FLUSH TO .005" BELOW FLUSH (2PLACES) N.S.
PICK UP EXIST LOCS.
SEE NOTE 4
LDW280M111261-5
(REF.)
REMOVE
GB511K-08-4(4)
GB511K-08-7(4)
GN512H-08(4)
PICK UP EXIST LOCS
SEE NOTE 4
ADD
REMOVE
GB511K-08-2(3)
GB511K-08-3(3)
GN512H-08(3)
PICK UP EXIST LOCS.
SEE NOTE 4
ADD
SHIM AS REQD .160 MAX.
SEE NOTE 1
LDW280-12136-11
(REF.)
JSHIM AS REQD
.040 MAX.
(SEE NOTE 1)
REMOVE GB511K-08-4(4)
ADD GB511K-08-5(4)
GN512H-08(4)
CBORE .312 DIA x.015 CORNER R.
FLUSH TO .005" BELOW FLUSH (4 PLACES) F.S.
PICK UP EXIST LOCS.
SEE NOTE 4
REMOVE
NAS1195DD08W M(2)
NAS697C08(2)
NAS1097AD3(4)
GB511J-08-5(2)
ADD NAS697C08(2)
NAS1097AD3(4)(C'SK N.S. LDW280-11849-11)
GB511J-08-8(2)
SEE NOTE 4
REMOVE GB511K-08-2(3)
GB510A-08-7(3)
GN512H-08(3)
C'SK N.S.
PICK UP EXIST. LOCS.
SEE NOTE 4
ADD
REMOVE GB510A-08-4(2)
GB510A-08-7(2) C'SK'D LDW280-11237-15 & -21
LDW280-11849-11 N.S.
GN512H-08(2)
PICK UP EXIST. LOCS.
SEE NOTE 4
ADD
LDW280-12136-13
SHIM AS REQD
.040 MAX.
SEE NOTE 1
LDW280-12136-15
SHIM AS REQD .160 MAX.
SEE NOTE 1
LDW280M111261-5(REF.)
LDW280M111138-9(REF.)
B - B
-Y15.000
(REF.)
B - B
FULL SIZE


-Y80.750(REF.)
-Y61.093(REF.)
+Z30.250(REF.)
+Z10.250(REF.)
+Z0.000(REF.)
-Z10.250(REF.)
-Z31.000(REF.)
LDW280-5
(REF.)

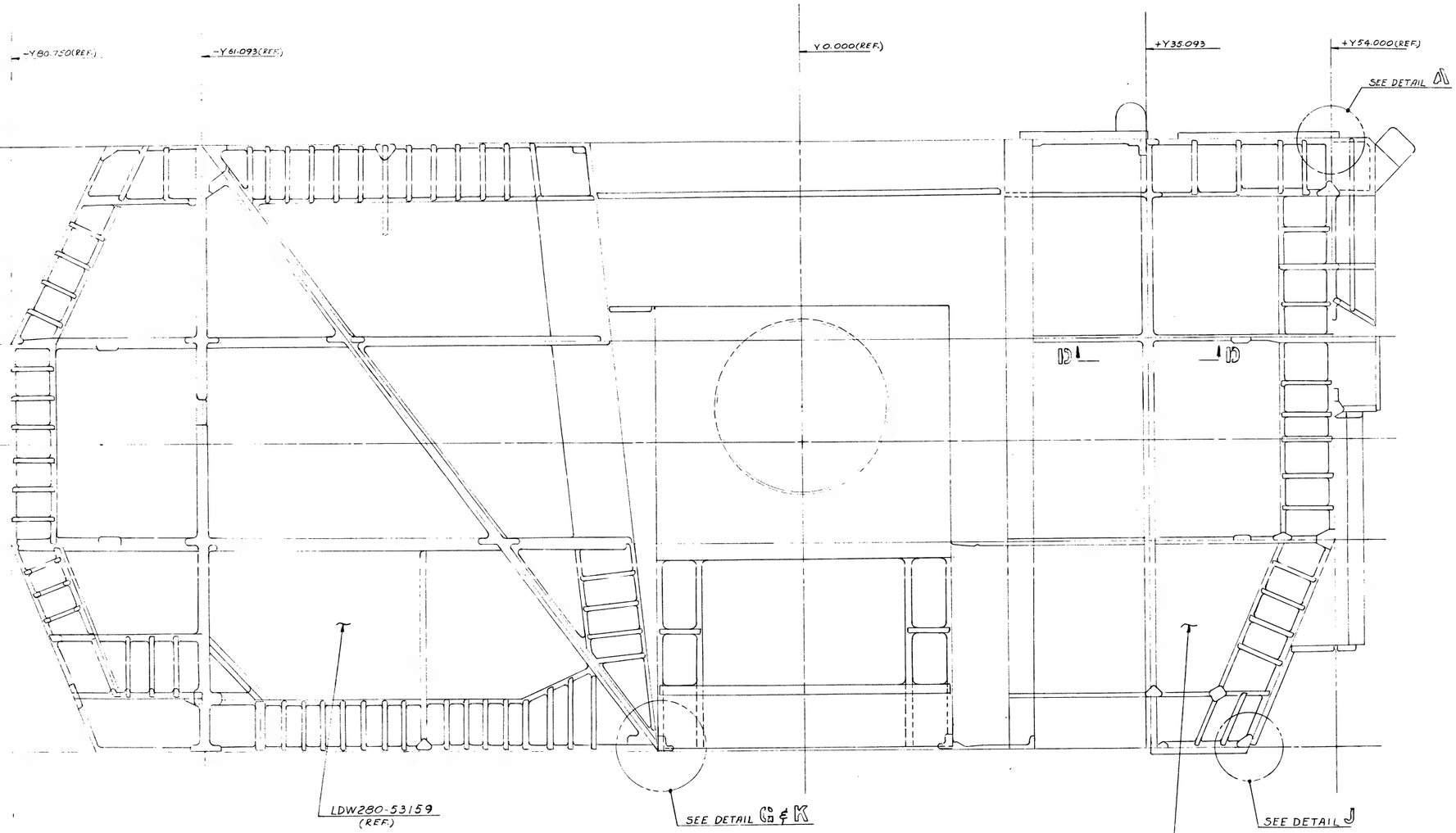

LDW280M110995-11
(REF.)
-Z31.000(REF.)
C - C


REMOVE
GB511K-08-2(2)
ADD GB511K-08-3(2)
GN512H-08(2)
PICK EXIST LOCS.
SEE NOTE 4
LDW280-12137-11
(REF.)
B - B


LDW280-12137-11
(REF.)
+Z30.250
(REF.)
REMOVE
GB511K-08-3(2)
ADD GB511K-08-4(2)
GN512H-08(2)
PICK UP EXIST. LOCS.
SEE NOTE 4
SHIM AS REQD SEE NOTE 1
.040 MAX.
(ADD)
LDW280-12137-11
280M10856-3
(REF.)
+Y54.000
(REF.)
C - C
DETAIL A
FULL SIZE


DETAIL C
FULL SIZE
REMOVE EXIST. HARDWARE
NAS1133V7
MS21043-3
AN960D10L(2)
FINAL HOLE SIZE .190-.196
PICK UP EXIST. LOC.
ADD
(ADD)
LDW280-12141-11
ADD GB511K-08-9(2)
CN512H-08(2)
FINAL HOLE SIZE .165-.171
SEE NOTE 4
REMOVE EXIST. HARDWARE
ADD NAS1133V4
MS21043-3
AN960D10L(2)
FINAL HOLE SIZE .190-.196
SEE NOTE 3
SHIM AS REQ'D (.063 MAX)
SEE NOTE 1
(ADD)
LDW280-12142-11
X223.500(REF.)
REMOVE GB511K-08-2(2)
GB511K-08-6(2)
GN512H-08(2)
PICK UP EXIST LOCS.
FINAL HOLE SIZE IN
LDW280-12141 11 &
LDW280-12142 .165-.171
SEE NOTE 4
ADD
SEE NOTE 3
-Y15.000(REF.)
LDW280M10995-11(REF.)
AN960D10
AN960D10L
SHIM AS REQ'D
SEE NOTE 2
MS20470DD5(3)
PICK UP EXIST. RIVET LOCS.
SEE NOTE 3 & 4
SEE NOTE 3
SHIM AS REQ'D (.063 MAX)
SEE NOTE 1
(ADD)
LDW280-12142-13
H - H

NAS 9-1100



LDW200-55003-1 INSTL. (REWORK OF LDW200-54001-3)
VIEW LOOKING DOWN

NOTES

1. SHIM PER LPC 280-53
2. SHIM .048 MAX. USING AN960D10L WASHERS
3. FOR LDW280-12141-11 FAYING SURFACES - INSULATE BY APPLYING TWO COATS OF ZINC CHROMATE PRIMER TO BOTH SURFACES AS INDICATED ON DWG. INSTALL MS 20470 DD5 RIVETS WET WITH ZINC CHROMATE PRIMER
4. FOR LENGTHS OF FASTENERS CALLED OUT IN F/D AND B/M IT IS PERMISSIBLE TO USE THE NEXT LARGER OR NEXT SMALLER GRIP LENGTH
5. INSTALL GR 500B FASTENERS PER LSP14-15303 AND APPLY ZINC CHROMATE PRIMER PRIOR TO INSTL.

03/03 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK			
SIZE	CODE IDENT NO. 26512	LDW200-55003	
SCALE 1/4 & NOTED		SHEET 3.00	

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200-55003 | EO NO. A1

CONTROL INFO NO. LDW280-B-7048

SECT. E-E & F-F

SHIM AS REQ'D .250 MAX (SEE NOTE 1)

WAS

SHIM AS REQ'D .160 MAX. (SEE NOTE 1)

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD # 3775 PKG. 10 (5)

REASON FOR EO: STRESS CORROSION

DESCRIPTION OF EO: IN SECT. E-E & F-F SHIM AS REQ'D..250 MAX. WAS SHIM AS REQ'D. .160 MAX

GAEC EO RELEASE: VK 2/1/69

MODEL	EFFECTIVITY: ~~PROCURING ACTIVITY NO.~~	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY							
											ZMR	CL		JaP	Gmd
LM	LFM 357	LM-5(35)						DATE 2/1/69			2/1/69	2/1/69		2/1/69	2/1/69
								V.D.I	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~QUAL~~
				PRIORITY C	DRAWING TITLE: FITTING INSTL.-A/S-M/S-THERMAL SHIELD LWR-REWORK OF LDW280-54001						DRAWING NO. LDW200-55003				EO NO. A1

ISSUED BY A. PROKOPETZ/F. DERESPINIS SECTION V.D.I X86048 GROUP NO. 335 PL 25

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

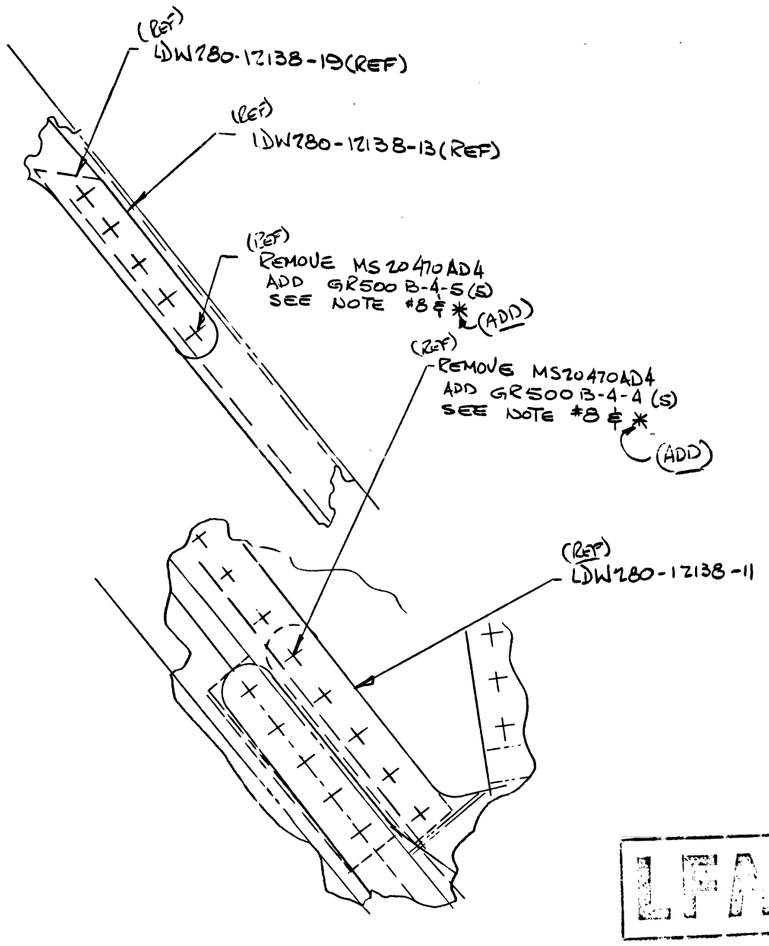
DWG. NO. LDW200-55003 | EO NO. A2
CONTROL INFO NO. LDW280B7031

ENG 32.2 REV 3-65

IN F/D ADD NOTE * GBS11K-08 ⊄ GNS12H-08 MAY BE USED AS AN ALTERNATE IN LIEU OF GR500B-4.

IN B/M ADD GBS11K-08-5(10), GBS11K08-4(10) & GNS12H-08(20) & CROSS REF. TO NOTE *.

ASSIGN NEXT AVAILABLE NOTE # TO NOTE * & CROSS REF TO F/D AS SHOWN BELOW.



TO
NAS 9-1100

LFM

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	LCD 3775 PKG 12

REASON FOR EO: STRESS CORROSION

DESCRIPTION OF EO: IN B/M ADD GBS11K-08-5(10), GBS11K-08-4(10) & GNS12H-08(20) & cross REF. HARDWARE TO NOTE * *. IN F/D ADD NOTE *

(S) GAEC EO RELEASE 1-31-69 JK 2/1/69

MODEL	EFFECTIVITY: EI PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 357	LM 5(35	

DRAWING CHANGE REQD: REVISE DWG ✓; RECORD EO
DISPOSITION OF PARTS: NOT REWORK; RQD'D SCRAP

APPROVED BY				FOR VDI	CL		
DATE	1/31/69			1/31/69	2/1/69		1/31/69
	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG

PRIORITY: C
DRAWING TITLE: FITTING INST'L - REWORK OF LDW280-54001 - THERMAL SHIELD LWR TUB
DRAWING NO.: LDW200-55003
EO NO.: A2

1-31-69 ISSUED BY: P. WEISSLITZ x86048 SECTION VDI GROUP NO. 331 PL. 25

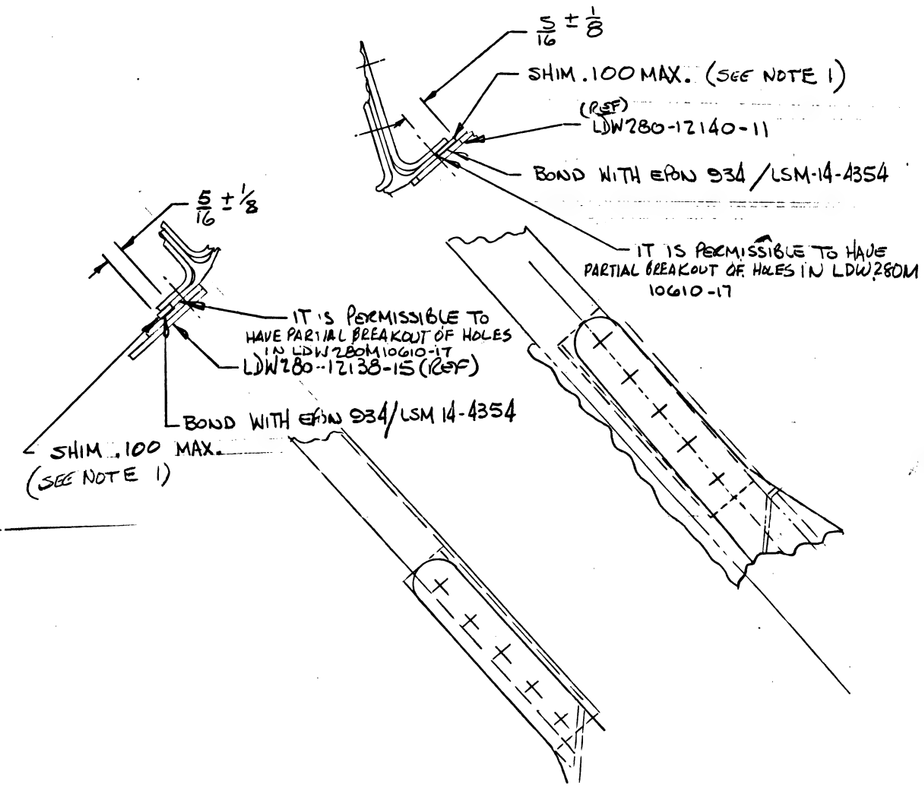
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.2 REV 3-68

ENGINEERING ORDER

DWG. NO. LDW200-55003		EO NO. A3
CONTROL INFO NO. LDW280B7053		

ADD SHIM REQUIREMENTS



TO
NAS 9-1100

LFM

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	LCD 3775 PKG # 12

(5)

REASON FOR EO	DESCRIPTION OF EO	GAEC EDM RELEASE
STRESS CORROSION	ADDED SHIM REQUIREMENTS	2/1/69

MODEL	EFFECTIVITY: E.I. ~~PRODUCING ACTIVITY NO.~~	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE RECD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	PRIORITY
LM	LFM 357	LM 5(35)		✓		✓		C

DRAWING TITLE: FITTING INST'L REWORK OF LDW280-54001 THERMAL SHIELD LOWER TUB

DRAWING NO.: LDW200-55003 EO NO. A3

APPROVED BY	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	EDM
DATE	VD1		2-1-69	2/1/69		2/1/69	2/1/69

2-3-69 ISSUED BY P. WEISSLITZ x8048 SECTION VD1 GROUP NO. 335 PL 25

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LEC 200		EO NO. 1
CONTROL INFO NO. LDW280B7027		

ADD NOTE AS FOLLOWS TO DRAWINGS LISTED
NOTE * MINIMUM PERMISSIBLE AVERAGE FASTENER EDGE DISTANCE IS 1½ DIA. UNLESS OTHERWISE SPECIFIED

DWG #	TITLE	E.O.#
LDW200-55001	FITTING INST'L - A/S CABIN REWORK OF LDW280-54001	A2
LDW200-55002	FITTING INST'L - A/S A=B REWORK OF LDW280-54001	A1
LDW200-55003	FITTING INST'L A/S M/S THERMAL SHIELD LWR. REWORK OF LDW280-54001	A4

LFM

ASSIGN NEXT AVAILABLE NOTE * TO NOTE *

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	LCD 3115 FREI 12	(5)
REASON FOR EO: STRESS CORROSION.			DESCRIPTION OF EO: ADDED NOTE *	GAEC EO RELEASE: JK 2/3/69

MODEL	EFFECTIVITY: EI (CANCELLED)	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	DATE	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	QAE
LM	LFM 857	LMS(3S)		✓		NOT REQ'D		JAP	1/30/69			FDR/JW 1-30	EW 1-31		CAP 2/3/69	GMC 2-3-69
									VDI							

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SEE ABOVE	LEO-200	1

1-31-69 ISSUED BY P. WEDSSLITE x56048 SECTION VDI GROUP NO. 335 PL 25

01

NAS 9-1100

LDW200-55004

LFM

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	LFM # 358	LDW280-54001	MODULE OR SER NO. LM-5(35)	REQD PER MODULE OR END ITEM 1
PART NO. LDW200-55004-1			GAEC SCH NO.	

WORK PACKAGE FUNCTION # 110 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00	3.00	4.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	—
LAST DASH NO. USED	-12

GRUMMAN REL INFO
PRIM NO. 227

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32; ±.020; ±½

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓

LCD3688
CCA1714

CONTRACT NO. NAS 9-1100 LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	P.MARTELLO		
LAYOUT BY	P. MARTELLO		
CHECKED BY	J.D.COBB 2-17-69		
GR LDR	W.Wolf 2-17-69		
VD I	[signature] 2/17/69		
STRUCT		PROJ ENGR	[signature] 2/18/69
STRUCT	[signature] 2/18/69	REL GROUP	[signature] 2-19-69

(F) GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

LINES INSTALLATION
INTERNAL MID-SECTION

SIZE	CODE IDENT NO.	
B	26512	LDW200-55004

SCALE NONE SHEET 1.00 OF 4

2-14-69

ENG 77.1 12-65

01

NAS 9-1100

C							2		MS21042L08	E	NUT	GOV STD						
C							4		GB511J-3-2		BOLT	GRUMMAN STD						
C							2		GB511J-08-2		BOLT	GRUMMAN STD						
C							2		GC500J-DGT		CLAMP	GRUMMAN STD						
C							4		AN960D10L		WASHER	GOV STD						
C							4		AN960D8L		WASHER	GOV STD						
N							6		LSC269-504-6		SEAL	SEE NOTE 1						
C							1		LDW200-55004-12		BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.050 x 3 x 4	NONE	#88	4D
C							1		LDW200-55004-11		BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.050 x 3 x 4	NONE	#88	4C
									LDW280-16000-									5H
N							1		-417 1ECC-6		TUBE ASSY	SEE DWG						5H
N							1		-417 0ECC-6		TUBE ASSY	SEE DWG						3D
N							1		-4169ECC-6		TUBE ASSY	SEE DWG						
									LDW280-16000-									
									LDW200-55004-1	E	LINES INSTL					NONE	NONE	5E
CL							-1		PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE

QTY PER ASSEMBLY — CODE IDENT

CL = CLEANLINESS LEVEL PER LSP 14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
#88	ANODIZE	LSP14-9030

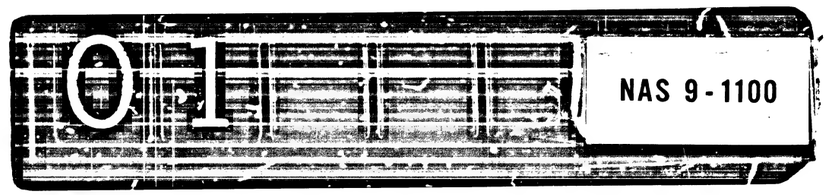
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55004

SCALE NONE — SHEET 2.00

ENG 77.2 7-55



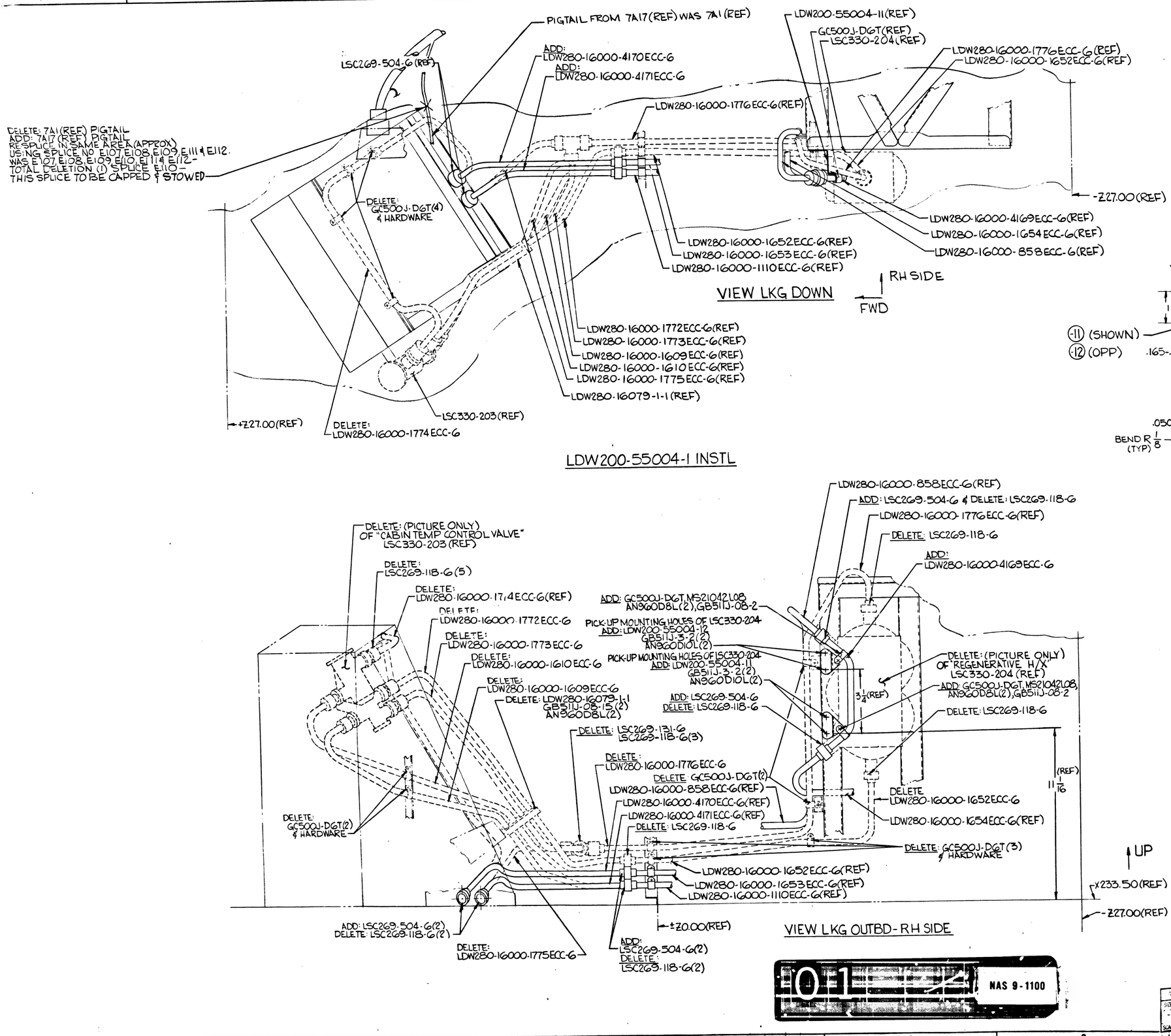
NOTES:
1. COMMERCIAL PART: SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING.
2. ALL GAMAH JOINT CONNECTIONS SHALL BE IN ACCORDANCE WITH LSP 14-17402.

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW200-55004	
SCALE ~		SHEET 3.00	

ENG 73.1 6-64

01

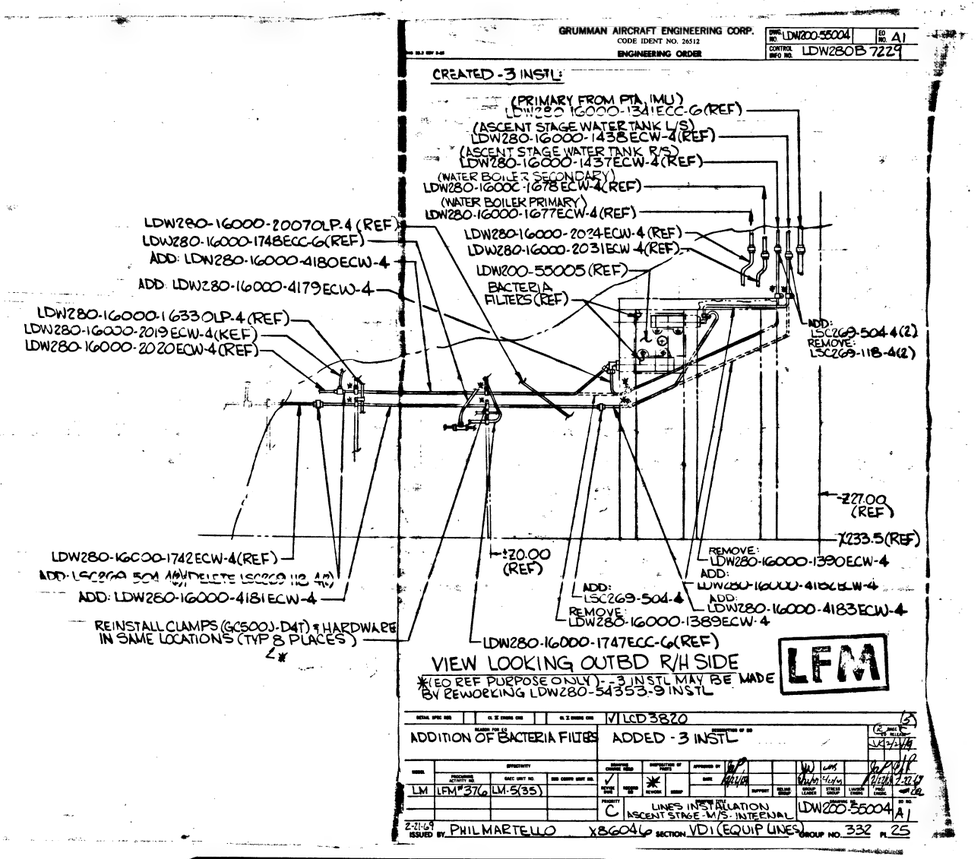
NAS 9-1100


PIGTAIL FROM 7A17(REF) WAS 7A1(REF)
LSC269-504-6(REF)
ADD: LDW280-16000-4170ECC-6
ADD: LDW280-16000-4171ECC-6
LDW200-55004-11(REF)
GC500J-DGT(REF)
LSC330-204(REF)
LDW280-16000-1776ECC-6(REF)
LDW280-16000-1652ECC-6(REF)
LDW280-16000-1776ECC-6(REF)
DELETE: 7A1(REF) PIGTAIL
ADD: 7A17(REF) PIGTAIL
RESPLICE IN SAME AREA (APPROX)
USING SPLICE NO E107,E108,E109,E111 & E112.
WAS E107,E108,E109,E110,E111 & E112-
TOTAL DELETION (1) SPLICE E110-
THIS SPLICE TO BE CAPPED & STOWED
DELETE: GC500J-DGT(4) & HARDWARE
-Z27.00(REF)
LDW280-16000-4169ECC-6(REF)
LDW280-16000-1654ECC-6(REF)
LDW280-16000-858ECC-6(REF)
LDW280-16000-1652ECC-6(REF)
LDW280-16000-1653ECC-6(REF)
LDW280-16000-1110ECC-6(REF)
RH SIDE
VIEW LKG DOWN
FWD
LDW280-16000-1772ECC-6(REF)
LDW280-16000-1773ECC-6(REF)
LDW280-16000-1609ECC-6(REF)
LDW280-16000-1610ECC-6(REF)
LDW280-16000-1775ECC-6(REF)
LDW280-16079-1-1(REF)
LSC330-203(REF)
+Z27.00(REF)
DELETE: LDW280-16000-1774ECC-6
5/16 R (TYP 3 PLACES)
45°
.198-.204 (#8 DRILL) (2) HOLES
-11 (SHOWN)
-12 (OPP)
.165-.171 (#19 DRILL)
23/32
.050(REF)
BEND R 1/8 (TYP)
1 17/32
LDW200-55004-1 INSTL
LDW280-16000-858ECC-6(REF)
ADD: LSC269-504-6 & DELETE: LSC269-118-6
LDW280-16000-1776ECC-6(REF)
DELETE: LSC269-118-6
ADD: LDW280-16000-4169ECC-6
DELETE: (PICTURE ONLY) OF "CABIN TEMP CONTROL VALVE" LSC330-203 (REF)
DELETE: LSC269-118-6(5)
DELETE: LDW280-16000-1774ECC-6(REF)
DELETE: LDW280-16000-1772ECC-6
DELETE: LDW280-16000-1773ECC-6
DELETE: LDW280-16000-1610ECC-6
DELETE: LDW280-16000-1609ECC-6
DELETE: LDW280-16079-1-1 GBS11J-08-15(2) AN960D8L(2)
ADD: GC500J-DGT,MS21042L08, AN960D8L(2),GBS11J-08-2
PICK-UP MOUNTING HOLES OF LSC330-204
ADD: LDW200-55004-12 GBS11J-3-2(2) AN960D10L(2)
PICK-UP MOUNTING HOLES OF LSC330-204
ADD: LDW200-55004-11 GBS11J-3-2(2) AN960D10L(2)
ADD: LSC269-504-6
DELETE: LSC269-118-6
DELETE: (PICTURE ONLY) OF "REGENERATIVE H/X LSC330-204 (REF)
ADD: GC500J-DGT,MS21042L08, AN960D8L(2),GBS11J-08-2
DELETE: LSC269-118-6
3 1/4 (REF)
DELETE: LSC269-131-6 LSC269-118-6(3)
DELETE: LDW280-16000-1776ECC-6
DELETE GC500J-DGT(2)
LDW280-16000-858ECC-6(REF)
LDW280-16000-4170ECC-6(REF)
LDW280-16000-4171ECC-6(REF)
DELETE: LSC269-118-6
DELETE: GC500J-DGT(2) & HARDWARE
DELETE LDW280-16000-1652ECC-6
LDW280-16000-1654ECC-6(REF)
DELETE: GC500J-DGT(3) & HARDWARE
11 1/16 (REF)
UP
X233.50(REF)
-Z27.00(REF)
LDW280-16000-1652ECC-6(REF)
LDW280-16000-1653ECC-6(REF)
LDW280-16000-1110ECC-6(REF)
±Z0.00(REF)
ADD: LSC269-504-6(2) DELETE: LSC269-118-6(2)
DELETE: LDW280-16000-1775ECC-6
ADD: LSC269-504-6(2) DELETE: LSC269-118-6(2)
VIEW LKG OUTBD-RH SIDE
NAS 9-1100
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L.I., NEW YORK
SIZE D
CODE IDENT NO. 26512
LDW200-55004
SCALE 1/2
SHEET 4.00
LDW200-55004 D
LDW200-55004 B

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LDW200-55004 | ED NO. A1
CONTROL INFO NO. LDW280B 7229

CREATED - 3 INSTL:



VIEW LOOKING OUTBD R/H SIDE

*(EO REF PURPOSE ONLY) - 3 INSTL MAY BE MADE BY REWORKING LDW280-54353-9 INSTL

LFM

VI LCD 3820

ADDITION OF BACTERIA FILTERS | ADDED - 3 INSTL

| EFFECTIVITY | | |

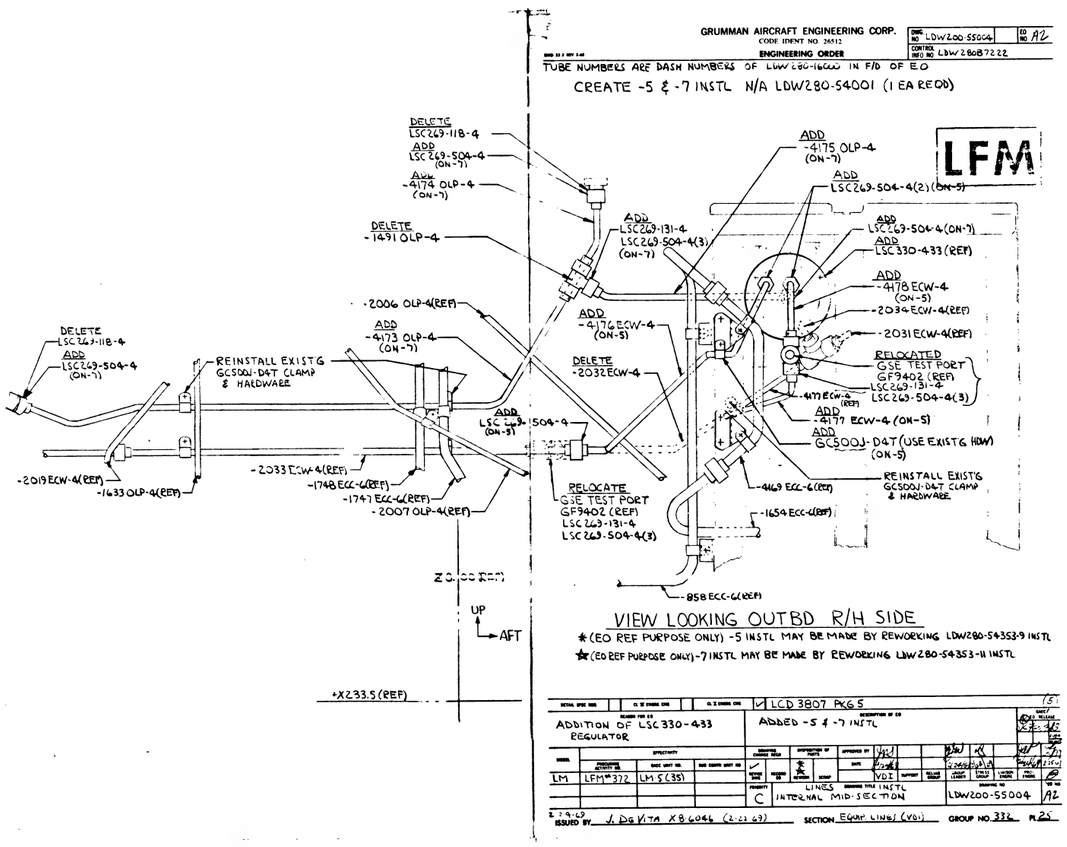
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO LDW200-55004 | ED NO A2
CONTRG INFO NO LDW280B7222

TUBE NUMBERS ARE DASH NUMBERS OF LDW280-16000 IN F/D OF E.O

CREATE -5 & -7 INSTL N/A LDW280-54001 (1 EA REQD)

LFM



VIEW LOOKING OUTBD R/H SIDE

* (EO REF PURPOSE ONLY) -5 INSTL MAY BE MADE BY REWORKING LDW280-54353-9 INSTL
★ (EO REF PURPOSE ONLY) -7 INSTL MAY BE MADE BY REWORKING LDW280-54353-11 INSTL

LCD 3807 PKG 5

REASON FOR ED	DESCRIPTION OF ED
ADDITION OF LSC330-433 REGULATOR	ADDED -5 & -7 INSTL

EFFECTIVITY			DISPOSITION OF PARTS	APPROVED BY					
MODEL	PRODUCTION DESIGN	SHIP UNIT NO.	MAN CONFIG UNIT NO.						
LM	LFM**372	LM 5(35)		DATE	2/3/69	VDI	2/4/69		

PRIORITY C — LINES — INSTL — INTERNAL MID-SECTION — LDW200-55004 — A2

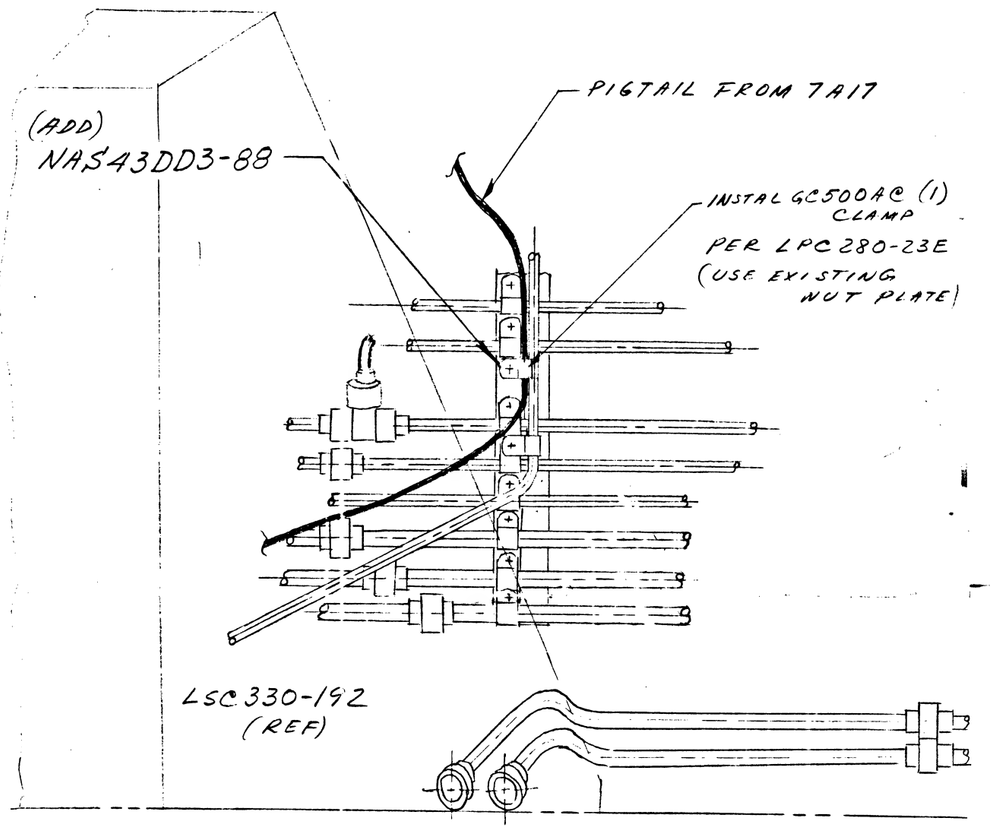
2-7-69 ISSUED BY J. DGVITA X8 6046 (2-23-69) SECTION EQUIP. LINES (VDI) GROUP NO. 336 PL 25

01
NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENG 32.2 REV 3-65
ENGINEERING ORDER

DWG. NO. LDW200-55004 | EO NO. A3
CONTROL INFO NO. LM83-4683

ZONE AB-5#6



LDW200-55004-1 INSTAL.
VIEW LKG
OUTBD - RH SIDE

NAS 9-1100

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	V	LCD 3688A

REASON FOR EO: CLAMP REQUIRED TO PROVIDE PROPER SUPPORT OF ELECTRICAL CABLE

DESCRIPTION OF EO: ADDED: NAS43DD3-88 & GC500AC (1) CLAMP PER LPC280-23E

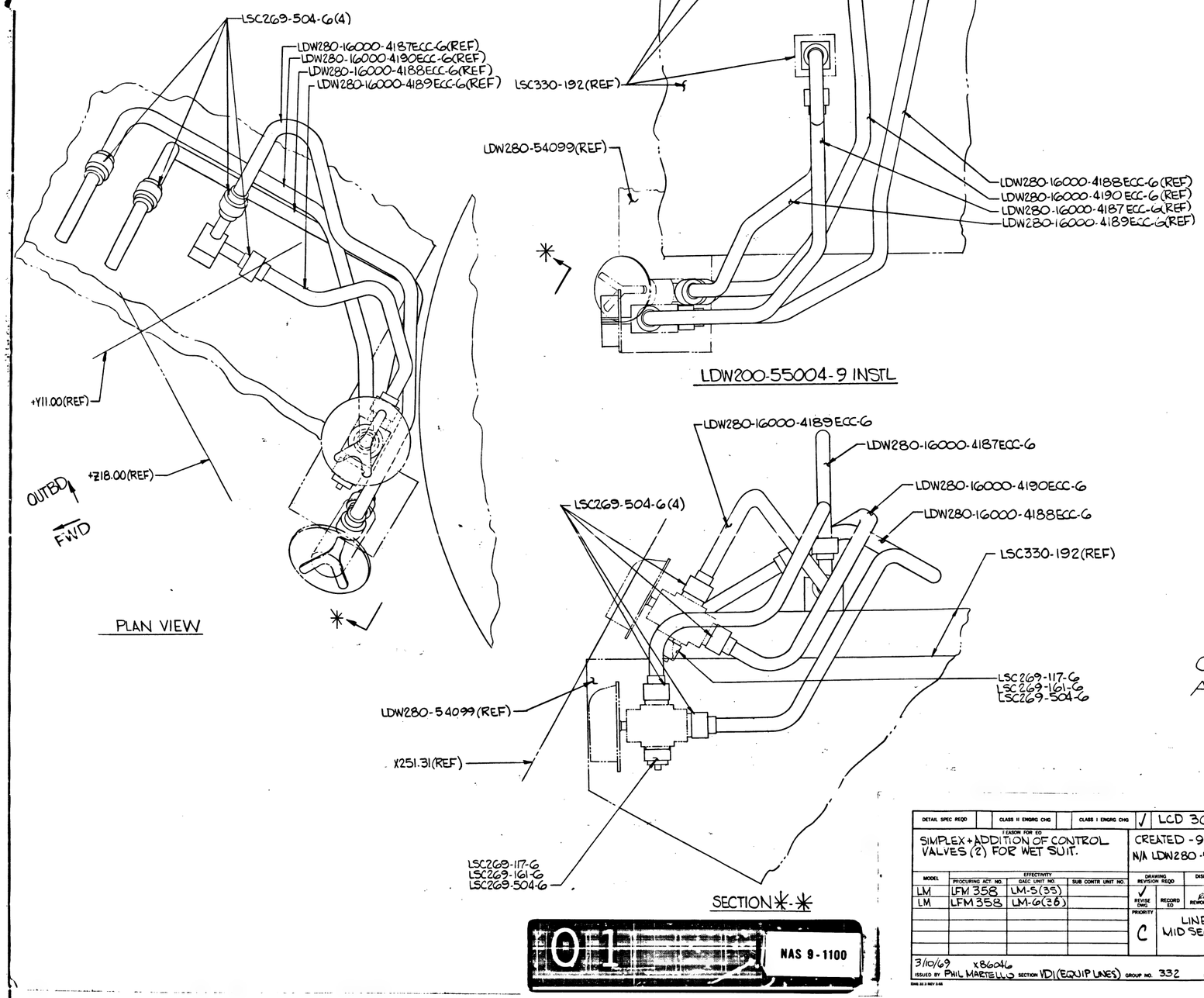
MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO. (LFM)
LM	LFM358	LM-5 (35)	358

DRAWING CHANGE REQD: REVISE DWG V; RECORD EO
DISPOSITION OF PARTS: REWORK ✓; SCRAP
PRIORITY: C
DRAWING TITLE: LINES INSTALLATION INTERNAL MID-SECTION
DRAWING NO.: LDW200-55004
EO NO.: A3

	APPROVED BY	DATE	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
		2-26			B1A		2-27-69

ISSUED BY J.E OZOLINSH 867-8590 SECTION MECH. SYS GROUP NO. 812 PL 83

FULL SIZE SHT AREA (30x42) - 8.75
½ SIZE SHT AREA (¼ OF FUL) - 2.19



PLAN VIEW

LDW200-55004-9 INSTL

SECTION ✳-✳

CORRECTED EO NO.
A4 WAS A3 CWB-ltr 3-22-69

LFM

DETAIL SPEC REQD		CLASS II ENGRG CHG		CLASS I ENGRG CHG	✓	LCD 3688 CCA 1714 PKG 5						CONTROL INTG NO. LDW280B7273		
REASON FOR EO: SIMPLEX + ADDITION OF CONTROL VALVES (2) FOR WET SUIT.					DESCRIPTION OF EO: CREATED -9 INSTL N/A LDW280-54001, LFM358 LM5(35), LFM358 LM6(36),								GRUMMAN WDC TO RELEASE		
MODEL	EFFECTIVITY: PROCURING ACT. NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING REVISION REQD	DISPOSITION OF PARTS			DATE	BY					
LM	LFM 358	LM-5(35)		✓				3/4/69				3/10/69	3/11/69	
LM	LFM 358	LM-6(36)		REVISE DWG	RECORD EO	NOT REQ'D REWORK	SCRAP	VDI	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGR
				PRIORITY: C	DRAWING TITLE: LINES INSTALLATION MID SECTION - A/S - INTERNAL							ENGINEERING ORDER DRAWING NO. LDW200-5500+		EO NO. A4
3/10/69 X86046 ISSUED BY PHIL MARTELLO SECTION VDI (EQUIP LINES) GROUP NO. 332 PL 25								CODE IDENT NO. 26512				GRUMMAN AIRCRAFT ENGINEERING CORP BETHPAGE, L. I., N. Y.		

01 NAS 9-1100

2

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENG 32.1 REV 3-65
ENGINEERING ORDER

DWG. NO. LDW200-55004 | EO NO. A5
CONTROL INFO NO. LDW280 B7374

CANCEL EO A4 AND -9 INSTL CREATED THEREON.

LFM

EO A4 CONTROL # 280B7278

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG
		✓ LCD 3688 CCA 1719 (5)

REASON FOR EO: PHASE II OF LCD CANCELLED (SIMPLEX + 2V)

DESCRIPTION OF EO: CANCELLED EO A4

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM358	LM-5(35) & LM-6(36)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: ✓ REWORK | ✓ SCRAP

APPROVED BY	DATE	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	CONT
	3/17/69	VDI		3/15/69		3/20/69	3/22/69	

PRIORITY: C
DRAWING TITLE: LINES INTL INTERNAL MID SECT
DRAWING NO.: LDW200-55004
EO NO.: A5

ISSUED BY J. WOLF x1153 SECTION VDI(A) LINES GROUP NO. 33L PL 25

01

NAS 9-1100

LDW200-55005

LFM

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM #376	LDW280-54001	LM-5 (3E)	1
PART NO. LDW200-55005-1		GAEC SCH NO.	

WORK PACKAGE FUNCTION III (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00	2.00	3.00	4.00						
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED	A
LAST DASH NO. USED	-23

GRUMMAN REL INFO
PRIM NO. NC(624) 215 MIE-16-2/24/69

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ± .032 ± 1/2°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCR-3820	

CONTRACT NO. NAS 9-1100 LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	DALY 2-22-69	REL.	
LAYOUT BY	DALY 2-22-69		
CHECKED BY			
GR. LDR	[signature]		
V.D.I	[signature] 2/22/69		
STRUCT		PROJ ENGR	[signature] 2/22/69
STRUCT.	JPB 2/22/69	REL GROUP	[signature] 2-22-69
WEIGHTS			

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET WSTL~A/S MID-SECTION
REWORK OF LDW280-54001
LFM # 376

SIZE	CODE IDENT NO.	
B	26512	LDW200-55005

SCALE NONE SHEET 1.00 OF 4

ENG 77.1 12-68

CDR

01

NAS 9-1100

QTY PER ASSEMBLY		CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
4			NAS682 A4		ANCHOR NUT	STD PART						
1			NAS680 A4		ANCHOR NUT							
A/R			MS20470AD4		RIVET			SEE NOTE 2				
A/R			MS20470AD5		RIVET							
A/R			MS20426AD5		RIVET							
A/R			MS20426AD3		RIVET			SEE NOTE 2				
	4		MS21042L3		NUT							
	8		AN960D10L		WASHER							
	1		AN960D416		WASHER	STD PART						
	4		GB511J-3-4		BOLT	GRUMMAN STD						
	1		GB511J-4-7		BOLT	GRUMMAN STD						
2			-23		SHIM	AL. ALLOY	QQ-A-250/5	2024-T3	.080 X 1 1/2 X 2 1/4	NONE	88	
1			-21		RADIUS BLOCK	AL ALLOY	QQ-A-250/5	2024-T3	.125 X 1 3/8 X 6 1/8		88	
	1		-19		CLAMP	CRES ½H-301	MIL-S-5059	TYPE 301	.125 X 1 5/8 X 7		NONE	
2			-18		CLIP	AL ALLOY	QQ-A-250/5	2024-T3	.063 X 1 1/8 X 2 1/2		88	
2			-17		CLIP				.063 X 1 7/8 X 2 1/2			
1			-15		ANGLE				GS180A28DGX6 1/4			
1			-13		PLATE				.080 X 6 1/8 X 6 3/4			
1			-11	E	HAT	AL ALLOY	QQ-A-250/5	2024-T3	.063 X 6 1/8 X 6 1/2	NONE	88	
	1		-3	E	BRACKET ASSY					NONE	NONE	
			LDW200-55005-1	E	INSTL					NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
88	ANODIZE	LSP14-9030

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55005

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

1. INSTALL
2. GROOV
FOR NS
DIA IS
3. INSTAL
4. TO INS
GRIP LE
PROVID
5. SHIM P
6. INSTALL
BETWEE
GAP
7.

.256-.263 DIA THRU-11 & -21
NAS 680A4
MS20426AD3(2) FLUSH IN-11 (ON-3)

.249-.255 DIA- 4 HOLES THRU-11 & -21 TO BE COORDINATED WITH LSC 330-434 (ON-3)

NAS682A4 (4)
MS20426AD3 (8)
FLUSH IN-11 (ON-3)

3/8

2 25/32

3/8 ±.015

3/4 (REF)

3/8

-11

A

MS20470AD4 (8) (ON-3)

-18 N.S.
-17 F.S.

-23 (2)

LDW280-23253 (REF)

A

5/32 (TYP)

-17 N.S.
-18 F.S.

VIEW A-A

-3Y 17.25 (REF)

-15 (2)

X253.500

MS20470AD4 (8) (IN-3)

-19

GB511J-4-7
AN960D416

LDW280M10795 (REF)

-21

2 13/32

LSC330-434 (REF)

SHIM AS REQD (SEE NOTES 5 & 6)
(.060 MAX)

-13

MS20426AD5 (4) (ON-3)
FLUSH IN-13

LSC 330-434 (REF)

MS20470AD5 (4) (ON-3)

MS20470AD4 (12) (ON-3)

LSC330-434 (REF)

MS20426AD5 (4) (ON-3)
FLUSH IN-13

3/8

13/32

.190-.196 DIA 4 HOLES (ON-1)
PICK UP EXISTING LOCATIONS
IN LDW 280-23253
GB511J-3-6 (4)
AN960D10L (8)
MS21042L3 (4)

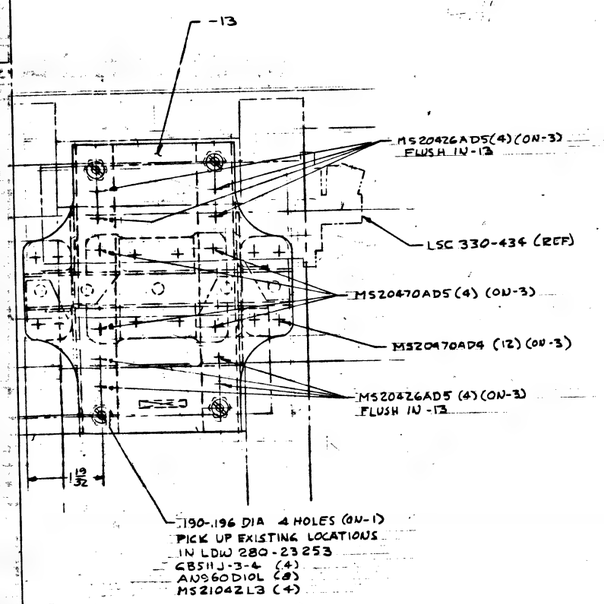
LDW200-55005-1 INSTL
-3 ASSY

01/02

NAS 9-1100

1. INSTALL FASTENERS PER LSP 14-15302.
2. GR500A & GR501A MAY BE USED AS ALTERNATE FASTENERS FOR NS20470 & MS20426 RESPECTIVELY PROVIDED SAME DIA IS USED
3. INSTALL GR500A & GR501A PER LSP 14-15303 WHEN APPLICABLE
4. TO INSURE PROPER GRIP LENGTHS IT IS PERMISSIBLE TO USE GRIP LENGTHS ONE SIZE LARGER OR ONE SIZE SMALLER PROVIDED THE DIAMETER AND TYPE OF FASTENER IS MAINTAINED
5. SHIM AS REQD USING AL ALY SH 2024-T3 QQ-A-250/A FIN 88
6. INSTALL -19 TO INSURE FIRM GRIP ON LSC330-434. CHECK GAP BETWEEN -19 & -11 AND FABRICATE SHIM .010 BELOW MEASURED GAP

Q2/02 NAS 9-1100



LDW 200-55005-1 INSTL
-3 ASSY

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS D.W.	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY.	√
FILLET AND INSIDE CORNER RADII TOLERANCES .0156 TO .0629 ± .008 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 MIP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED ⌀ MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
250 FOR ALL DRILLED HOLES	√
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	√
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ⌀ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	√
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	√
TOLERANCE ON LOFTED DELINEATIONS IS	

DRW SIZE ⌀⌀ 34 X 70

DIMENSIONS ARE LINEAR
FULL SIZE SHEET AREA 1.94 X 72.4+
1/2 SIZE SHEET AREA 1/4 OF FULL

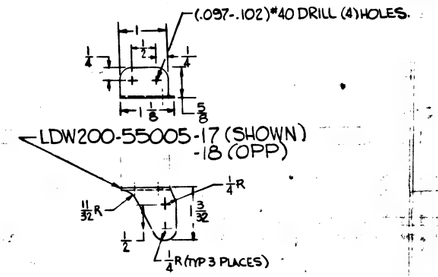
18 SQ. FT.
4.5 SQ. FT.

PRINT TRIM LINE

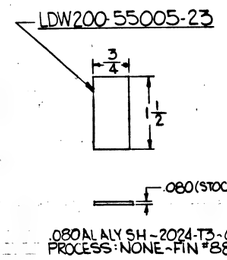
LDW 200-55005

LDW200-55005

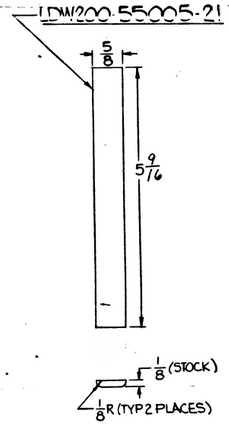
	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK		
	SIZE K	CODE IDENT NO. 26512	LDW200-55005
LM MODEL OR END ITEM	SCALE FULL		SHEET 3.00



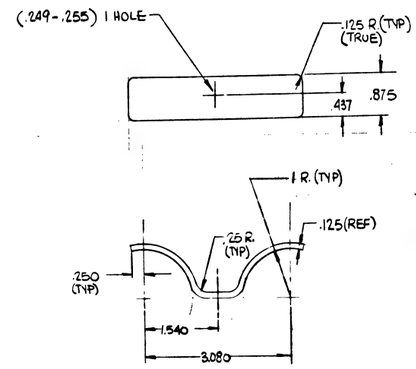
.063 AL ALY SH-2024-T3-QQ-A-250/5
PROCESS: NONE-FIN #88-(2) EA REQD/VEH
1/8 BEND R.



.080 AL ALY SH-2024-T3-QQA-250/5
PROCESS: NONE-FIN #88-(2) REQD/VEH

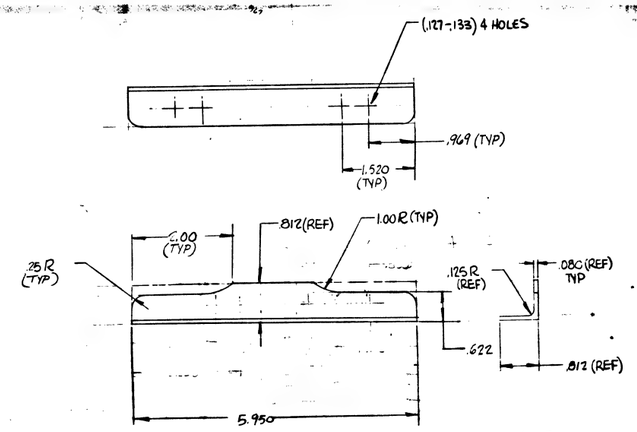


.125 AL ALY SH-2024-T3-QQ-A-250/5
PROCESS: NONE-FIN #88-(1) REQD/VEH



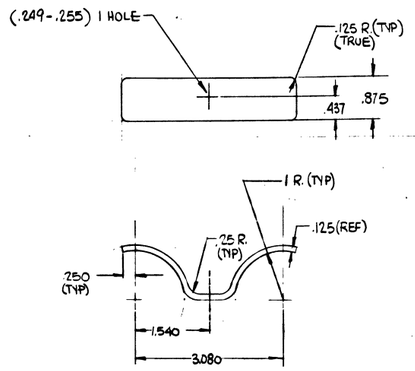
LDW200-55005-19 CLAMP

.125 CRES 1/2H TYPE 301 ~ MIL-S-5059
PROCESS NONE ~ FIN NONE ~ 1 REQ'D/VEH



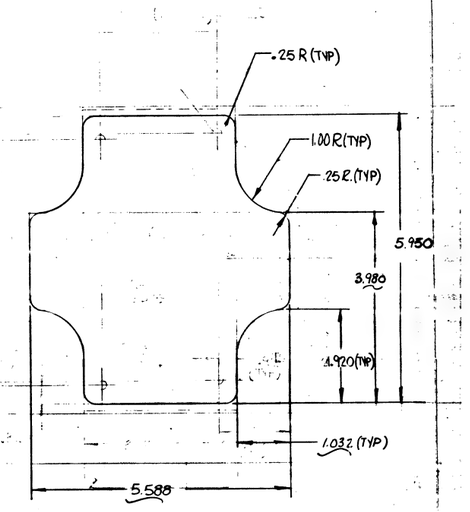
LDW200-55005-15 ANGLE

MAKE FROM GS180A28DG EXTRUSION
7075-T6511 ~ PROCESS NONE ~ FIN 88
2 REQD/VEH



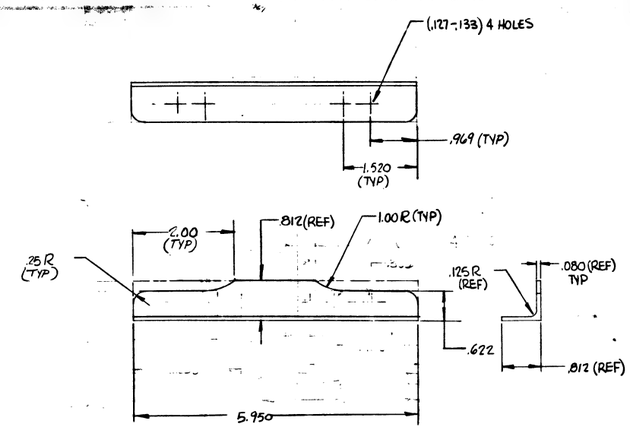
LDW200-55005-19 CLAMP

.125 CRES ½H TYPE 301 ~ MIL-S-5059
PROCESS NONE ~ FIN NONE ~ 1 REQ'D/VEH



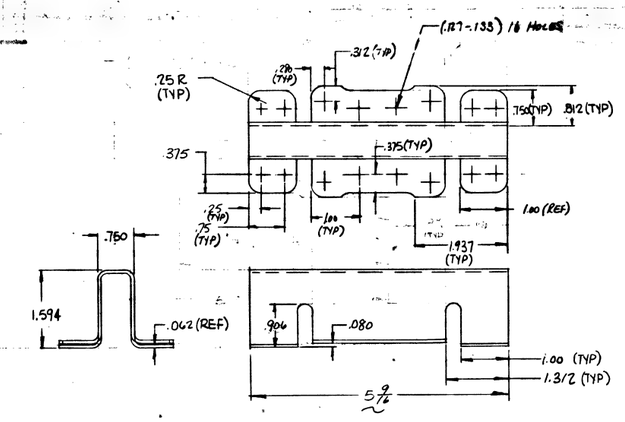
LDW200-55005-13 PLATE

.080 AL ALY SH ~ 2024-T3 QQ-A-250/5
9/32 BR ~ PROCESS NONE ~ FIN 88 ~ (1) REQD/VEH



LDW200-55005-15 ANGLE

MAKE FROM GS180A28DG EXTRUSION
7075-T6511 ~ PROCESS NONE ~ FIN 88
2 REQD/VEH



LDW200-55005-11 HAT

.062 AL ALY SH ~ 2024-T3 ~ QQ-A-250/5
⅛ BR ~ PROCESS NONE ~ FIN 88 ~ (1) REQD/VEH

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY.
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
250 √ FOR ALL DRILLED HOLES
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED ME
SYMBOL ⚡ DENOTES SURFACE TO BE MACHINED
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
LENGTHS OF AN, MAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
TOLERANCE ON LOFTED DELINEATIONS IS

DRN SIZE 8½ x 34 x 78

DIRECTIONAL ARROW LOCATE FULL SIZE SHEET AREA 1 on 2 3 4 + VU SIZE SHEET AREA 1/4 OF FULL

21 MIL PC. 5/16 MIL PC.

PRINT TRIM LINE

LDW200-55005

LDW200-55005

02402

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE K	CODE IDENT NO. 26512	LDW200-55005	
MODEL OR END ITEM	SCALE FULL		SHEET 4.00

LDW200-55006

LEM

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LEM # 374	LDW280-54001	SEE NOTE #1	1
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW200-55006-1		GAEC SCH NO.	

WORK PACKAGE FUNCTION # III (6)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00		2.00		3.00				
REV									
SHEET									
REV									
SHEET									
REV									
LAST SECT LTR USED	~	GRUMMAN REL INFO							
LAST DASH NO. USED	-1	PRIM NO. JK1024 WE-16 8/1-1/9							

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
~ ~ ~

ORIG DWG AUTH			
DETAIL SPEC REQUIREMENT			
CLASS II ENGRG CHANGE			
CLASS I ENGRG CHANGE	✓		
LCD 2771, ECP H-044			

CONTRACT NO. NAS 9-1100 LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	J. DE VITA 2-28-69				
LAYOUT BY	J. DE VITA 2-28-69				
CHECKED BY	V. SOLDWEDEL 3/6/69 MCHANEY 3-6-69				
GRP LDR	3/6/69				
VDI	3/6/69				
STRUCT.	3-11-69	PROJ ENGR			
STRUCT.	3/11/69	REL GROUP			

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

LINES INSTL
OXID/FUEL RATIO, RCS, ASCENT STAGE
REWORK OF LDW280-54356, LFM 374

SIZE	CODE IDENT NO.	
B	26512	LDW200-55006

SCALE NONE SHEET 1.00 OF 3

CDR 040169

ENG 77.1 12-65

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NAS 9-1100

N							4		LSC 269-210-10	E	TEE	SEE NOTE #5								
N							4		LSC 269-206-10	E	UNION	SEE NOTE #5								
									LDW 280-16000											
N							1		-4120 RCO-10	E	TUBE	SEE DWG								
							1		-4119 RCF-10											
							1		-4118 RCO-10											
							1		-4117 RCF-10											
							1		-4114 RCO-10											
							1		-4113 RCF-10											
							1		-4112 RCO-10											
							1		-4111 RCF-10											
							1		-4110 RCO-10											
							1		-4109 RCF-10											
							1		-4108 RCO-10											
							1		-4107 RCF-10											
							1		-4106 RCF-10											
							1		-4105 RCO-10											
							1		-4104 RCO-10											
N							1		-4103 RCF-10	E	TUBE	SEE DWG								
									LDW 280-16000											
F									LDW 200-55006-1	E	LINES INSTL	SEE NOTE #2								
CL							-1		PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE		
QTY PER ASSEMBLY								CODE IDENT												

CL = CLEANLINESS LEVEL PER LSP-14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW 200-55006

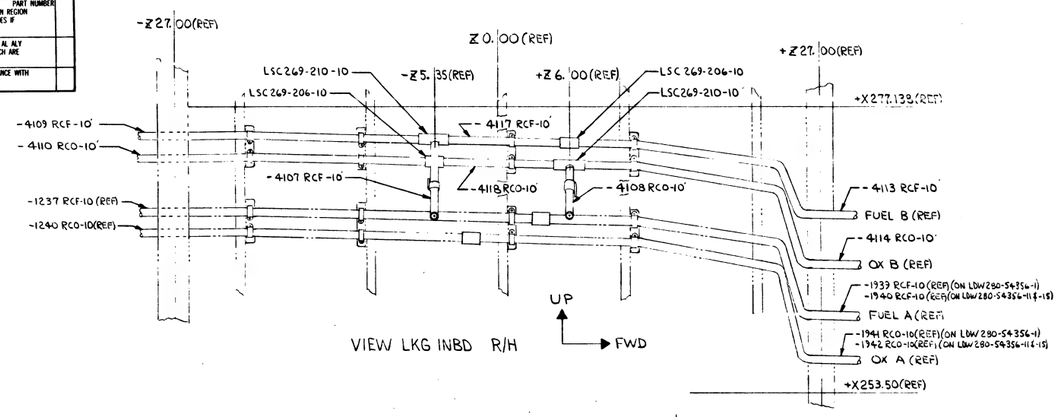
SCALE NONE SHEET 2.00

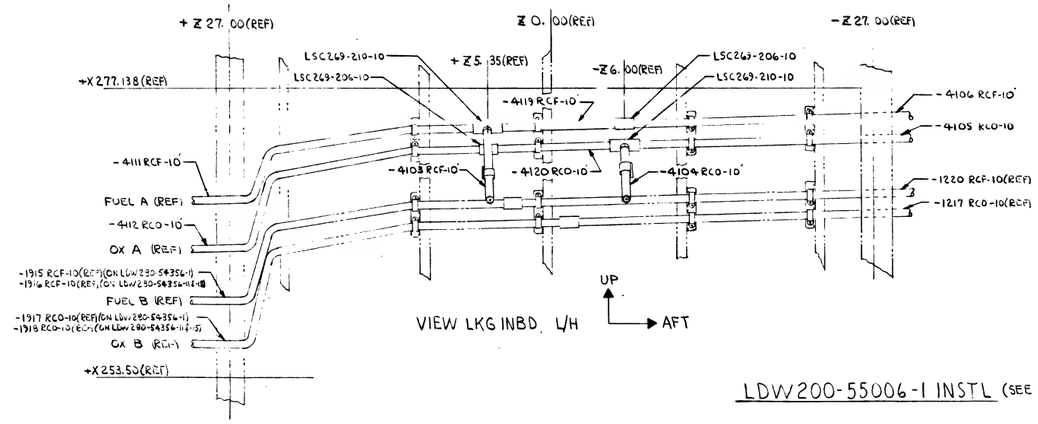
ENG 77.2 7-55

01

NAS 9-1100

SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH MIL STD-130	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☐ USE BOTH SIDES IF NECESSARY	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL RIVETS IN ACCORDANCE WITH	





LDW200-55006-1 INSTL (SEE NOTE 2)

NOTES:

1. THIS DWG WHEN USED FOR DELIVERED LM VEHICLES IS AFFECTED BY LFM # 374, EFFECTIVITY IS TO BE DETERMINED.
2. LDW200-55006-1 MAY BE USED FOR REWORK ON LM-4,3,4 THRU LM-6 AS BY REWORKING LDW280-54356-1,-11 & -15 INCL.
   a. LDW200-55006-1 REWORKS LDW280-54356-1 BY TRIMMING EXISTG LINES AND REIDENTIFYING AS FOLLOWS: -1939 RCF-10 AS -4113 RCF-10; -1937 RCF-10 AS -4114 RCO-10; -1223 RCF-10 AS -4108 RCO-10; -1230 RCO-10 AS -4107 RCF-10; -1231 RCF-10 AS -4109 RCF-10; -1234 RCO-10 AS -4110 RCO-10; -1911 RCF-10 AS -4111 RCF-10; -1913 RCO-10 AS -4112 RCO-10; -1216 RCO-10 AS -4103 RCF-10; -1215 RCF-10 AS -4104 RCO-10; -1227 RCF-10 AS -4106 RCF-10; -1217 RCO-10 AS -4105 RCO-10; RELOCATE LSC269-210-10 TEE (4); ADD - 4117 RCF-10, -4118 RCO-10, -4119 RCF-10, -4120 RCO-10 & LSC269-206-10 UNION (4).
   b. LDW200-55006-1 REWORKS LDW280-54356-11&-15 BY TRIMMING EXISTG LINES AND REIDENTIFYING AS FOLLOWS: -1939 RCF-10 AS -4113 RCF-10; -1937 RCF-10 AS -4114 RCO-10; -1229 RCF-10 AS -4108 RCO-10; -1230 RCO-10 AS -4107 RCF-10; -1231 RCF-10 AS -4109 RCF-10; -1234 RCO-10 AS -4110 RCO-10; -1912 RCF-10 AS -4111 RCF-10; -1914 RCO-10 AS -4112 RCO-10; -1216 RCO-10 AS -4103 RCF-10; -1215 RCF-10 AS -4104 RCO-10; -1220 RCF-10 AS -4106 RCF-10; -1217 RCO-10 AS -4105 RCO-10; RELOCATE LSC269-210-10 TEE (4); ADD - 4117 RCF-10, -4118 RCO-10, -4119 RCF-10, -4120 RCO-10 & LSC269-206-10 UNION (4).
3. TUBE NUMBERS ARE DASH NUMBERS OF LDW280-16000.
4. INDUCTION BRAZE IN ACCORDANCE WITH LSP-14-6303.
5. COMMERCIAL PART; SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING.

GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714			
SIZE D	CODE IDENT NO. 26512	LDW200-55006	
SCALE		SHEET 3.55	

ENG 733 REV. 547

LDW200-55007

LFM

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM # 374	LDW200-54001	SEE NOTE #1	1
PART NO. LDW200-55007-1		GAEC SCH NO.	

WORK PACKAGE FUNCTION #111 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00		2.00		3.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	~
LAST DASH NO. USED	-1

GRUMMAN REF INFO
PRIM NO. LEC 3374 4E16 E1/7

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES
~ ~ ~

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 2771 ECP H-044	

CONTRACT NO. NAS 9-1100 LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	J. DEVITA 3-4-69		
LAYOUT BY	J. DEVITA 3-4-69		
CHECKED BY	J. Soldwedel 3/6/69		
GRP LDR	J. Wolf 3/6/69		
VDI	J. Gustafson 3/6/69		
STRUCT.	JCW 3-11-69	PROJ ENGR	J. Gustafson 3/12/69
STRUCT.	GP 3/12/69	REL GROUP	L. Marsh 3/13/69

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

LINES INSTL —
REWORK OF ELECTRONIC
ASCENT STAGE-MID SECTION-LFM 374

SIZE	CODE IDENT NO.	
B	26512	LDW200-55007
SCALE NONE		SHEET 1.00 OF 3

CDR 040169

ENG 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
A		LDW200-55007-1	E	LINES INSTL (ELEC)	SEE NOTE #2						
CL											

CL = CLEANLINESS LEVEL PER LSP-14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55007

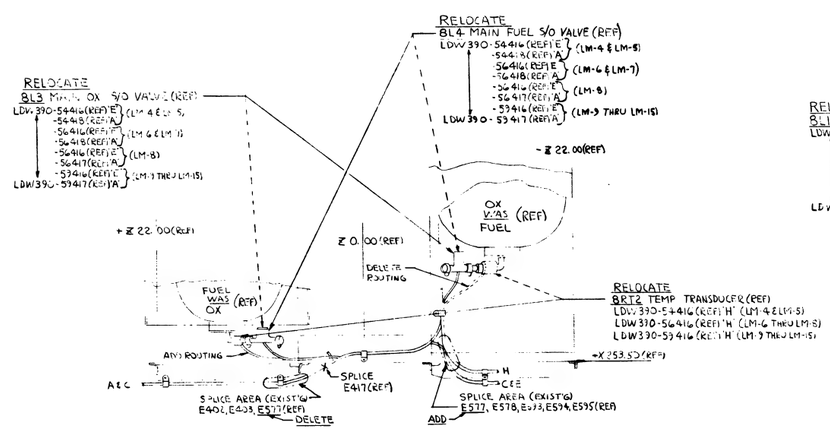
SCALE NONE SHEET 2.00

ENG 77.2 7-65

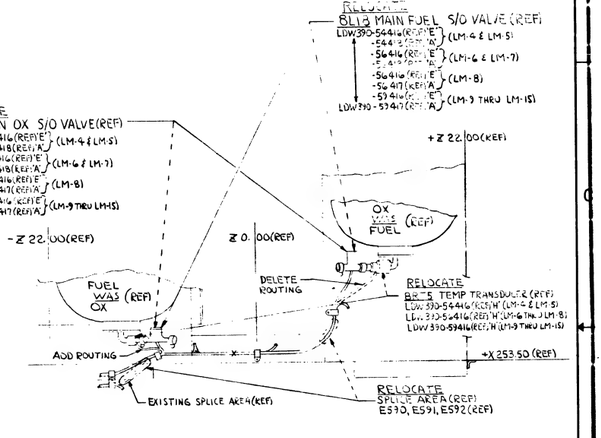
01

NAS 9-1100

SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH MIL STD 130.	
AND ALL OTHER MARKINGS IN REGION MARKED ☐ USE BOTH SIDES IF NECESSARY.	PART NUMBER
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT CERTIFIED	
INSTALL RIVETS IN ACCORDANCE WITH	



RCS MODULE SYSTEM 'A'
VIEW LOOKING INBD LH SIDE



RCS MODULE SYSTEM "B"
VIEW LOOKING INBD RH SIDE

NOTES:
1. THIS DWG WHEN USED FOR DELIVERED LM VEHICLES IS AFFECTED BY LRM # 374. EFFECTIVITY IS TO BE DETERMINED.
2. LDW200-55007-1 MAY BE USED FOR REWORK ON LM-4(34) THRU LM-15(45) BY REWORKING LDW280-54359-1, -3, -5-1, -7-1; LDW280-58359-1 AND LDW280-53359-1 INSTL

LDW200-55007-1 INSTL (SEE NOTE*2)

GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714			
SIZE D	CODE IDENT NO 26512	LDW200-55007	
SCALE		SHEET 3	

DSG 733 REV 547

01

NAS 9-1100

LDW200-55009

LFM

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LFM#1116	LDW280-54001	1M-4(34)	1
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW200-55009-1		GAEC SCH NO.	

WORK PACKAGE FUNCTION III (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	2.00	3.00	4.00					
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	
LAST DASH NO. USED	-13

GRUMMAN REL INFO

PRIM NO.	VD024		
215	IME-16	4/26/69	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ± .020 ± ½°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 3918	

CONTRACT NO. NAS 9-1100 NM LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	F. SHANLEY	THERMO	M.J. Rudnansky 4/24/69
LAYOUT BY		MAT'L.	J. Lambert 4/15/69
CHECKED BY	W.L. Colby 4-25-69		
GR. LDR.	F. DeSapena	KSC	T.L. 4-26-69
VEH. DES. INT.	[illegible] 4/24/69		
STRUCT.		PROJ ENGR	David 4/24/69
STRUCT.	CL FOR A.P. 4/24/69	REL GROUP	J.E. Marsh
WEIGHTS			

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

HATCH ASSEMBLY -
ASCENT STAGE - CABIN - FWD.
REWORK OF LDW280-54001 LFM#416

SIZE	CODE IDENT NO.	
B	26512	LDW200-55009

SCALE NONE SHEET 1.00 OF 4

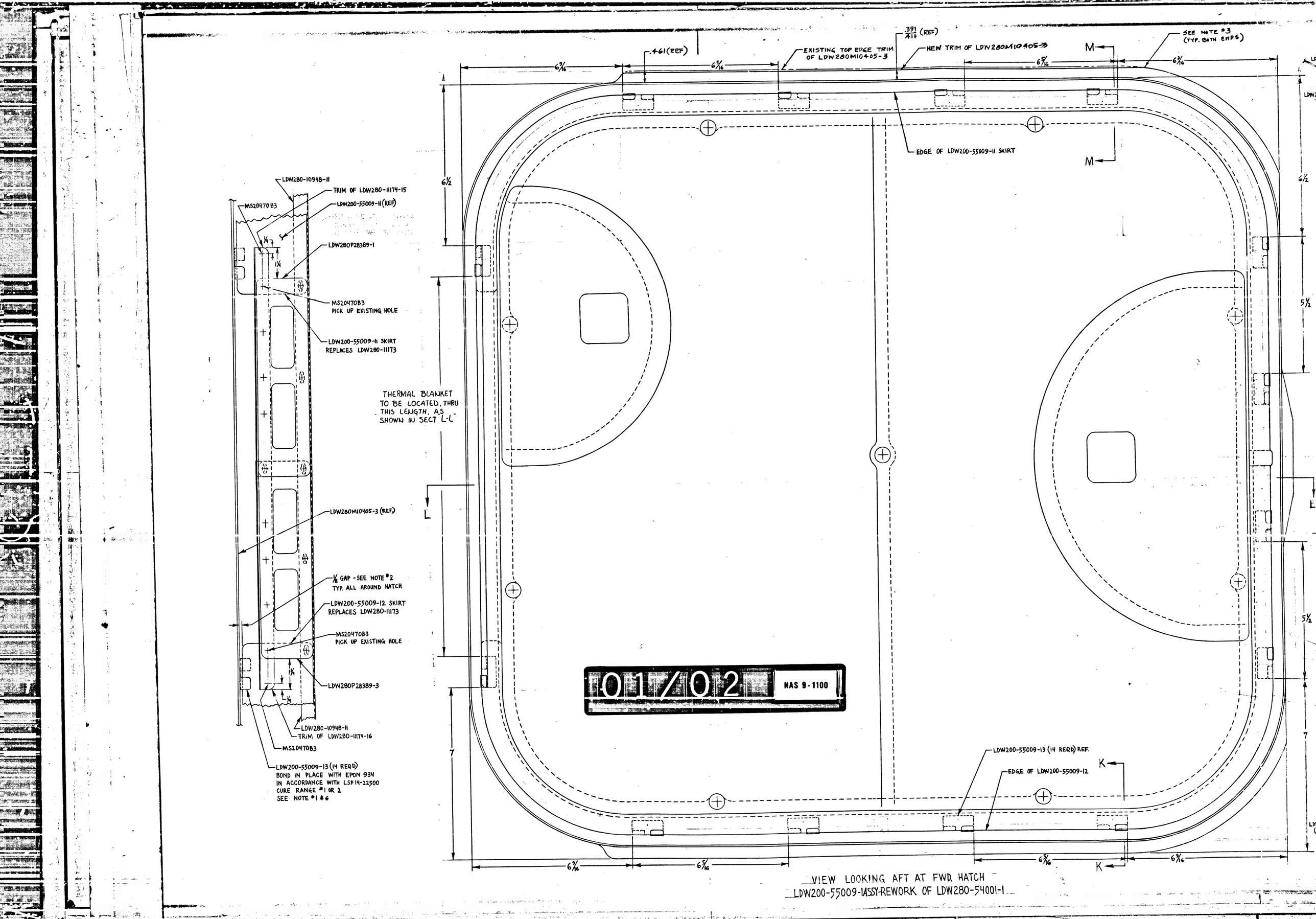
CDR 4/24/69

ENG 77.1 12-65

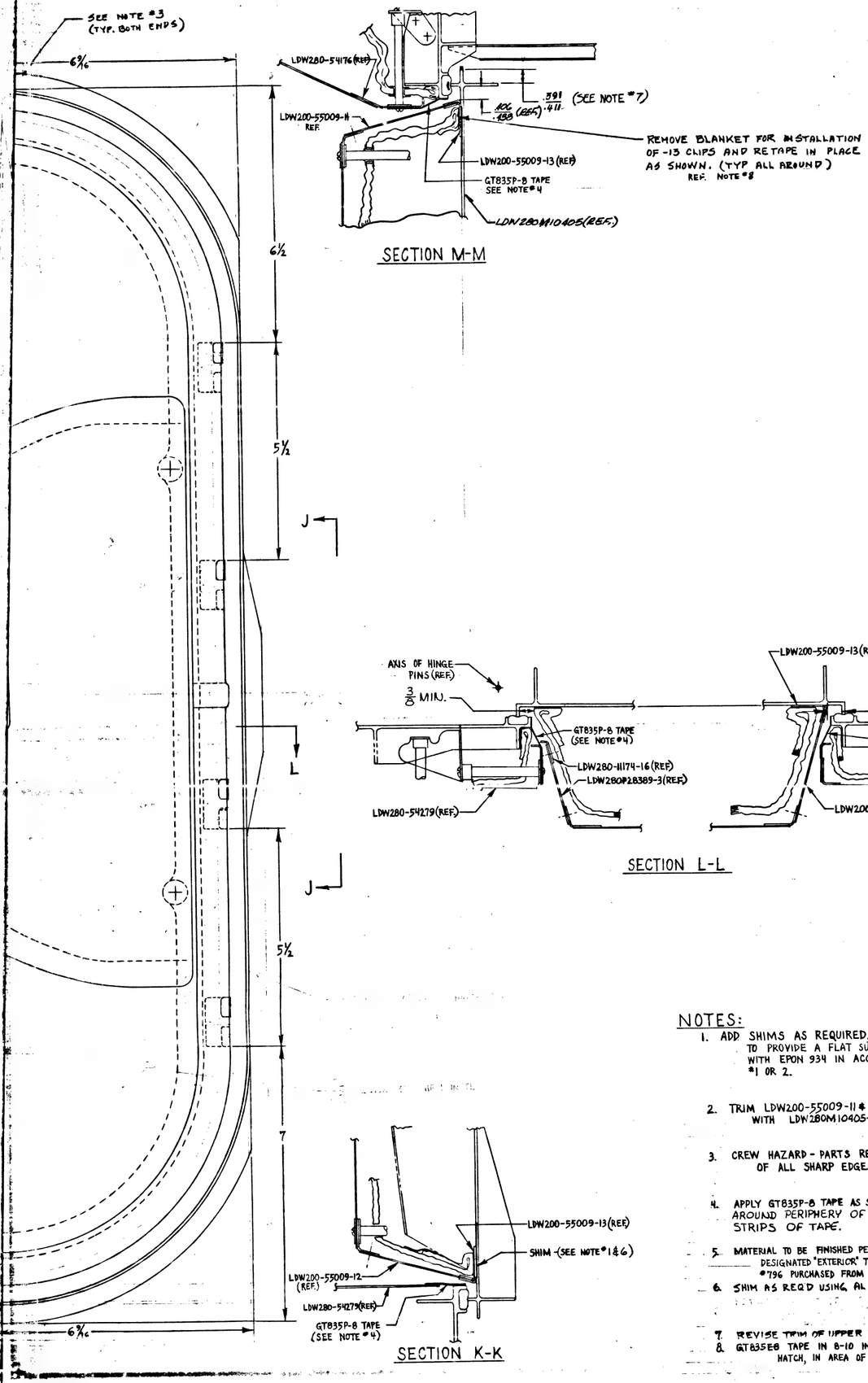
01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE



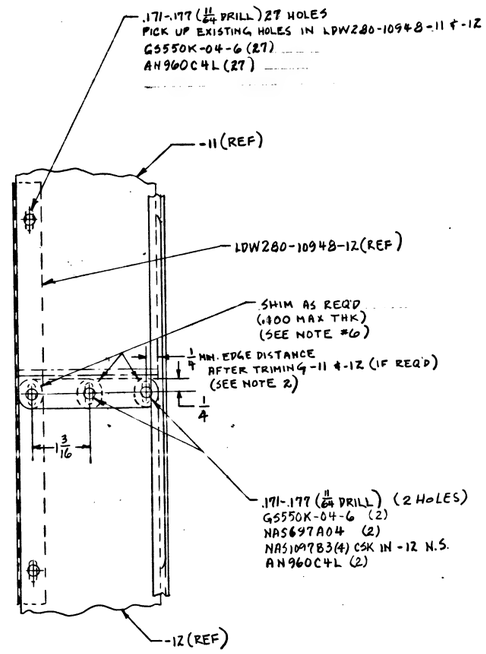
VIEW LOOKING AFT AT FWD. HATCH
LDW200-55009-1ASSY-REWORK OF LDW280-54001-1



SECTION M-M

SECTION L-L

SECTION K-K



VIEW J-J

SUPPLEMENTARY DATA

UNLESS OTHERWISE SPECIFIED NOTES CHECKED (✓) APPLY TO THIS DWG.

MARK PART NUMBER IN ACCORDANCE WITH MIL STD 130.	
NUMBER, STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED [redacted] REF: [redacted]	✓
MISMATCH STEP OF PERMISSIBLE DUE TO CHANGE OF CUTTING AT INSIDE INTERSECTING SURFACES.	
REMOVE ALL BURRS. BREAK ALL EDGES .015 .031.	
✓ SURFACE ROUGHNESS IN ACCORDANCE WITH ASA B46.1.	
125 ✓ FOR ALL SURFACES	
✓ FOR ALL HOLES.	
GEOMETRIC CHARACTERISTIC SYMBOLS IN ACCORDANCE WITH MIL STD 8.	
DEPTH SHOWN FOR TAPPED HOLES IS MIN. THIS 2.5 IMP THDS BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
INSPECTION INFORMATION [redacted] PERMISSIBLE EDGE DISTANCE MARKED [redacted]	
ALL DIMENSIONS SHOWN TO BE MET BEFORE CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
HOLES MUST BE KEPT FREE OF CHROME [redacted]	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLENGES IS ± 1/32.	✓
TOLERANCE ON LOFTED DELINEATIONS IS ± 1/32	✓

DWG SIZE A4 297 x 210 MM

PRINTING INFO ONLY

PRINT TRIM LINE

FULL SIZE SHEET AREA 361.92 — 2.2 MM

½ SIZE SHEET AREA OR OF FULL — 5.5 MM

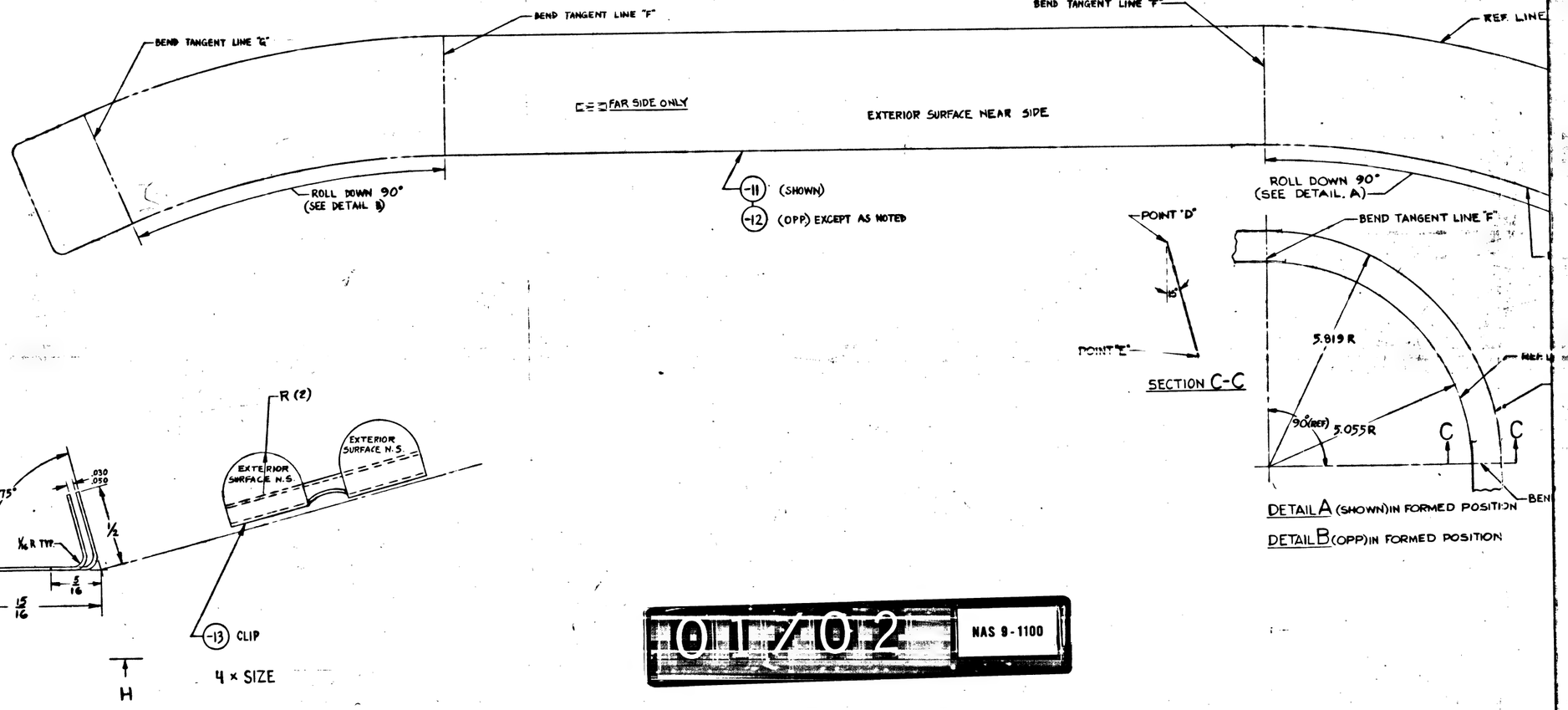
NOTES:

1. ADD SHIMS AS REQUIRED, UNDER LDW200-55009-13 CLIPS (14 PLACES) TO PROVIDE A FLAT SURFACE UNDER CLIP. BOND SHIMS IN PLACE WITH EPON 934 IN ACCORDANCE WITH LSP 14-22500 CURE RANGE #1 OR 2.
2. TRIM LDW200-55009-11 & -12 SKIRTS, ON INSTL., TO MAINTAIN 1/8 GAP — 3/16 GAP WITH LDW280M10405-1 HATCH. ~ IF REQ'D.
3. CREW HAZARD - PARTS REQUIRE SPECIAL HANDLING TO INSURE REMOVAL OF ALL SHARP EDGES AND BURRS.
4. APPLY GT835P-8 TAPE AS SHOWN, IN 8 — 10 INCH STRIPS TO BE APPLIED AROUND PERIPHERY OF HATCH, WITH 1.00 ± 1/4 INCH GAPS BETWEEN STRIPS OF TAPE.
5. MATERIAL TO BE FINISHED PER LEI 280-015. FOR LDW200-55009-11 & -12, SURFACE DESIGNATED "EXTERIOR" TO BE PROTECTED WITH STRIPPABLE VINYL COATING #796 PURCHASED FROM CARROLL PRODUCTS INC., FARMINGDALE, N.Y.
6. SHIM AS REQ'D USING AL ALLOY SH. 2024-T3 QQ-A-250/4 FINISH #76
7. REVISE TRIM OF UPPER TOP EDGE OF LDW280M10405-3 AS SHOWN.
8. GT835E8 TAPE IN 8-10 INCH STRIPS TO BE APPLIED AROUND PERIPHERY OF HATCH, IN AREA OF -11 & -12 SKIRT, WITH 2 ± 1/2 INCH GAPS BETWEEN STRIPS OF TAPE.

02702 NAS 9-1100

GRUMMAN AIRCRAFT ENGNG CORP. BETHPAGE, L.I., NEW YORK

SIZE	CODE IDENT NO.	
	26512	LDW200-55009
MODEL OR END ITEM LM	SCALE FULL	SHEET 3.00

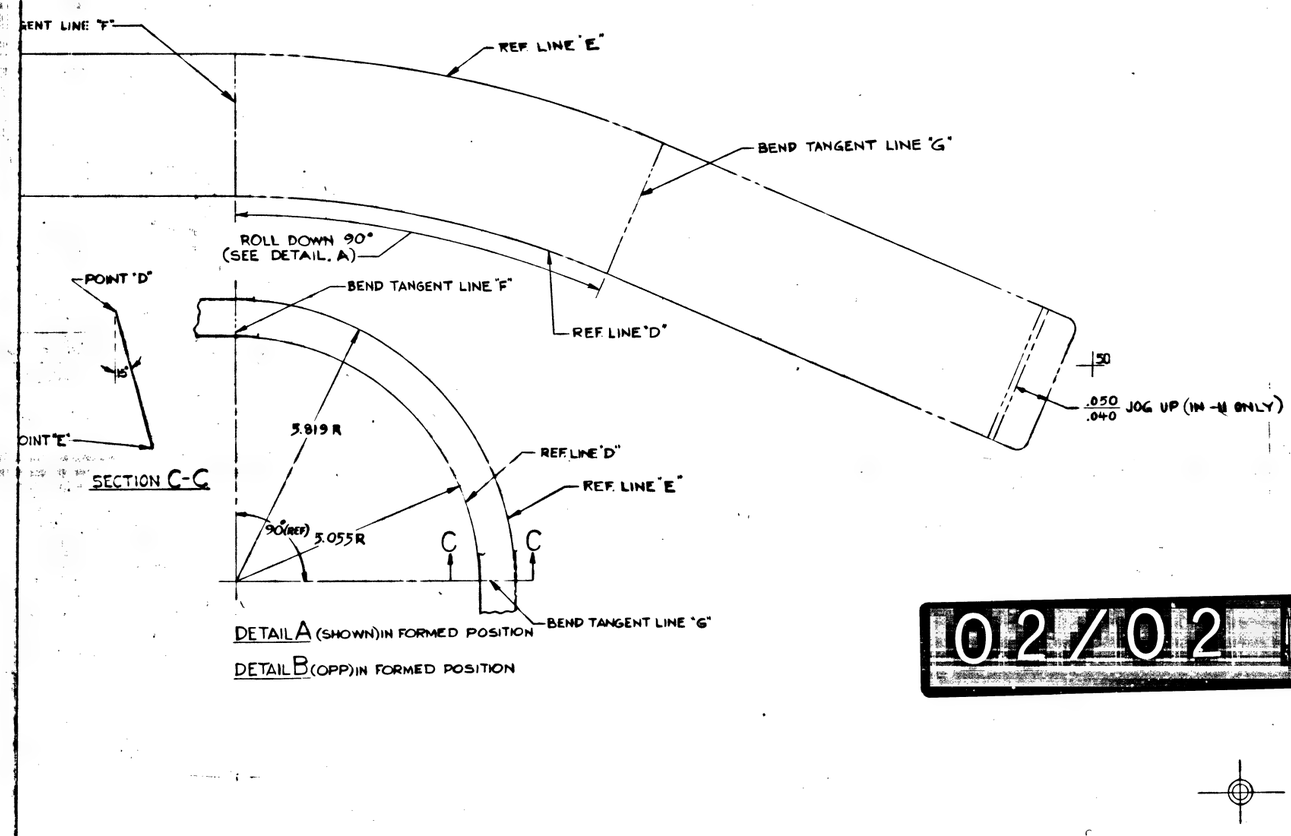


101/102

NAS 9-1100

CODE IDENT NO 26512 | DWG NO LDW200-55009 | REV 4

FRAME 1 | FRAME 2



02/02 NAS 9-1100

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

PART NUMBER
AND ALL OTHER MARKINGS
IN REGION MARKED
USE BOTH SIDES IF NECESSARY.

FILLET AND INSIDE CORNER
RADII TOLERANCES
.0160 TO .0620 ± .000
.0630 TO .2500 ± .005
OVER .2500 ± .000

DEPTH SHOWN FOR TAPPED
HOLES IS FULL THDS. 2-3 MIN. THDS.
BEYOND PERMISSIBLE

EXTERNAL THREAD LENGTH
SHOWN INCLUDES
2 IMPERFECT THREADS MAX.

DO NOT CADMIUM PLATE & PAINT
HOLES OR SURFACES MARKED
WITH DOUBLE ASTERISK.

MISMATCH STEP OF ± .005
PERMISSIBLE DUE TO CHANGE
OF CUTTERS AT INSIDE
INTERSECTING SURFACES.

DIAMETERS MARKED
MUST BE CONCENTRIC WITHIN
FULL INDICATOR
READING

HOLES MUST BE FREE OF
CHROME PLATING SOLUTION

ALL DIMENSIONS SHOWN TO BE MET
AFTER CADMIUM PLATING
THICKNESS OF PLATE .0003/.0008
TO .0005 MAX AND THICKNESS TO
BE .0002 ON THREADED AREAS.
NO ALLOWANCES FOR PLATING IN
HOLES

125 SURFACE ROUGHNESS
INCLUDING REAMED HOLES
PER MIL-STD-10

250 FOR ALL DRILLED HOLES

REMOVE ALL BURRS
BREAK ALL EDGES .015-.031

INSPECTION INFORMATION
MINIMUM PERMISSIBLE
AVERAGE EDGE DISTANCE
MEASURED IS

SYMBOL "X" DENOTES SURFACE
TO BE MACHINED

UNLESS OTHERWISE SPECIFIED
TOLERANCE ON FLANGES IS ± 1/32

LENGTHS OF AN, MAS & NAS AL ALY
RIVETS SHORTER THAN 1 INCH ARE
NOT SPECIFIED

TOLERANCE ON LOFTED
DELINEATIONS IS

DRG SIZE IS B4
PRINTING INFO ONLY
FULL SIZE SHEET AREA ON 36) = 20.0 SQ. FT.
½ SIZE SHEET AREA (½ OF FULL) = 5.0 SQ. FT.
PRINT TRIM LINE

	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I. NEW YORK			
LM	SIZE H	CODE IDENT NO. 26512	LDW200-55009	
MODEL OR END ITEM	SCALE FULL & HALF		SHEET 4.00	

FOR PHOTO REPRODUCTION

LDW200-55009 A 0

CODE IDENT NO. 26512 | DWG NO. LDW200-55009 | SHT 4

FRAME 1 FRAME 4 3 2

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200-55009 | EO NO. A1

CONTROL INFO NO. LM-5-21766

ON-1

IN NOTE #2 REF. TO:

LDW280M10405-1 S/B LDW280M10405-3

DETAIL SPEC REQ | CL II ENGRG CHG | ✓ CL I ENGRG CHG |

REASON FOR EO: DASH NO. CORRECTION IN NOTE #2

DESCRIPTION OF EO: ON-1 IN NOTE #2 LDW280M10905-3 WAS LDW280M10405-1

GAEC EO RELEASED (15)

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP	APPROVED BY	DATE	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
LM	NOT	REQ'D		✓		NOT	REQ'D	VDI	5-2-69	5-28-69	5-5-69	5-5-69	5-6-69

PRIORITY: E

DRAWING TITLE: HATCH ASSY A/S-CABIN FWD REWORK OF LDW280-1500 & UP

DRAWING NO.: LDW200-55009

EO NO.: A1

ISSUED BY LIAISON, P HUSTED, 86255 SECTION VDI GROUP NO. 335 PL 25

01

NAS 9-1100

LDW 200-55010

LFM

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LFM # 435	LDW280-54001	LM-9 (39)	1
								↕	↕	LM-8 (38)	1
								↕	↕	LM-7 (37)	1
								LFM # 435	LDW280-54001	LM-6 (36)	1
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW 200-55010-1		GAEC SCH NO.	

WORK PKG # 110 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	2.00	3.00	4.00					
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	D
LAST DASH NO. USED	-1

GRUMMAN REC INFO
PRIM NO. 215

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ± .016 ± ½°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD # 3892	

CONTRACT NO. NAS 9-1100 LINE ITEM 1 DOCUMENTATION TYPE II

DRAWN BY	ROCKLEIN GMR		
LAYOUT BY	——		
CHECKED BY	——		
GRP LDR	FDE/DV 5/16/69		
VDI			
STRUCTURES	——	PROJ ENGR	5/16/69
STRUCTURES	W/H 5/16/69	REL GROUP	
MATERIALS			

(12) GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

REINF. INST'L-A/S, M/S, OX PROP. LINE
REWORK OF LDW280-54001
LFM # 435

SIZE	CODE IDENT NO.	
B	26512	LDW 200-55010
SCALE NONE		SHEET 1.00 OF 4

ENG 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
2		AN 737-TW 56	E	CLAMP	GOV STD						
A/R		MS 20995C32	E	WIRE, SAFETY	GOV STD						
2		LSC 269-206-20	E	UNION	SEE DWG						
1		LDW 280-16409-2	E	TUBE	SEE DWG						
1		LDW280-16409-1	E	TUBE	SEE DWG						
4		MS 21042 L3	E	NUT	GOV STD						
4		MS 21042 L08	E	NUT	↕						
4		AN960 C10L	E	WASHER	↕						
4		AN960 C8	E	WASHER	GOV STD						
4		GB511J-3-5	E	BOLT	GRUMMAN STD						
4		GB511J-08-4	E	BOLT	GRUMMAN STD						
1		LDW 280-12156-13	E	REINFORCEMENT	SEE DWG						
1		LDW 280-12156-11	E	REINFORCEMENT	↕						
1		LDW 280M11493-13	E	FITTING	↕						
1		LDW 280M11493-11	E	FITTING	↕						
1		LDW 280M11329-15	E	FITTING	↕						
1		LDW 280M11329-13	E	FITTING	SEE DWG						
		LDW 200-55010-1	E	REINF INST'L					NONE	NONE	
-1											

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						FP	ZYGLO	MIL-I-6866

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW 200-55010

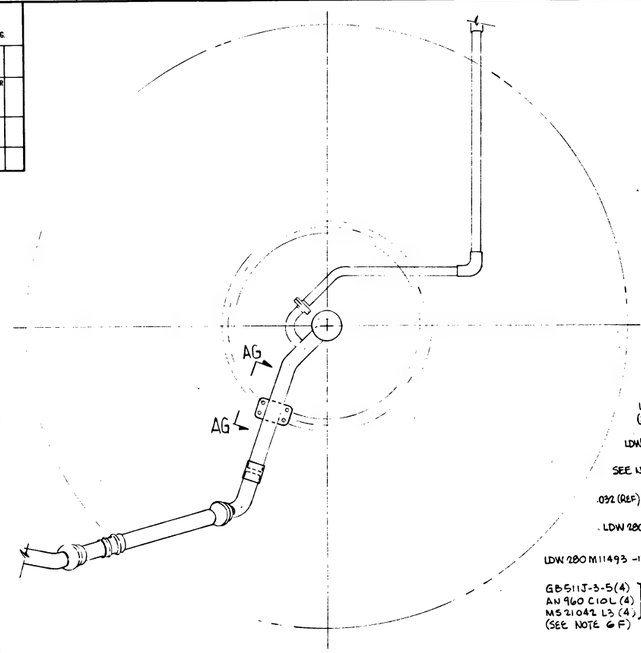
SCALE NONE SHEET 2.00

ENG 77.2 7-65

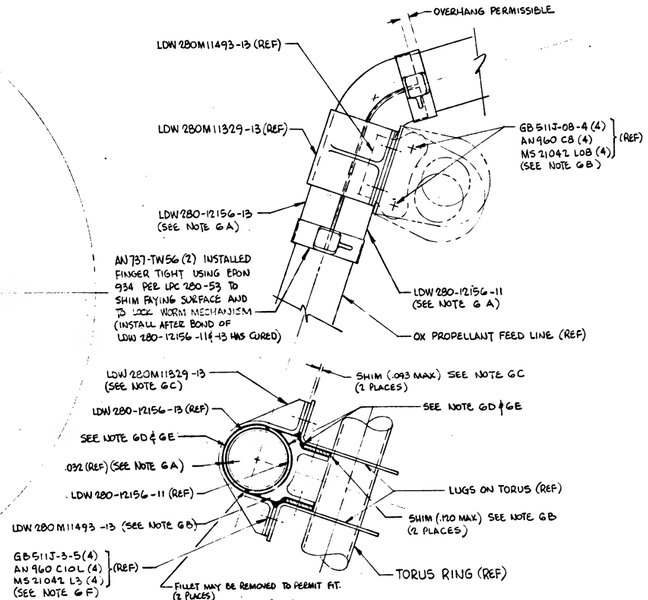
01

NAS 9-1100

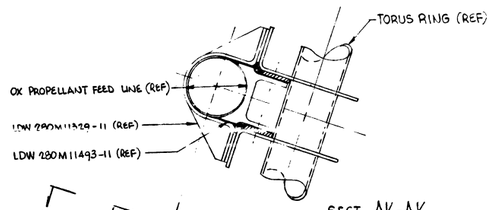
SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH MIL STD 130	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▱ USE BOTH SIDES IF NECESSARY	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL RIVETS IN ACCORDANCE WITH	

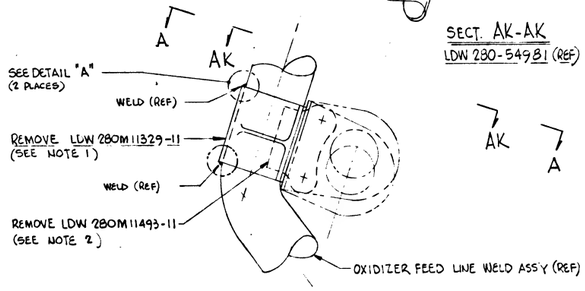


VIEW LOOKING DOWN (REF)
(R.H. SIDE)
LDW 280-54981 (REF)



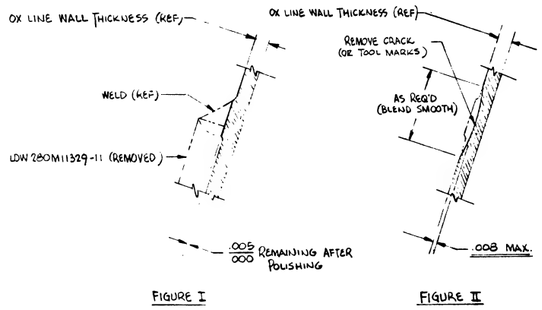
SECT. A-A
(SEE NOTES 1 THRU 9)





SECT. AK-AK
LDW 280-54981 (REF)

SECT AG-AG
LDW 280-54981 (REF)



DETAIL "A"
(SHOWN 10X SIZE)

The following rework procedure shall be performed in the sequence indicated:

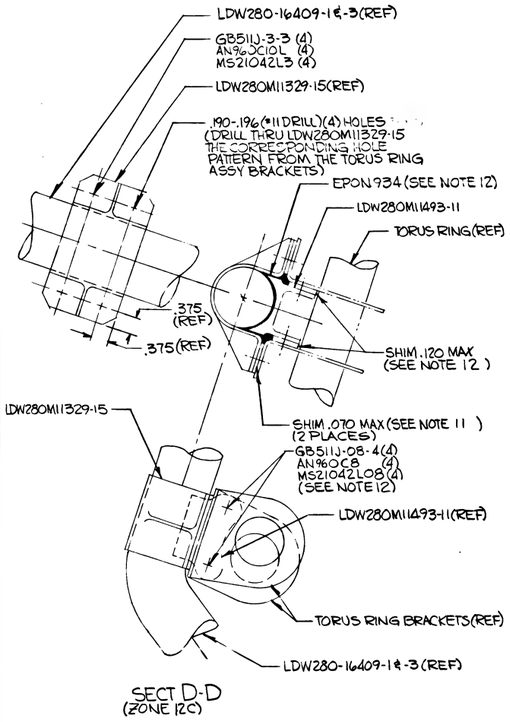
1. Remove LDW280M11329-11 Bracket by removing attaching hardware and grinding welds (See Sect. AG-AG, Zone 4A), taking all possible care to minimize removal of material from Ox. Propulsion Feed Line (See Detail "A" (Zone 7A)).
2. Remove LDW280M11493-11 Saddle by removing attaching hardware and breaking bond between saddle and welded lugs on torus, and between saddle and Ox. Propulsion Feed Line. NOTE: Care must be exercised to avoid damage to torus and/or welded lugs on torus, and/or the Ox. Propulsion Feed line.
3. Grind and polish the remaining weldment to within .005 of basic O.D. of line as shown in Figure I of Detail "A" (Zone 7A). (WITH 400 GRIT) PER MIL-I-6866
4. ~~Eye penetrant~~ inspect weldment area of Ox. Line ~~provided with legible completed packet in Release~~ 3Y6LO
   ~~a) Clean surface.~~
   ~~b) Apply penetrant, wait 30 min.~~
   ~~c) Wash with suitable detergent.~~
   ~~d) Remove excess penetrant with solvent.~~
   ~~e) Apply developer, wait~~
   ~~f) Inspect.~~
   ~~g) Clean Parts~~
5. ~~Eye penetrant~~ inspect (See Note 4) the area below torus of welded lugs on torus.
6. If no cracks are detected in Ox. Line, repair joint as follows: (See Sect. A-A, Zone 4B)
   A) Coat ~~LDW280-12156-11 & -13~~ (See Sect. A-A) to Ox Line as shown, using Epon 934 per LSP-14-22500 Cure Range I. Maintain .092 nominal bond thickness by wrapping Ox. Line with .092 steel safety wire (MS20995C92) as required. Bond ~~shall be~~ cured before proceeding to step 6B. SHALL BE.
      ~~Note~~ a. Remove by mechanical methods as much cured liquid shim material as practicable.
      2. Residual cured liquid shim material that is firmly adhered to line surfaces that cannot be removed by mechanical methods shall be allowed to remain provided height of such residue does not exceed 0.015 inch.
      3. Surfaces of lines to be bonded shall be lightly abraded followed by a solvent wipe with methyl ethyl ketone.
      4. Lines not bonded within four (4) hours of cleaning shall be re-cleaned.
   B) Install LDW280M11493-13 Saddle as shown in Sect. A-A (Zone 4B) and as follows:
      1) Prefit LDW280M11493-13 maintaining a snug fit with O.D. of clam shells (LDW280-12156-11). Measure gaps (2) between LDW280M11493-13 and support structure and shim as required per LPC280-53. With shims in place hold LDW280M11493-13 to Propellant Line and drill through with #19 (.165 - .171) 4 holes(located from existing holes.).
      2) After cure of Epon install GB511J-08-4 (4), AN960C8 (4) and MS21042L08 (4).
   C) Install LDW280M11329-13 Bracket as shown in Sect. A-A (Zone 4B) and as follows:
      1) Prefit LDW280M11329-13 maintaining a snug fit with O.D. of clamshells (LDW280-12156-13).
      2) Measure gaps (2) between LDW280M11329-13 and support structure and shim as required per LPC280-53. With shims in place hold LDW280M11329-13 to Ox. Line and drill thru wh with .128 - .134 thru (4) located from existing holes.
   D) Prior to final assembly, solvent clean all parts including previously reworked Ox. line for a length of 1" on either side of part using methyl ethyl ketone (MEK).
   E) On completion of above steps, apply Epon 934 to faying surfaces of LDW280M11493-13, LDW280M11329-13, Ox. Line, and faying surfaces of shims and support structure, also fill crevices between LDW280M11493-13 and Ox. line. For Epon 934 use Cure Range I (8 hours at 150°F) per LSP-14-22500.
   F) Install GB511J-3-5 (4) bolt, AN960C10L (4) washer and MS21042L3 (4) nut. Apply maximum torque 10-15 inch pounds over the locking feature of the nut after the Epon (Note GE) has cured.
   G) No permissible preload between feed line assembly and torus ring assembly.
7. If a crack indication is detected in Ox. Line, grind and polish the crack area until the crack indication disappears. Verify that the depth of ground and polished area is within the tolerance shown in Figure II of Detail "A" (Zone 7A). (NOTE: The same procedure shall be applied to the removal of inadvertent tool marks in Ox. Line.)
8. If ~~eye penetrant~~ inspection (See Note 4) verifies that the crack has disappeared (and that the local tube condition meets requirements of Figure II, Detail "A"), repair the joint per Note 6.
9. If crack is not removed within the limits specified in Note 7, remove local section of Ox. Line as shown on Sheet 4,00 and install LDW280-16409 as per Notes 10 and subsequent.

GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714		
SIZE F	CODE IDENT NO. 26512	LDW 280-55[illegible]
SCALE		SHEET [illegible]

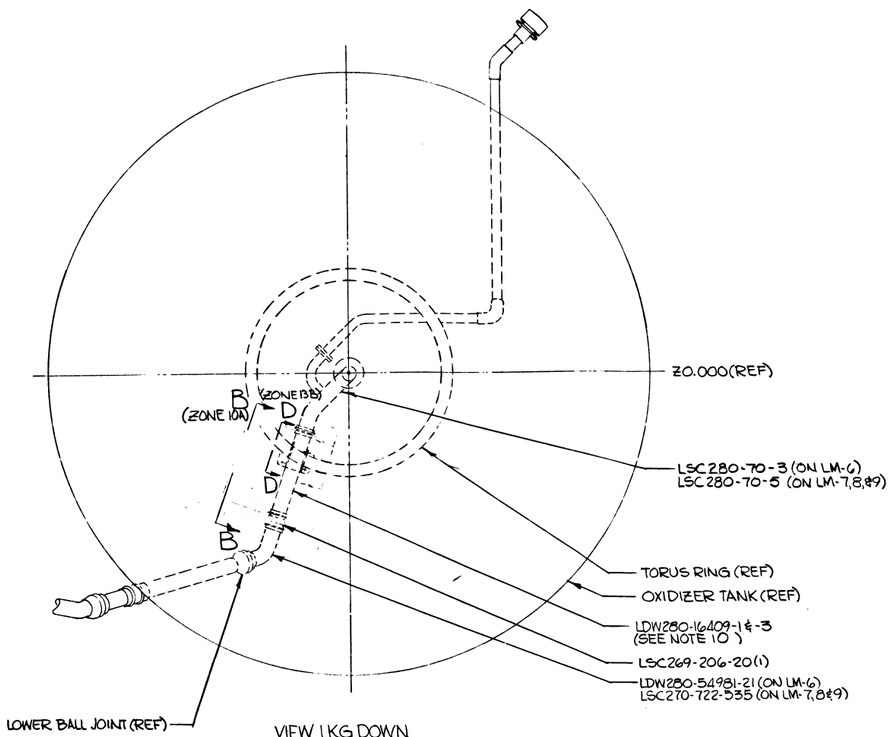
ENG 733 REV 547

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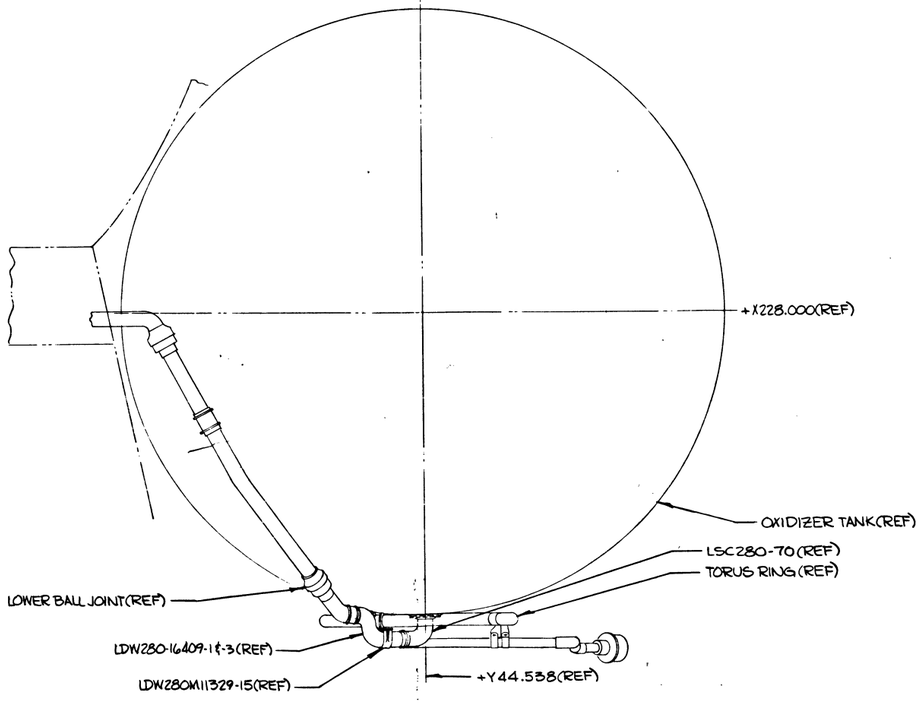
NAS 9-1100



SECT D-D
(ZONE 12C)



VIEW LKG DOWN
AT OXIDIZER
TANK



VIEW LKG FWD

NOTES (CONTINUED)

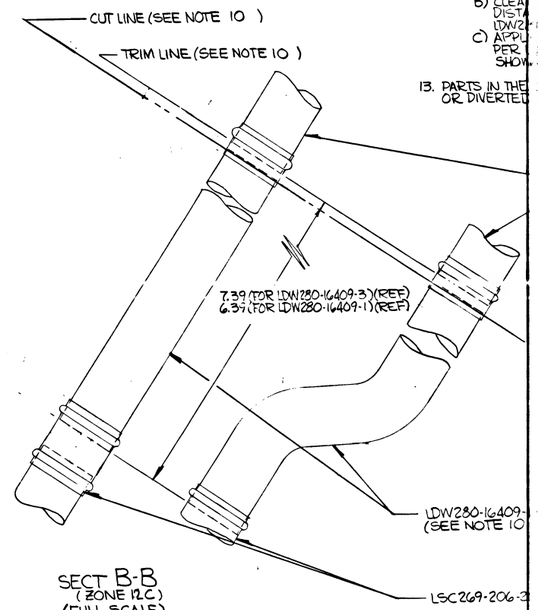
ALL INDUCTIO
LSP-14-630

10. TO REPLACE
FEED LINE
A) REMO
LDW2
ZONE
THE
B) PLUG
OXI
C) DET
ES
G39
LSC
D) FIT
THE
E) TR
F) IN
PE
G) IN
IN
H) IF
&
16
TH
TO
TO
I) IN
IN

11. SHIM MAT
PERMISS
& OXIDIZER

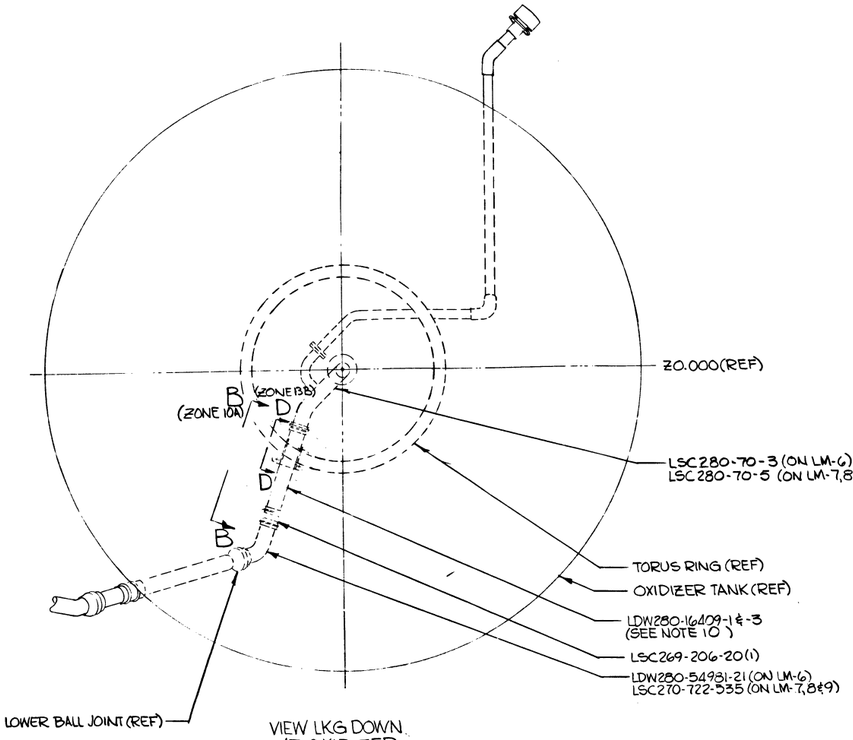
12. INSTALL LDW
A) DRE
WITH
MEAS
BRA
B) CLEA
DIST
LDW2
C) APPL
PER
SHOW

13. PARTS IN THE
OR DIVERTED

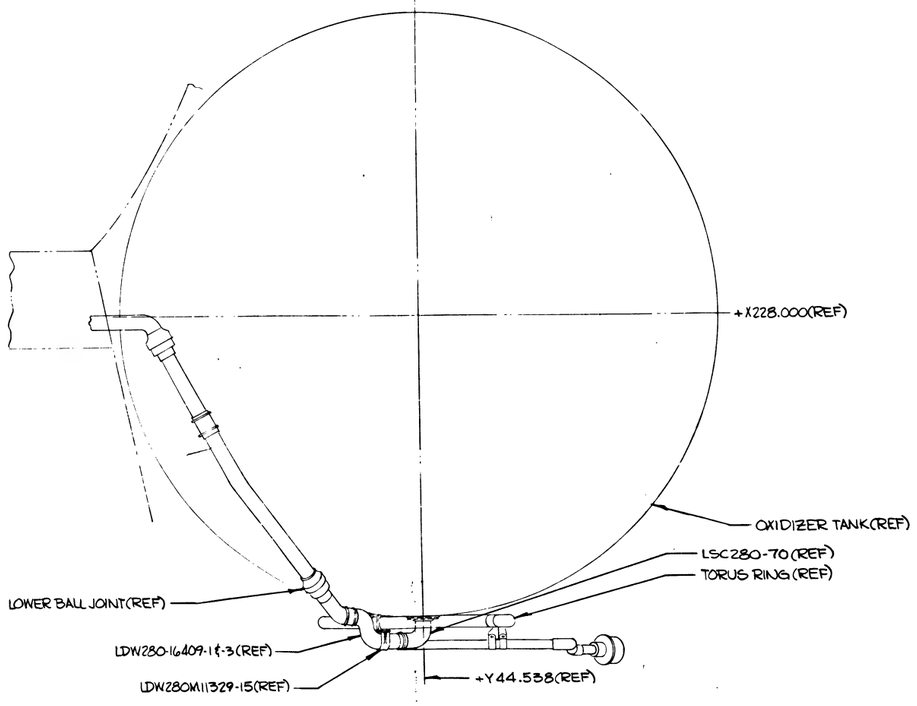


SECT B-B
(ZONE 12C)
(FULL SCALE)

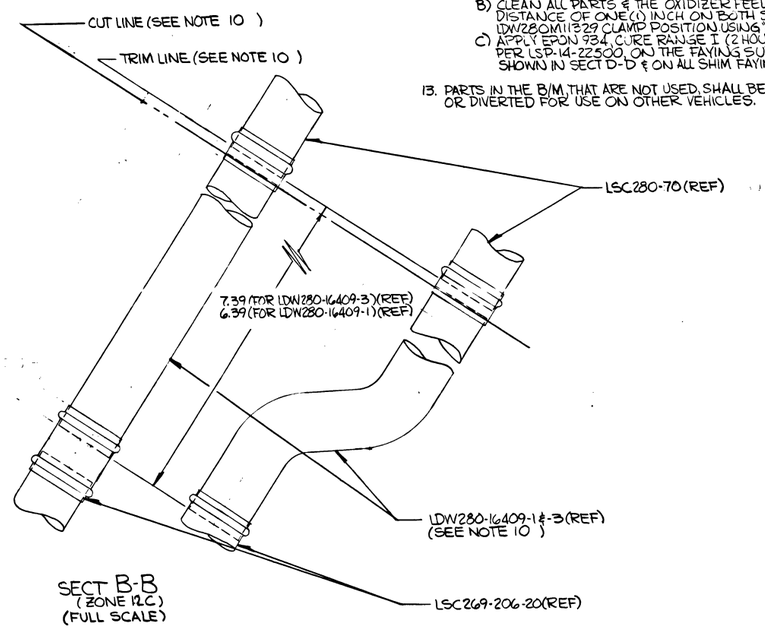
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VIEW LKG DOWN AT OXIDIZER TANK



VIEW LKG FWD



SECT B-B (ZONE 12C) (FULL SCALE)

NOTES (CONTINUED)

ALL INDUCTION BRAZING SHALL BE IN ACCORDANCE WITH LSP-14-6303.

10. TO REPLACE THE AFFECTED SECTION OF THE OXIDIZER FEED LINE PROCEED AS FOLLOWS:
    A) REMOVE THE FASTENERS THAT ATTACH THE LDW280M11329-13 CLAMP (SEE SECT AG-AG, SH 3.00, ZONE 4A) TO THE TORUS RING ASSY & REMOVE THE CLAMP.
    B) PLUCK THE LSC269-206-20 UNION FROM THE OXIDIZER FEED LINE. THE UNION IS LOCATED BETWEEN THE LOWER BALL JOINT & THE TANK.
    C) ESTABLISH A ROUGH CUTOFF LENGTH LESS THAN 6.39 INCHES FROM THE PLUCKED END OF LSC280-70. & CUTOFF THE LENGTH OF LSC280-70;
    D) FIT LDW280-16409-1 INTO PLACE & DETERMINE THE REQD INSERTION DEPTH AT EACH END;
    E) TRIM LSC 280-70 THE REQD FINISH LENGTH;
    F) INDUCTION BRAZE LDW280-16409-1 INTO PLACE PER LSP 14-6303;
    G) INDUCTION BRAZE A NEW LSC269-206-20 UNION INTO PLACE.
    H) IF BURN-THRU OCCURS DURING BRAZING REMOVE & DISCARD LDW280-16409-1 & INSTALL LDW280-16409-3 IN ITS PLACE. THE CORRESPONDING CUT & TRIM LENGTHS WILL BE ONE(1) INCH LONGER FOR LDW280-16409-3. REPEAT STEPS "B" THRU "G" TO INSTALL LDW280-16409-3.
    I) INSTALL THE LDW280M11329-15 CLAMP AS SHOWN IN SECT D-D, ZONE 12B.

11. SHIM MATL: MIL-S-22499, COMP 1, TYPE 1, CLASS II. NO PERMISSIBLE PRELOAD BETWEEN THE TORUS BRACKETS & OXIDIZER FEED LINE IS TO EXIST.

12. INSTALL LDW280M11493-11 AS FOLLOWS:
    A) DRY FIT LDW280M11493-11, MAINTAINING A SNUG FIT WITH THE OXIDIZER FEED LINE (LDW280-16409-1/-3). MEASURE THE GAPS(2) BETWEEN THE TORUS RING BRACKETS. SHIM AS REQD PER LPC280-53;
    B) CLEAN ALL PARTS & THE OXIDIZER FEED LINE FOR A DISTANCE OF ONE(1) INCH ON BOTH SIDES OF THE LDW280M11329 CLAMP POSITION USING "MEK".
    C) APPLY EPDN 934 CURE RANGE I (2 HOURS@150°F) PER LSP-14-22500 ON THE FAYING SURFACES SHOWN IN SECT D-D & ON ALL SHIM FAYING SURFACES.

13. PARTS IN THE B/M THAT ARE NOT USED SHALL BE SCRAPPED OR DIVERTED FOR USE ON OTHER VEHICLES.

02/02 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE, L. I., NEW YORK
SIZE | CODE IDENT NO. 26512 | LDW200-55010
SCALE 1/4 (1"=4") | SHEET 4.00

LDW200-55010 B
LDW200-55010 A

PRINT TRIM LINE
FULL SIZE SHEET AREA = 36 x 1.0 = 15.0 SQ FT
½ SIZE SHEET AREA (½ OF FULL) = 4.0 SQ FT
PRINTING INFO ONLY
DWG SIZE = A

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENG 32.1 REV 3-65 **ENGINEERING ORDER**

DWG NO.	EO NO.
LDW200-55010	A1
CONTROL INFO NO. LDW30B7844	

(REF SENTENCE OF PART A OF NOTE 6)

(WAS) MAINTAIN .032 NOMINAL THICKNESS BY WRAPPING OX. LINE WITH .032 STEEL SAFETY WIRE (MS20995C32) AS REQUIRED.

(S/B) MAINTAIN .032 NOMINAL THICKNESS BY WRAPPING (OR LAYING LENGTH WISE) OX LINE WITH .032 STEEL SAFETY WIRE (MS20995C32) AS REQUIRED.

LFM

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD 3982 PCG #10 (5)

REASON FOR EO: ALTERNATE METHOD — APOK 5/20/69

DESCRIPTION OF EO: REVISED NOTE 6 PART A - ADDED ALTERNATE (OR LAYING LENGTH WISE.)

GAEC EO RELEASE: W.I.S. 6/16/69; JK 5/20/69; 5/29/69

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM #435	LM-6(36)	
	THRU	LM-9(39)	

DRAWING CHANGE REQD: REVISE DWG ✓; RECORD EO

DISPOSITION OF PARTS: NOT REWORK; REQD SCRAP

APPROVED BY / DATE: VD1 5/16/69; SUPPORT; RELIAB GROUP; GROUP LEADER 5/16/69; STRESS GROUP; LIAISON ENGRG; PROJ ENGRG 5/29/69

PRIORITY: C

DRAWING TITLE: REINFORCEMENT - A/S, M/S, OR PROP LINE - REWORK OF LDW280-54001

DRAWING NO.: LDW200-55010

EO NO.: A1

5/9/69 ISSUED BY P. MARTELLO x86048 DOWLEY KSC

SECTION VD1 GROUP NO. 335 PL 25

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NAS 9-1100

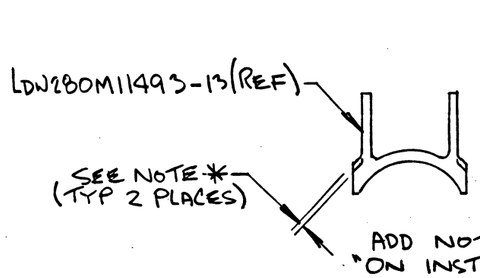
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200-55010		EO NO. A2
CONTROL INFO NO. LM-5-21798		

REVISE F/D AS SHOWN:



ADD NOTE * TO GENERAL NOTES:
"ON INSTL IT IS PERMISSIBLE TO TRIM LDW280M11493-13 UP TO .060 MAX TO INSURE PROPER NESTING WITH MATING PART."

* DENOTES NEXT APPLICABLE NOTE NUMBER.

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓LCD 3982 (5)

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
TO INSURE PROPER FIT OF MATING PARTS.	ADDED NOTE * TO GENERAL NOTES.	

MODEL	EFFECTIVITY			DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY							
	ET	GAEC UNIT NO.	SUB CONTR UNIT NO.	REVISE DWG	RECORD EO	REWORK	SCRAP	DATE			RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ. ENGRG
LM	LFM435	LM-6 (36)		✓		✓		6/10/69	VDI			6/5/69	5-25-69	5-25-69	6/10/69
		THRU										RH	CH		
		LM-9 (39)													

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C5	FITTING, INSTL ~ A/S ~ M/S TORUS SUPPORT ~ OX LINE	LDW200-55010	A2

ISSUED BY LIAISON A. WILSON X86755 5/25/69 SECTION VDI GROUP NO. 335 PL 25

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200-55010 | EO NO. A3

CONTROL INFO NO. LDW280B7894

ON-1 INSTL:
LDW280-12156-11 & -13 S/B LDW280-12156-1 (MATCHED SET)

LFM

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD 3982 PKG #10

REASON FOR EO: PARTS ARE A MATCHED SET

DESCRIPTION OF EO: ON-1 INSTL: LDW280-12156-1 MATCHED SET (WAS) LDW280-12156-11 & -13

(5)

GAEC EO RELEASE: 6-4-69

MODEL	EFFECTIVITY: ~~PROCURING ACTIVITY NO.~~	GAEC UNIT NO.	~~SUB-CONTR. UNIT NO.~~
LM	LFM#435	LM-6(36)	
LM	LFM#435 (THRU)	LM-9(39)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
✓ REVISE DWG	RECORD EO	NOT REQD REWORK	SCRAP	DATE	6/14/69			FDE/W 6-3-69	QR 6/4/69	6/5/69	6/6/69	
					VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGR	PROJ ENGR	~~CHIEF ENGR~~

PRIORITY: C

DRAWING TITLE: REINFORCEMENT-A/S-M/S OK PROP LINE-REWORK OF LDW280-54001

DRAWING NO.: LDW200-55010

EO NO.: A3

6-17-69 ISSUED BY PHIL MARTELLO x86048 SECTION VDI GROUP NO. 335 PL 25

01

NAS 9-1100

LDW200-55011

LFM

								LFM #435	LDW280-54001	LM-9(39)	1
								LFM #435	LDW280-54001	LM-8(38)	1
								LFM #435	LDW280-54001	LM-7(37)	1
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW200-55011-1		GAEC SCH NO.	

WORK PKG FUNCTION #110 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00	2.00	3.00	3.01	4.00	5.00				
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED	D	GRUMMAN REL INFO	
LAST DASH NO. USED	-1	PRIM NO.	JK(024)
			215 6IE-16-5/22/69

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
	LCD#3982

CONTRACT NO. NAS 9-1100 LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	MARTELLO M/M		
LAYOUT BY	—		
CHECKED BY	Szalewinski 5-21-69		
GEP LDR	[illegible] 5/19/69		
VDI	[illegible] 5/21/69		
STRUCT	[illegible]		
STRUCT	W/L 5/20/69	PROJ ENGR	[illegible] 5/19/69
MATERIALS	[illegible] 5-21-69	REL GROUP	[illegible] 5-22-69

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

REINFORCEMENT INSTL
ASCENT STAGE, MID-SECT FUEL PROP LINE
REWORK OF LDW280-54001 LFM#435

SIZE	CODE IDENT NO.	
B	26512	LDW200-55011

SCALE NONE SHEET 1.00 OF 6 (6)

ENG 77.1 12-66

CDR 5-19-69

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
2		AN737-TW56	E	CLAMP	GOVT STD						
A/R		MS20995C32		WIRE, SAFETY	GOVT STD						
2		LSC269-206-20		UNION	SEE NOTE 14						
4		MS21042L3		NUT	GOVT STD						
4		AN960C10L		WASHER	GOVT STD						
4		GB511J-3-5		BOLT	GRUMMAN STD						
1		LDW280-16410-1		TUBE	SEE DWG						
1		LDW280-12157-13		REINFORCEMENT							
1		LDW280-12157-11		REINFORCEMENT							
1		LDW280M11491-13		FITTING							
1		LDW280M11491-11									
1		LDW280M11329-15									
1		LDW280M11329-13		FITTING	SEE DWG						
		LDW200-55011-1	E	REINF INSTL						NONE	
-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
FP	ZYGLO	MIL-I-6866

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55011

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

THE FOLLOWING REWORK PROCEDURE SHALL BE PERFORMED IN THE SEQUENCE INDICATED:

1. REMOVE LDW280M11329-11 BRACKET BY REMOVING ATTACHING HARDWARE AND GRINDING WELD (AS SHOWN IN SECTION AM-AM, ZONE 5A), TAKING ALL POSSIBLE CARE TO MINIMIZE REMOVAL OF MATERIAL FROM PROPULSION FEED LINE. (SEE DETAIL "A", ZONE 7A)
2. REMOVE LDW280M11491-11 SADDLE BY BREAKING BOND BETWEEN SADDLE AND BOLTED LUGS ON TORUS, AND BETWEEN SADDLE AND FUEL PROPULSION FEED LINE. (NOTE: CARE MUST BE EXERCISED TO AVOID DAMAGE TO TORUS AND/OR BOLTED LUGS ON TORUS, AND/OR THE FUEL PROPULSION FEED LINE.)
3. GRIND AND POLISH WITH 400 GRIT THE REMAINING WELDMENT TO WITHIN .005 OF BASIC O.D. OF LINE AS SHOWN IN FIGURE I OF DETAIL "A" (ZONE 7A).
4. ZYGLO INSPECT WELDMENT AREA OF FUEL LINE PER MIL-I-6866.
5. INSPECT (SEE NOTE 4) THE AREA BELOW TORUS OF BOLTED LUGS ON TORUS.
6. IF NO CRACKS ARE DETECTED IN FUEL LINE, REPAIR JOINT AS FOLLOWS: (SEE SECT. B-B, ZONE 4F)
   - A. BOND LDW280-12157-11 & -13 (SEE SECT. B-B) TO FUEL LINE AS SHOWN (NOTE -11 & -13 TO BE TRIMMED TO CLEAR DRAIN LINE) USING EPON 934 PER LSP-14-22500 CURE RANGE I. MAINTAIN .032 NOMINAL BOND THICKNESS BY WRAPPING OR LAYING LENGTHWISE ON FUEL LINE WITH .032 STEEL SAFETY WIRE (MS20995C32) AS REQUIRED. BOND SHALL BE CURED BEFORE PROCEDING TO STEP 6B.

     NOTE: (A) REMOVE BY MECHANICAL METHODS AS MUCH CURED LIQUID SHIM MATERIAL AS PRACTICABLE.
     (B) RESIDUAL CURED LIQUID SHIM MATERIAL THAT IS FIRMLY ADHERED TO LINE SURFACES THAT CANNOT BE REMOVED BY MECHANICAL METHODS SHALL BE ALLOWED TO REMAIN PROVIDED HEIGHT OF SUCH RESIDUE DOES NOT EXCEED .015 INCH.
     (C) SURFACES OF LINES TO BE BONDED SHALL BE LIGHTLY ABRADED FOLLOWED BY A SOLVENT WIPE WITH METHYL ETHYL KETONE.
     (D) LINES NOT BONDED WITHIN FOUR (4) HOURS OF CLEANING SHALL BE RECLEANED.
   - B. INSTALL LDW280M11491-13 SADDLE AS SHOWN IN SECTION B-B (ZONE 4F) AND AS FOLLOWS:
     (A) PREFIT LDW280M11491-13 MAINTAINING A SNUG FIT WITH O.D. OF CLAM SHELLS (LDW280-12157-11). MEASURE GAPS (2) BETWEEN LDW280M11491-13 AND SUPPORT STRUCTURE AND SHIM AS REQUIRED PER LPC280-53.
   - C. INSTALL LDW280M11329-13 BRACKET AS SHOWN IN SECTION B-B (ZONE 4F) AS FOLLOWS:
     (A) PREFIT LDW280M11329-13 MAINTAINING A SNUG FIT WITH O.D. OF CLAM SHELL (LDW280-12157-13).
     (B) MEASURE GAPS (2) BETWEEN LDW280M11329-13 AND LDW280M11491-13 AND SHIM AS REQUIRED PER LPC280-53, USING MATL 2024-T3 (QQ-A-250/4) FINISH TG (WITH SHIMS IN PLACE) HOLD LDW280M11329-13, SHIMS & LDW280M11491-13 TO FUEL LINE & DRILL THROUGH WITH .1902-.196 (4) HOLES, LOCATED FROM EXISTING HOLES.)
   - D. PRIOR TO FINAL ASSEMBLY, SOLVENT CLEAN ALL PARTS INCLUDING PREVIOUSLY REWORKED FUEL LINE FOR A LENGTH OF ONE INCH ON EITHER SIDE OF PART USING METHYL ETHYL KETONE (MEK).
   - E. ON COMPLETION OF ABOVE STEPS, APPLY EPON 934 TO FAYING SURFACES OF LDW280M11491-13, LDW280M11329-13, FUEL LINE AND FAYING SURFACES OF SHIMS AND SUPPORT STRUCTURE, ALSO FILL CREVICES BETWEEN LDW280M11491-13 AND FUEL LINE. FOR EPON 934 USE CURE RANGE I, (2 HOURS AT 150°) PER LSP-14-22500.)
   - F. INSTALL GB511J-3-5(4) BOLT, AN960C10L (4) WASHER AND MS21042L3 (4) NUT. APPLY MAXIMUM TORQUE 10-15 INCH POUNDS OVER THE LOCKING FEATURE OF THE NUT AFTER THE EPON (NOTE 6E) HAS CURED.
   - G. NO PERMISSIBLE PRELOAD BETWEEN FEED LINE ASSEMBLY AND TORUS RING ASSEMBLY.
7. IF A CRACK INDICATION IS DETECTED IN FUEL LINE, GRIND AND POLISH THE CRACK AREA UNTIL THE CRACK INDICATIONS DISAPPEARS. VERIFY THAT THE DEPTH OF GROUND AND POLISHED AREA IS WITHIN THE TOLERANCE SHOWN IN FIGURE II OF DETAIL "A" (ZONE 7A). (NOTE: THE SAME PROCEDURE SHALL BE APPLIED TO THE REMOVAL OF INADVERTENT TOOL MARKS IN FUEL LINE.)
8. IF INSPECTION (SEE NOTE 4) VERIFIES THAT THE CRACK HAS DISAPPEARED (AND THAT THE LOCAL TUBE CONDITION MEETS REQUIREMENTS OF FIGURE II, DETAIL "A"), REPAIR THE JOINT PER NOTE 6.
9. IF CRACK IS NOT REMOVED WITHIN THE LIMITS SPECIFIED IN NOTE 7, REMOVE LOCAL SECTION OF FUEL LINE AS SHOWN IN SHEET 5.00 AND INSTALL LDW280-16410-1 AS PER NOTES 10 AND SUBSEQUENT.
10. TO REPLACE THE AFFECTED SECTION OF THE FUEL FEED LINE PROCEED AS FOLLOWS:
    - A. REPEAT REMOVAL SEQUENCE OF NOTE 2.
    - B. REMOVE HARDWARE CONNECTING FILL AND DRAIN LINE TO LSC270-722-143 FUEL LINE.
    - C. LOCATE CUT LINE ON LSC270-722-143 WITH LDW280-16410-1 ASSEMBLY ON INSTALLATION.
    - D. PLUCK THE LSC269-206-20 UNION FROM THE FUEL FEED LINE. (THE UNION IS LOCATED BETWEEN THE TORUS RING AND THE BRACKET).
    - E. CUT LSC270-722-143 AND TRIM TO ACCEPT LSC269-206-20 BRAZE FITTING ON BOTH ENDS OF REPLACEMENT LINE LDW280-16410-1.

ENG 7.1 6-64

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW200-55011	
SCALE ~		SHEET 3.00	

01

NAS 9-1100

10. (CONTINUED)
    F. INDUCTION BRAZE PER LSP-14-6303.
    G. RE-INSTALL FILL AND DRAIN LINE TO REPLACEMENT LINE LDW280-16410-1. (SEE NOTES 40, 41 & 42 ON LDW280-54981)

11. CLEAN ALL PARTS AND THE FUEL FEED LINE FOR A DISTANCE OF ONE INCH ON BOTH SIDES OF THE LDW280M11329 CLAMP POSITION USING "MEK".

12. ASSEMBLY PROCEDURE FOR LDW280M11491-11 TO THE FEEDLINE ASSEMBLY AND TORUS RING ASSEMBLY (LDW280-54202):
    A) INSTALL LDW280M11329-15 AS SHOWN IN SECT. D-D (SH. 5.00). PICK UP EXISTING HOLE PATTERN FROM TORUS RING ASSEMBLY. DRILL(4) HOLES (.190 - .196) IN LDW280M11491-11 AND LDW280M11329-15 USING LDW280-54202 AS A DRILL TEMPLATE.
    B) MEASURE GAPS (2) FROM LDW280M11491-11 TO LDW280M11329-15 AND LDW280-54202 (USING TEMPORARY HARDWARE TO INSTALL) SO THAT THE SHIM THICKNESSES CAN BE DETERMINED.
    C) SHIM AS REQUIRED PER LPC280-53 USING MATERIAL 2024-T3 (QQ-A-250/4 FINISH 76). BOND EPOXY AREA USING EPON 934 PER LSP-14-22500. (CURE RANGE I - 2 HOURS AT 150°F.)
    D) INSTALL GB511J-3-5 (4) BOLT; AN960C10L (4) WASHER: AND MS21042L3 (4) NUT. APPLY MAXIMUM TORQUE 10-15 INCH POUNDS OVER THE LOCKING FEATURE OF THE NUT AFTER THE EPON IS CURED.
    E) NO PERMISSIBLE PRELOAD BETWEEN FEED LINE ASSEMBLY AND TORUS RING ASSEMBLY.

13. PARTS IN THE B/M, THAT ARE NOT USED, SHALL BE SCRAPPED OR DIVERTED FOR USE ON OTHER VEHICLES.

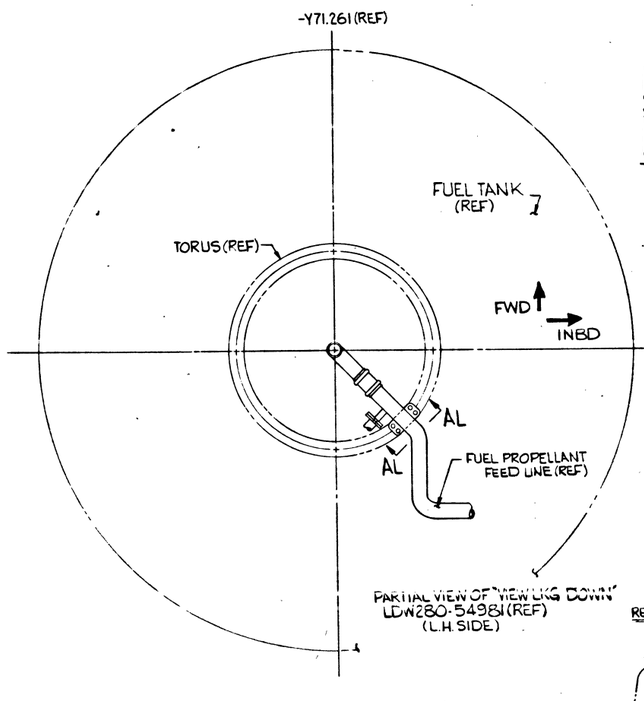
14. VENDOR ITEM - SEE SPECIFICATION OR SOURCE CONTROL DRAWING BEFORE ORDERING.

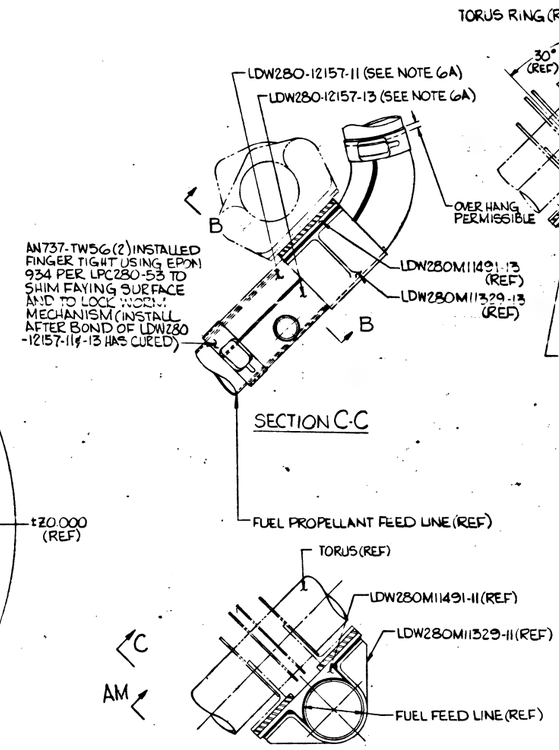
GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW200-55011	
SCALE ~		SHEET 3.01	D

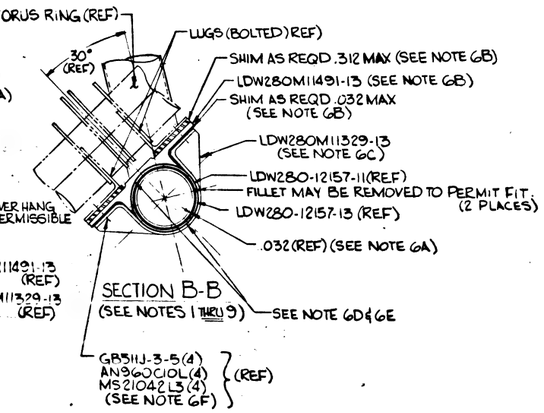
EMG 73.1 6-64

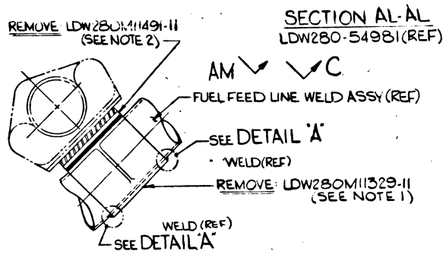
NAS 9-1100

SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH MIL STD-130	
AND ALL OTHER MARKINGS IN REGION MARKED ☐ USE BOTH SIDES IF NECESSARY	PART NUMBER
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL RIVETS IN ACCORDANCE WITH	









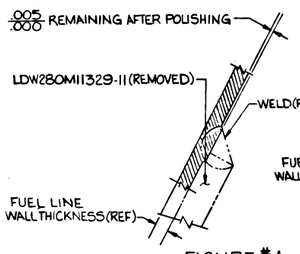


FIGURE #1

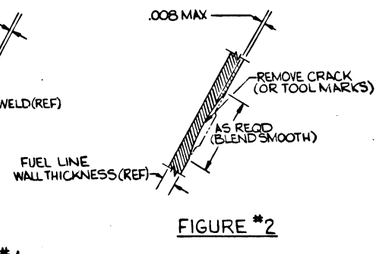


FIGURE #2

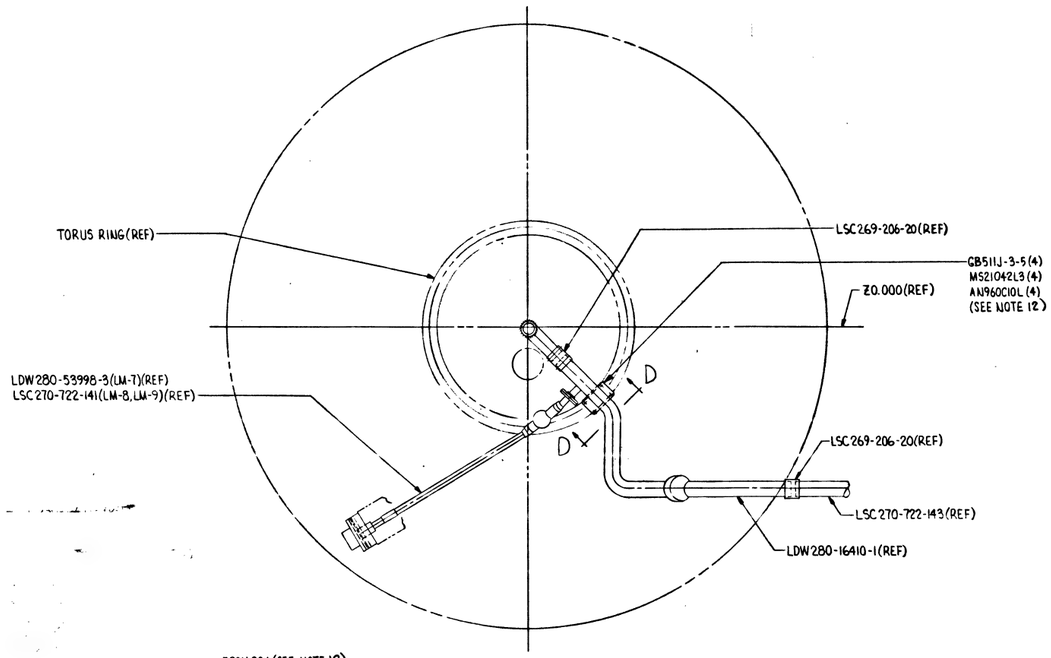
DETAIL A
SCALE: 10 x SIZE
(TYP 2 PLACES)

LDW200-55011-1 INSTL

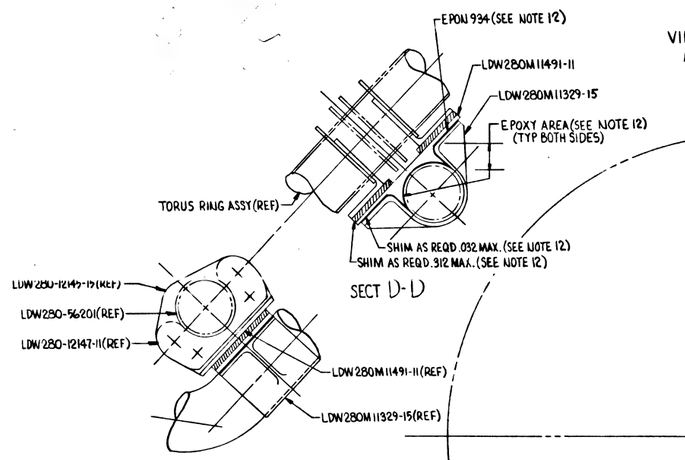
.01 NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714			
SIZE F	CODE IDENT NO 26512	LDW200-55011	
SCALE 3/4 SIZE(W)		SHEET 2 OF 30	

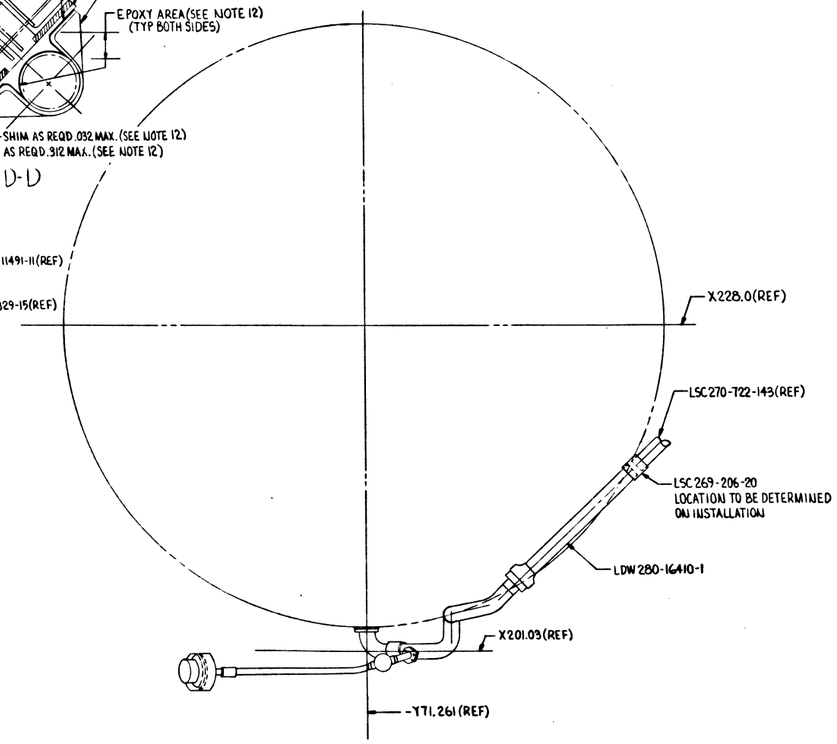
LDW200-55011



VIEW LOOKING DOWN
AT FUEL TANK



SECT D-D



VIEW LOOKING FWD

01

NAS 9-1100

FOR PARTS LIST, USAGE DATA, AND DWG SH STATUS, SEE DOCUMENT SAME NUMBER PREFIXED PL

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES			CONTRACT NO.	GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714	
LINEAR TOL	XX	± .03	DRAWN BY		
	XXX	± .010	LAYOUT BY		
ANGULAR TOL		± 0°30'	CHECKED BY		
TOL ON LOFTED DELINEATIONS IS			GR LEADER		
			REL GROUP		
			PROJ ENGR		
			CONT APPD	SIZE E	CODE IDENT NO. 26512 LDW200-55011
				SCALE 1/4	SHEET 5 OF

1 DISTR LIST #

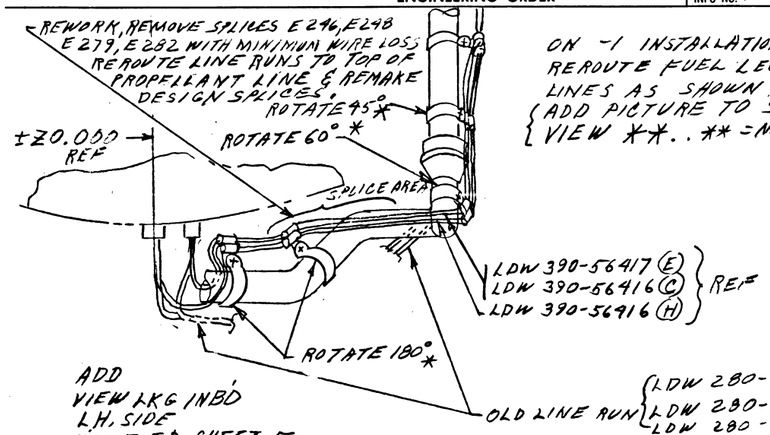
LDW 280-55011

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200-55011		EO NO. A1
CONTROL INFO NO. LM 5- 21818		



ON -1 INSTALLATION
REROUTE FUEL LEVEL INDICATOR
LINES AS SHOWN
{ADD PICTURE TO SHEET 5
{VIEW **. . ** = NEXT AVAILABLE LETTER.

* INCORPORATE PICTURE ONLY, DESIRE CALLOUT FOR DRAFTSMANS USE.

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	X	LED 3782	(5)

REASON FOR EO
TO RELIEVE TIGHT WIRE RUN & CHAFE CONDITION. [REF PIRR J1912] DUE TO REWORK PER LDW200-55011

DESCRIPTION OF EO
ON -1
REROUTED FUEL INDICATOR LINES (ELECTRICAL) LOCALLY.

GAEC EO RELEASE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 435	LM 7 (37)	
	LFM 435	LM 8 (39)	
LM	LFM 435	LM 9 (39)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		✓	

APPROVED BY					FOR	RH	CR		
DATE	6/11/69				6/11/69	6.6.69	6/6/69	6/12/69	6.6.69
6/6/69	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG		

PRIORITY: C

DRAWING TITLE: REINFORCEMENT INSTL-A/S MID-SECT. FUEL PROP LINE, REWORK OF LDW280-59001 LFM 435

DRAWING NO. LDW200-55011

EO NO. A1

ISSUED BY LIAISON J. PAULSEN X86755 SECTION VDI. GROUP NO. 335 PL 25

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO.	LDW200-55011		EO NO.	A2
CONTROL INFO NO.	LDW280B7895			

ON-1 INSTL:
LDW280-12157-11&-13 S/B LDW280-12157-1 (MATCHED SET)

LFM

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓ LCD 3982 PKG #10

REASON FOR EO: PARTS ARE A MATCHED SET

DESCRIPTION OF EO: ON-1 INSTL: LDW280-12157-1 MATCHED SET (WAS) LDW280-12157-11&-13

GAEC 4178 (5)
@ EO RELEASE 6/6/69

MODEL	EFFECTIVITY: ~~PROCURING ACTIVITY NO.~~	GAEC UNIT NO.	~~SUB CONTR UNIT NO.~~
LM	LFM #435	LM-7(37)	
LM	LFM #435 (THRU)	LM-9(39)	

DRAWING CHANGE REQD: ✓ REVISE DWG | RECORD EO
DISPOSITION OF PARTS: NOT REWORK | REQD SCRAP
PRIORITY: C

APPROVED BY				EDP(M)			
DATE				6-3-69			
	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
						6/5/69	6-6-69

DRAWING TITLE: REINFORCEMENT-A/S-M/S, FUEL PROP LINE-REWORK OF LDW280-54001
DRAWING NO.: LDW200-55011
EO NO.: A2

ISSUED BY PHIL MARTELLO X86048 SECTION VDI GROUP NO. 335 PL 25

01

NAS 9-1100

LDW200-55012

LFM

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO. LDW200-55012-2				PART NO. LDW200-55012-1		GAEC SCH NO.	
				LFM 426	LDW280-54001	LM7(39)	1	LFM 426	LDW280-54001	LM7(37)	1
								LFM 426	LDW280-54001	LM5(55)	1

WORK PACKAGE FUNCTIONAL #15

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH											
SHEET	1.00		2.00	3.00							
REV											
SHEET											
REV											
SHEET											
REV											

LAST SECT LTR USED	—
LAST DASH NO. USED	-101

GRUMMAN REL INFO: PRIM NO. JK(024) 463 11IE-16 5/22/69

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES	
ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
	LCD3980

CONTRACT NO.	NAS9-1100	LINE ITEM	9
DRAWN BY	S. SCIARROTTA		
LAYOUT BY	J. PAULICA		
CHECKED BY	O. Jaus 3-21-69		
GRP. LDR.	J. Peterson 5/21/69		
PROP	Wallace Stahl		
STRUCT			
V. D. I.		PROJ ENGR	
		REL GROUP	5/21/69

DOCUMENTATION TYPE II (5)

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

EXPLOSIVE VALVE-REWORK INSTL- APS PRESS. MODULE
(REWORK OF LDW270-54201-LFM 426)

SIZE	CODE IDENT NO.	
B	26512	LDW200-55012

SCALE NONE SHEET 1.00 OF 2

ENG 77.1 12-65

01 NAS 9-1100

L			2	2				LSC260-205-8	E	CAP	SEE NOTE #1										
L			3	3				LSC269-204-8	E	TEE	↕										
L			1	1				LSC269-231-2	E	CROSS	↕										
L			2	2				LSC270-819-9	S	EXPLOSIVE VALVE	SEE NOTE #1										
L				2				LDW280-16000-719ASH-8	E	TUBE	SEE DWG										
L			2					LDW280-16000-714ASH-8	E	TUBE	SEE DWG										
					4	4		GB511J-3-14	E	BOLT	GROMMAN STD										
					4	4		AN960C10L	E	WASHER	STD PART										
					4	4		MS21043-3	E	NUT	STD PART										
L			2	2				LDW200-55012-101	E	TUBE	CRES TUB.	LSM-14-1001	304L 1/8 HD	.500 O.D. x .016W	NONE	NONE					
K					1			-12	S	EXPLOSIVE VALVE	↕	ASSY (OX)			NOTE 2	↕					
K						1		-11	S	EXPLOSIVE VALVE	↕	ASSY (FUEL)			↕	↕					
K								-2	E	EXPLOSIVE VALVE REWORK INSTL (OX)											
K								LDW200-55012-1	E	EXPLOSIVE VALVE REWORK INSTL (FUEL)					NOTE 2	NONE					
			-12	-11	-2	-1															
QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE				

CLEANLINESS LEVEL PER LSP-14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : LPC19-2 (GAEC) LPC19-3 (VENDOR)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

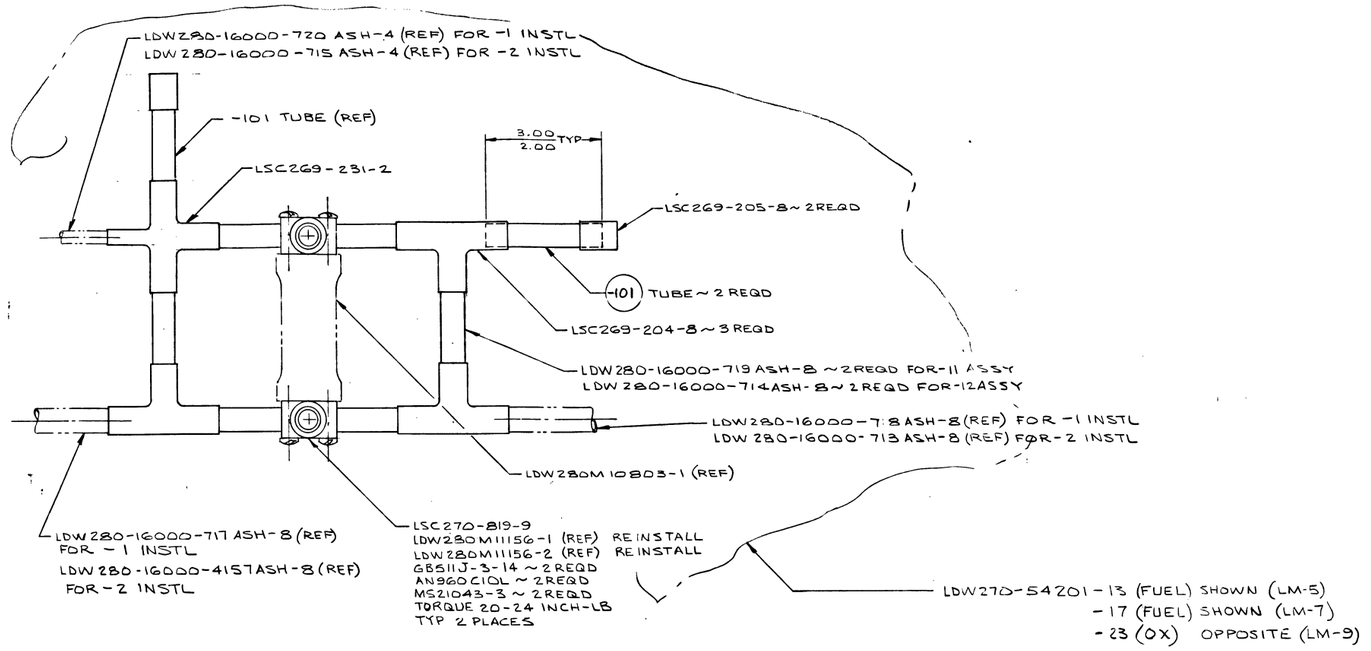
SIZE	CODE IDENT NO.	
B	26512	LDW200-55012

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



-1 EXPLOSIVE VALVE REWORK INSTL	(FUEL) SHOWN
-11 EXPLOSIVE VALVE ASSY	(FUEL) SHOWN
-2 EXPLOSIVE VALVE REWORK INSTL	(OX) OPP.
-12 EXPLOSIVE VALVE ASSY	(OX) OPP.

NOTE:
1. COMMERCIAL PART - SEE SPECIFICATION DWG. BEFORE ORDERING.
2. INDUCTION BRAZING OF FITTINGS SHALL BE IN ACCORDANCE WITH LSP-14-6303.
3. MANUFACTURE -11 & -12 ASSYS USING LDW280-54205-1 & -3 RESPECTIVELY AS ASSEMBLE FIXTURES LOCATE LSC270-819-9 VALVES AS SHOWN.
4. THE FOLLOWING MFG. PROCEDURES SHALL BE USED (FOR REF ONLY)

VEHICLE	MP No.	ACTION	RM No
LM5 (35)	MP-0111	REMOVES	RM 0298
	MP-0112	INSTALLS	
LM7 (37)	MP-0117	REMOVES	RM0304
	MP-0118	INSTALLS	
LM9 (39)	MP-0129	REMOVES	RM 0305
	MP-0130	INSTALLS	

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I. NEW YORK
SIZE | CODE IDENT NO. 26512 | LDW200-55012
SCALE | SHEET 3.00

LDW200-55012

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65 **ENGINEERING ORDER**

DWG. NO. LDW200-55012 | EO NO. A1
CONTROL INFO NO. LM 270-1919

CREATE -1-1 FOR LM7(37) & LFM426 SAME AS -1 EXCEPT

CREATE -11-1 SAME AS -11 EXCEPT
LSC270-819-9-1 WAS LSC270-819-9

ON -12
LSC270-819-9-1 WAS LSC270-819-9

RESTRICT -1 TO LM5(35)

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCD 3980 (5)

REASON FOR EO: PRECLUDE INSTL OF INTERNAL BRAZED EXPLOSIVE VALVE

DESCRIPTION OF EO: "NOTED"

GAEC EO RELEASE: 6/7/69

MODEL	EFFECTIVITY: PRECEDING ACTIVITY NO. EI	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 426	LM 7(37)	
LM	LFM426	LM9(39)	

DRAWING CHANGE REQD: ✓ REVISE DWG; RECORD EO
DISPOSITION OF PARTS: ✓ REWORK; SCRAP

APPROVED BY								
DATE	6/11/69							6/11/69
	PROP	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY: C

DRAWING TITLE: EXPLOSIVE VALVE REWORK INSTL (REWORK OF LDW200-55024 -LFM426)

DRAWING NO.: LDW200-55012

EO NO.: A1

ISSUED BY J. PAVLICA X1471 SECTION LM PROPULSION GROUP NO. 270 PL 25

001 NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200-55012 | EO NO. A2

CONTROL INFO NO. LM270-1924

THIS EO CANCELS EO A1
IN ITS ENTIRETY

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCO 3380 AK 6/14 (5)
REASON FOR EO: ELIMINATE SCHEDULE IMPACT			DESCRIPTION OF EO: 7. CANCELLED EO A1

GAEC EO RELEASE: SB 6/14 JK 6/21/69 RB 6/21/69 6/21/69

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO. EJ	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 426	LM7 (37)	
LM	LFM 426	LM9 (39)	

DRAWING CHANGE REQD: ✓ REVISE DWG | RECORD EO | DISPOSITION OF PARTS: ✓ REWORK | SCRAP

PRIORITY: C

DRAWING TITLE: EXPLOSIVE VALVE REWORK INSTL AB (REVISION OF LDW200-55012 - LFM426)

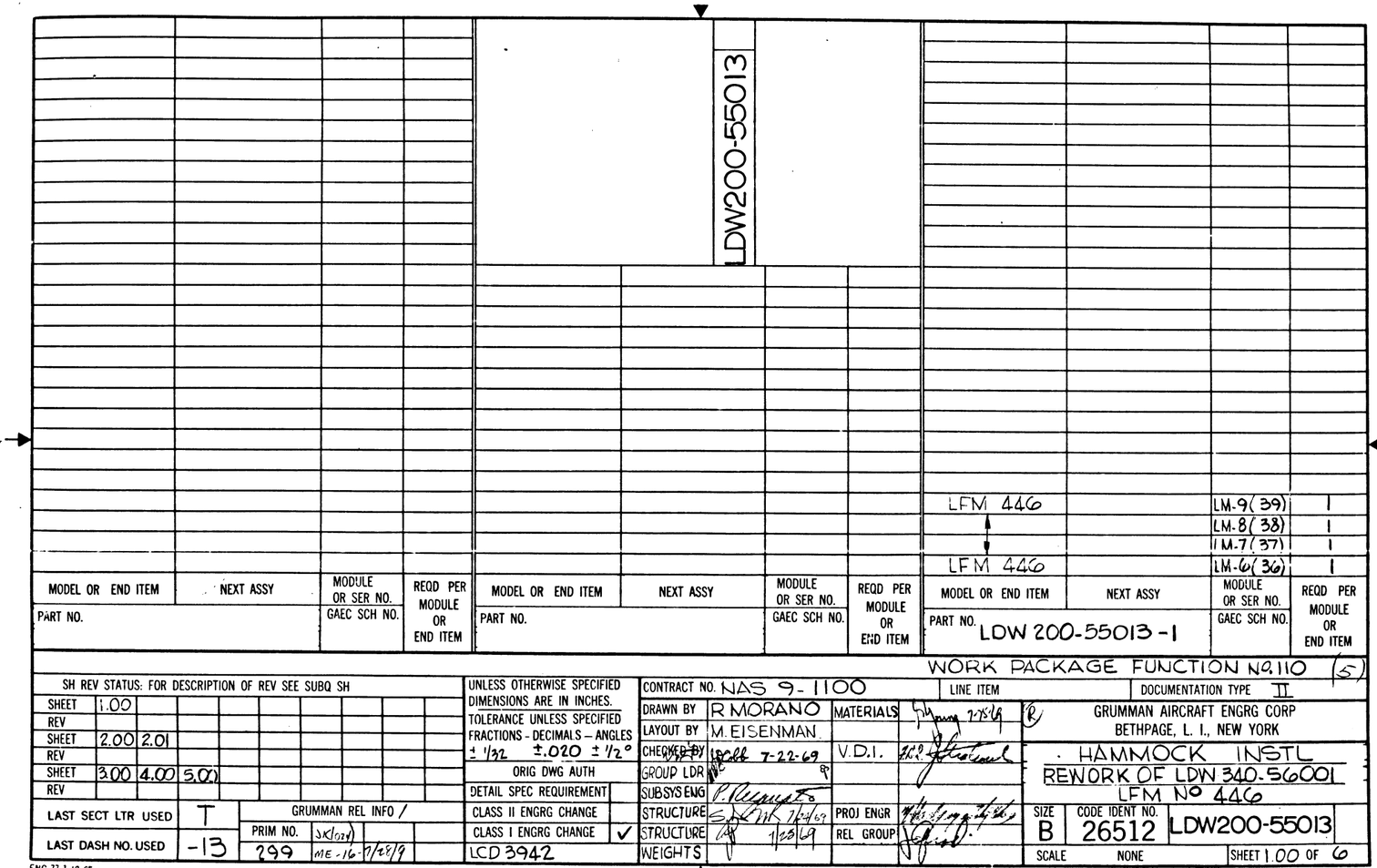
APPROVED BY	RB			JK			RB	
DATE	6/21/69			6/14/69			6/21/69	6/21/69
	PROD	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	QUAL

DRAWING NO. LDW200-55012 EO NO. A2

ISSUED BY J. PAVLICA 11971 SECTION LM PROPULSION GROUP NO. 270 PL 25

01

NAS 9-1100



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW 200-55013-1	LFM 446	LM-9(39)	1
		LM-8(38)	1
		LM-7(37)	1
	LFM 446	LM-6(36)	1

WORK PACKAGE FUNCTION NO. 110 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00									
REV										
SHEET	2.00	2.01								
REV										
SHEET	3.00	4.00	5.00							
REV										

LAST SECT LTR USED	T	GRUMMAN REL INFO /	
LAST DASH NO. USED	-13	PRIM NO.	299
			ME-16-7/28/69

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ±.020 ± 1/2°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 3942	

CONTRACT NO. NAS 9-1100		LINE ITEM	DOCUMENTATION TYPE II
DRAWN BY	R MORANO	MATERIALS	GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE, L. I., NEW YORK
LAYOUT BY	M. EISENMAN		
CHECKED BY	7-22-69	V.D.I.	HAMMOCK INSTL REWORK OF LDW 340-56001 LFM Nº 446
GROUP LDR			
SUBSYS ENG			
STRUCTURE	7/24/69	PROJ ENGR	SIZE B / CODE IDENT NO. 26512 / LDW200-55013
STRUCTURE	7/25/69	REL GROUP	SCALE NONE / SHEET 1.00 OF 6
WEIGHTS			

ENG 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
2		LDW340M11433-1	E	HOOK ASSY	SEE DWG						15B 17B
1		LDW340M11432-13		EYE BOLT							10B
2		LDW340M11432-11		EYE BOLT							27B 30B
2		LDW340M11430-11		EYE BOLT							24D 27D
2		LDW340-11675-19		PLATE							15C
2		LDW340-11675-17		ANCHOR							17C 12C 13C
1		LDW340-11675-15		PLATE							13C
1		LDW340-11675-1[illegible]		CLIP							15B
1		LDW340-11675-13		CLIP							17B
1		LDW340-11675-11		EYE BOLT							13C
1		LDW340-11366-3		STRAP ASSY							16C
1		LDW340-11366-1		WEB ASSY							16C
1		LDW340-56272-3		HAMMOCK ASSY							4A
1		LDW340-56272-1		HAMMOCK ASSY	SEE DWG						4A
A/R		LDW200-55013-13		ACLAR	SEE NOTE 4				NONE	NONE	14D
A/R		-11		WEBBING	SEE NOTE 3				NONE	NONE	14D
-1		LDW200-55013-1	E	HAMMOCK INSTL.					NONE	NONE	5A

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55013

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
ALT		GT534B-3	E	THREAD	GRUMMAN STD	SEE NOTE 6					
A/R		GT534B-2		THREAD		SEE NOTE 6					
3		GN510C1032		NUT							
3		GN510CT832		NUT							
1		GN510CT42B		NUT							
1		GB511J08-4		BOLT	GRUMMAN STD						
2		NAS1221-08-10P		SCREW	IND STD						
1		NAS674V1D		BOLT	IND STD						
A/R		MS20470AD5		RIVET	GOVT STD						
A/R		MS20470AD4		RIVET							
A/R		MS20426AD3		RIVET							
3		AN509DD8R4		SCREW							
1		AN960416L		WASHER							
6		AN960D10L		WASHER							
3		AN960D8	E	WASHER	GOVT STD						
-1											

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

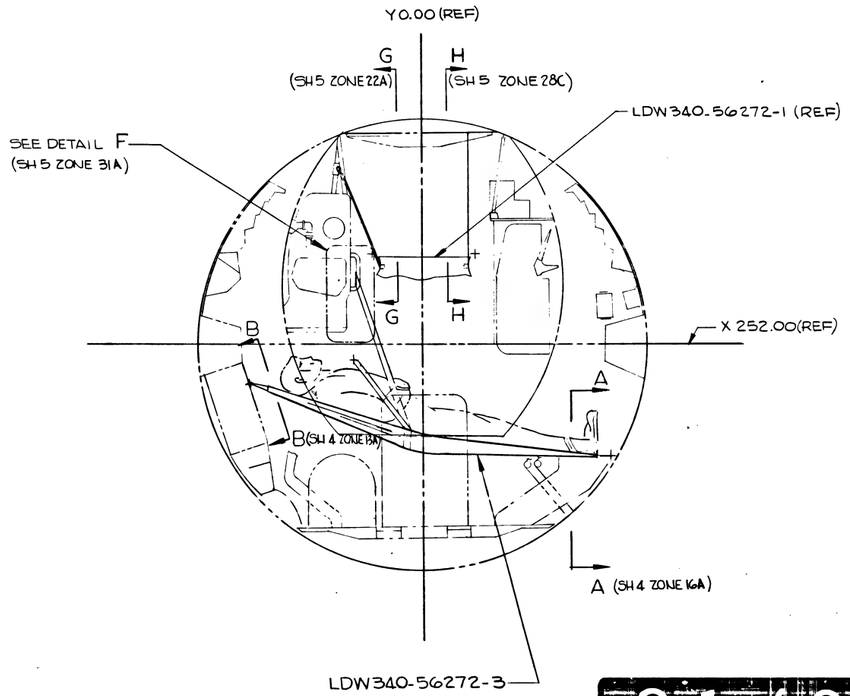
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55013

SCALE NONE SHEET 2.01

ENG 77.2 7-65



01702 NAS 9-1100

LDW200-55013-1 INSTL.

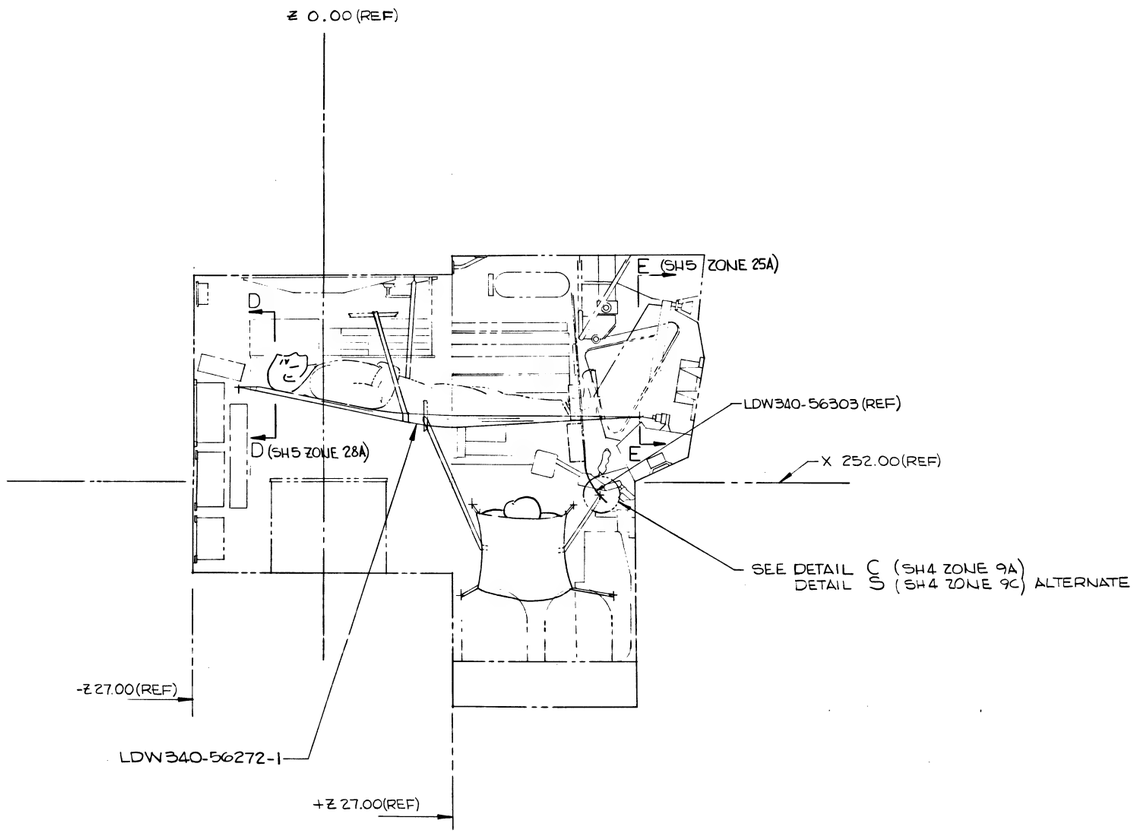
VIEW LOOKING AFT

CODE IDENT NO.	DWG NO.	SHEET
26512	LDW200-55013	3

FRAME 1 FRAME 2

NOTES:

1. STITCHING TO BE IN ACCORDANCE WITH FED STD 751 TYP 301, 6-11 STITCHES PER INCH. ALL STITCHING TO BE BACK STITCHED A MIN OF 3/8 TO 1/2 INCH.
2. DIMENSIONAL TOLERANCES
   .125 TO .750 ± .063
   .750 & UP ± .125
3. -11 MAY BE PURCHASED FROM HAVES INDUSTRIES INC. SUMMIT, NEW JERSEY (CODE IDENT 06973) TEFLON BETA FIBER WEBBING X178WB.
4. -13 PURCHASE IN ACCORDANCE WITH L3M-14-4055 TYPE I 5MIL ACLAR 33C.
5. LAYUP TO BE (2) LAYERS OF -11, (2) LAYERS OF -13.
6. GT534B-3 MAY BE USED AS AN ALTERNATE FOR GT534B-2.



-1 INSTL.

VIEW LOOKING OUTBOARD L H SIDE

02402 NAS 9-1100

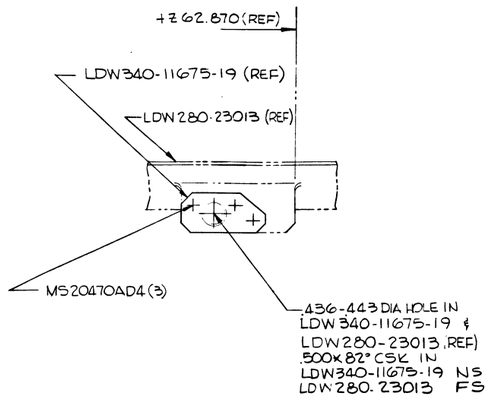
GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
	26512	LDW200-55013
SCALE 1/10		SHEET 3.00

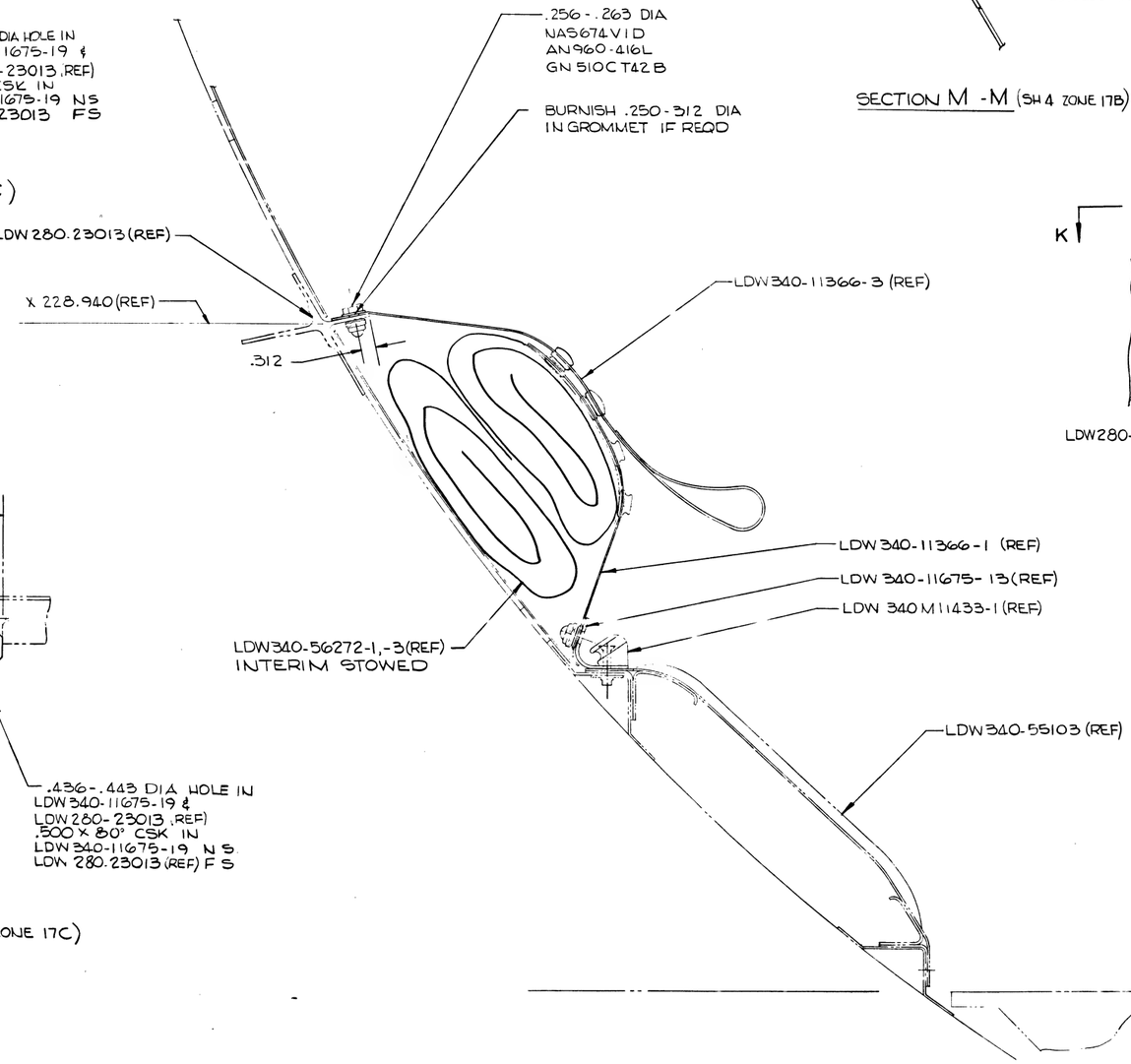
DWG NO LDW200-55013 SHEET 3

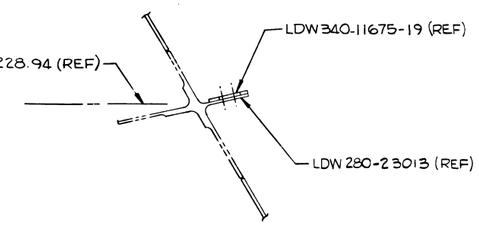
FRAME 1 FRAME 2

2FR

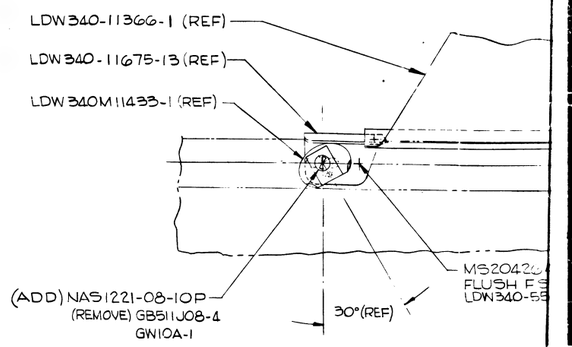


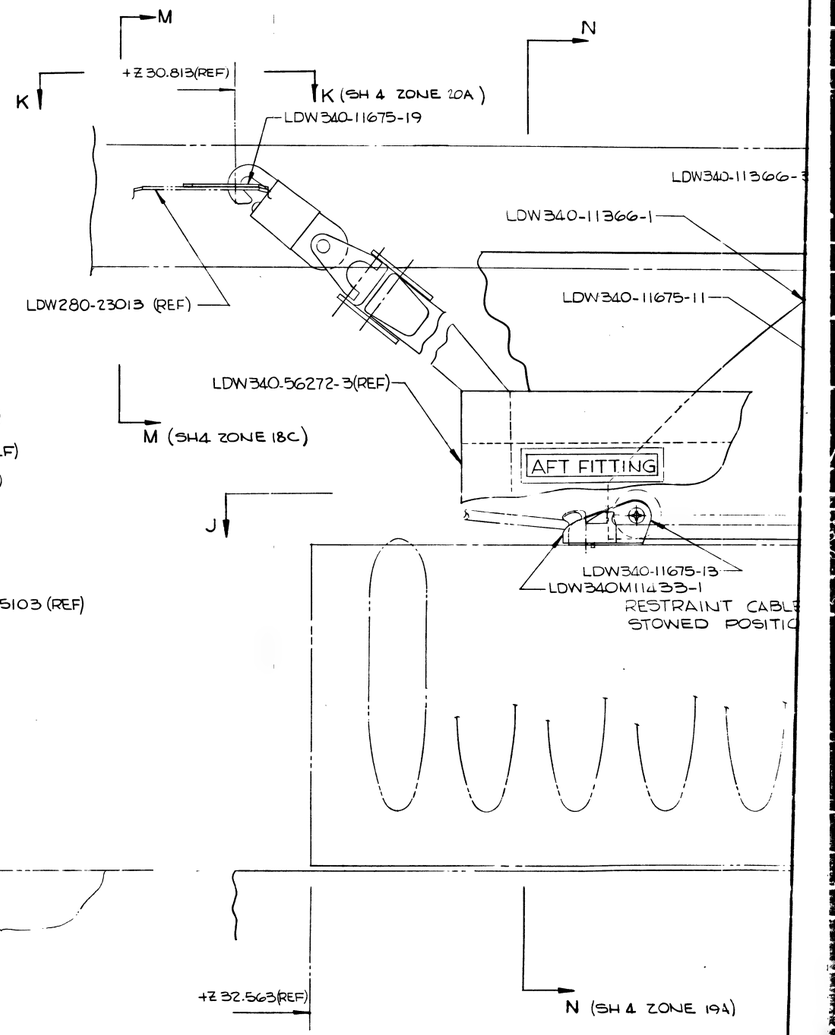
VIEW L-L (SH 4 ZONE 14C)

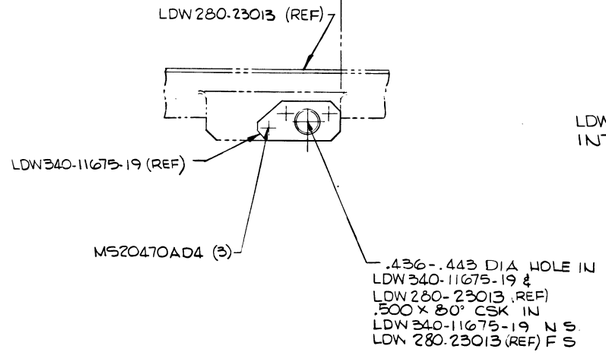




SECTION M -M (SH 4 ZONE 17B)

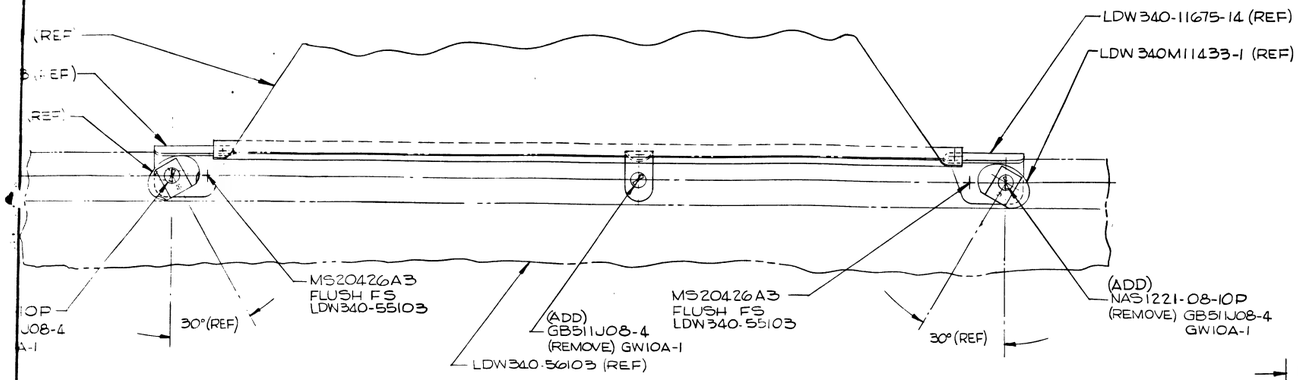




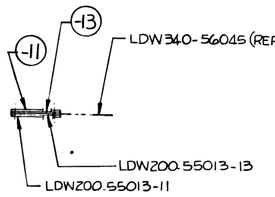


VIEW K-K (SH 4 ZONE 17C)

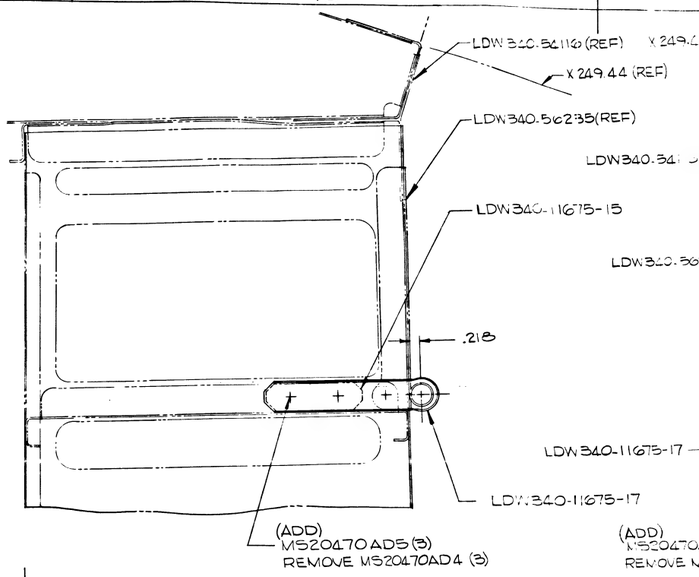
SECTION N -N
(SHEET 4 ZONE 17A)



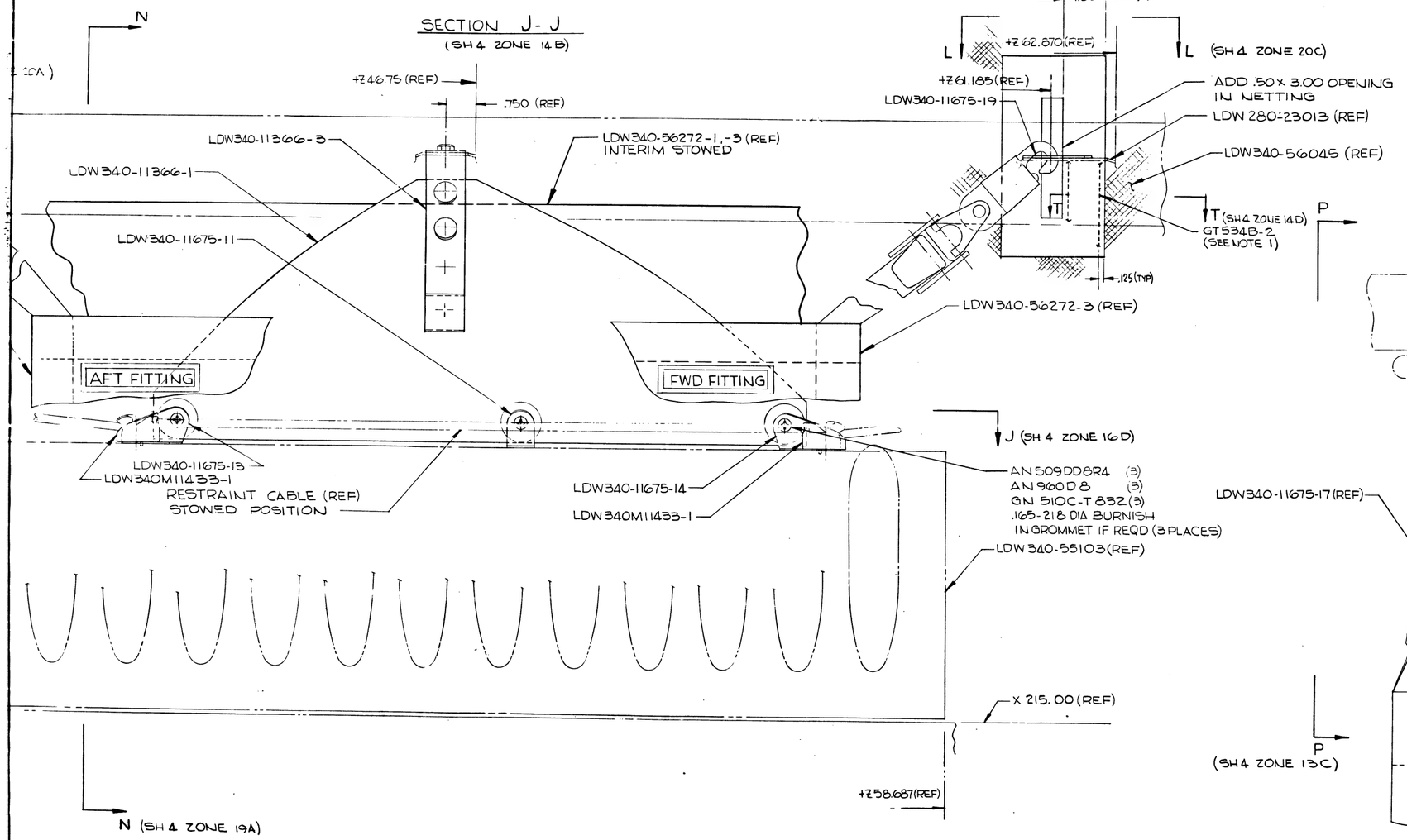
SECTION J-J
(SH 4 ZONE 14B)

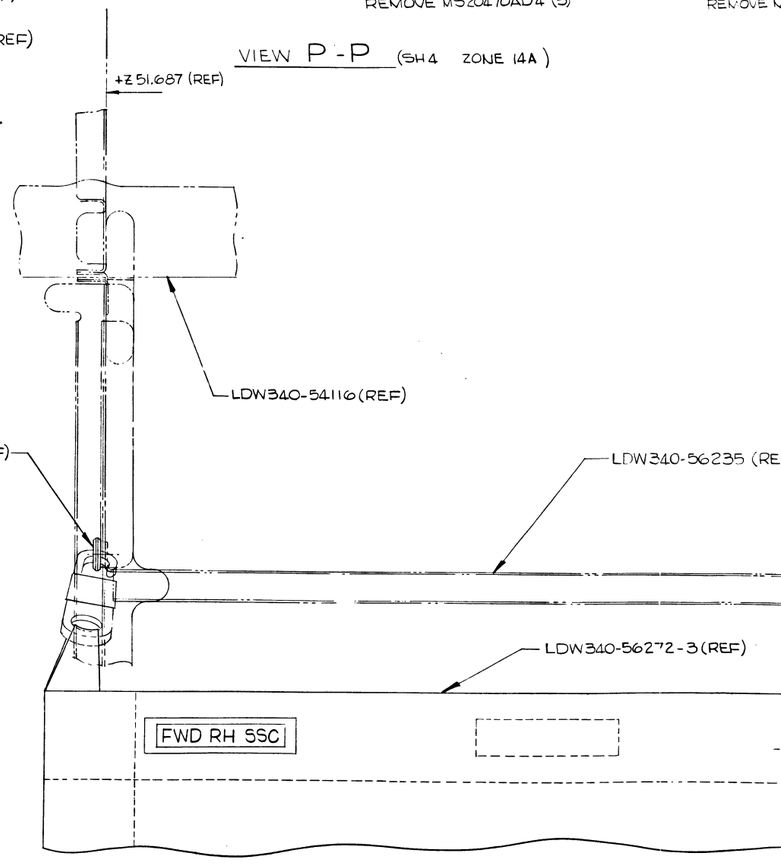


SECT T-T (SH4 ZONE 14C)
(SEE NOTE 5)



VIEW P-P (SH4 ZONE 14A)

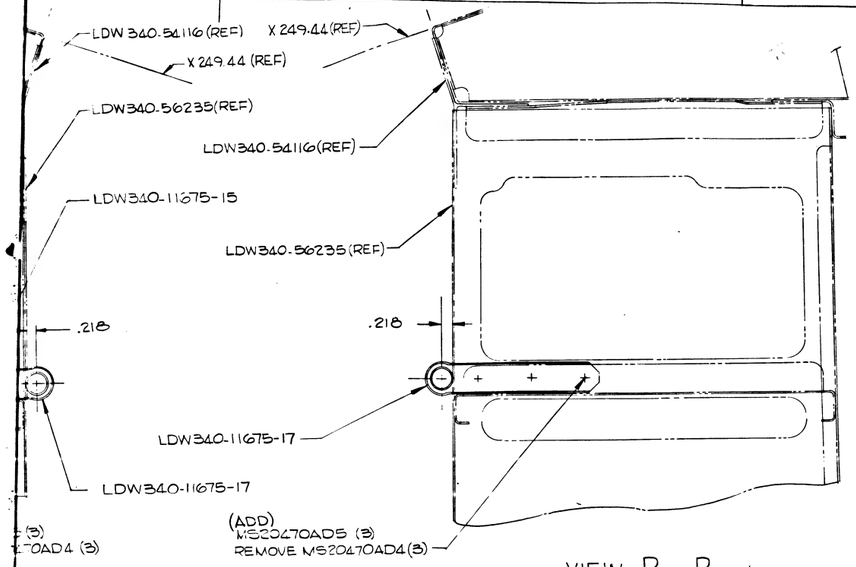




VIEW A-A (SH3 ZONE 6B)
LOOKING OUTBOARD LH SIDE

VIEW B-B
LOOKING OUTBOARD RH SIDE
(SH 3 ZONE 6B)

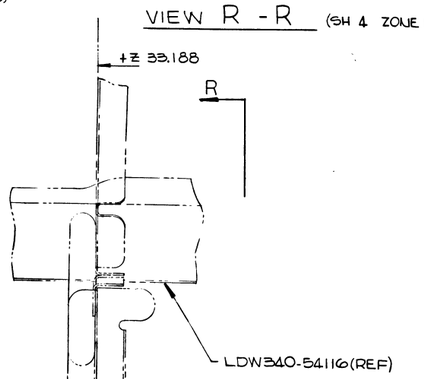
02/03 NAS 9-1100

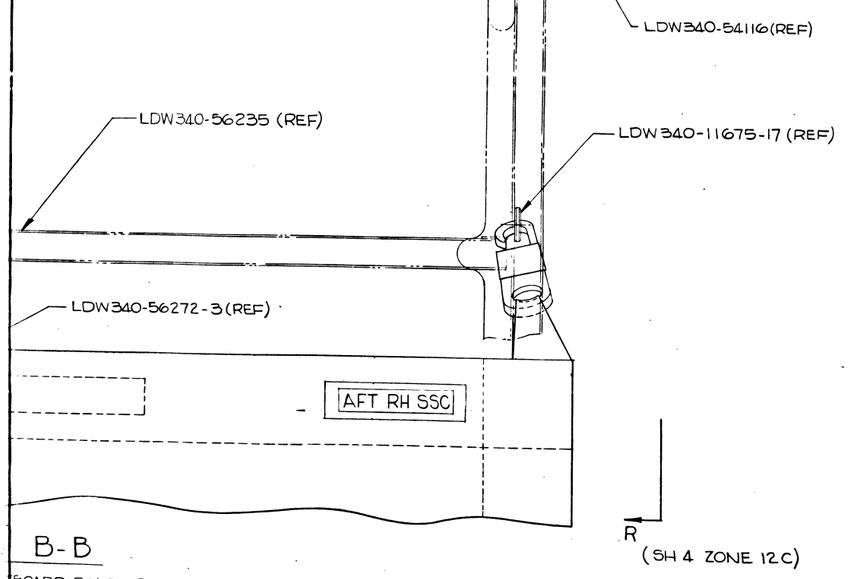


(3)
70AD4 (3)

NE 14A)

VIEW R - R (SH 4 ZONE 12A)

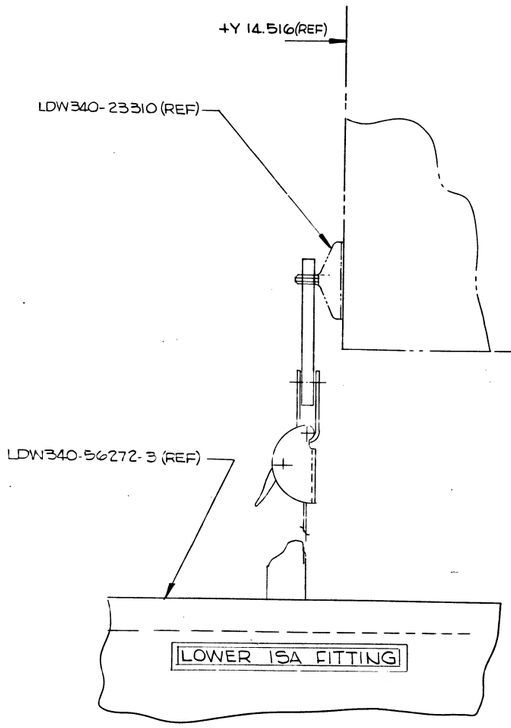


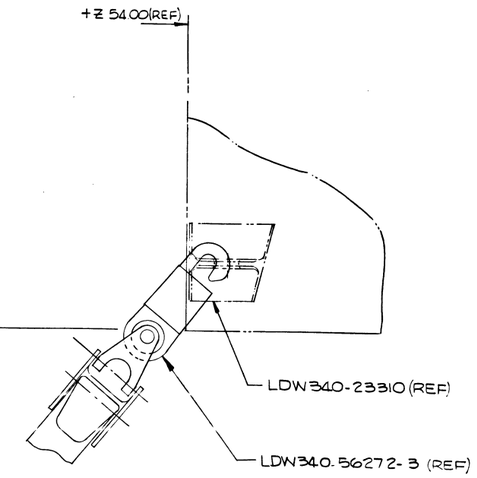


B-B

BOARD R H SIDE
ZONE 6B)

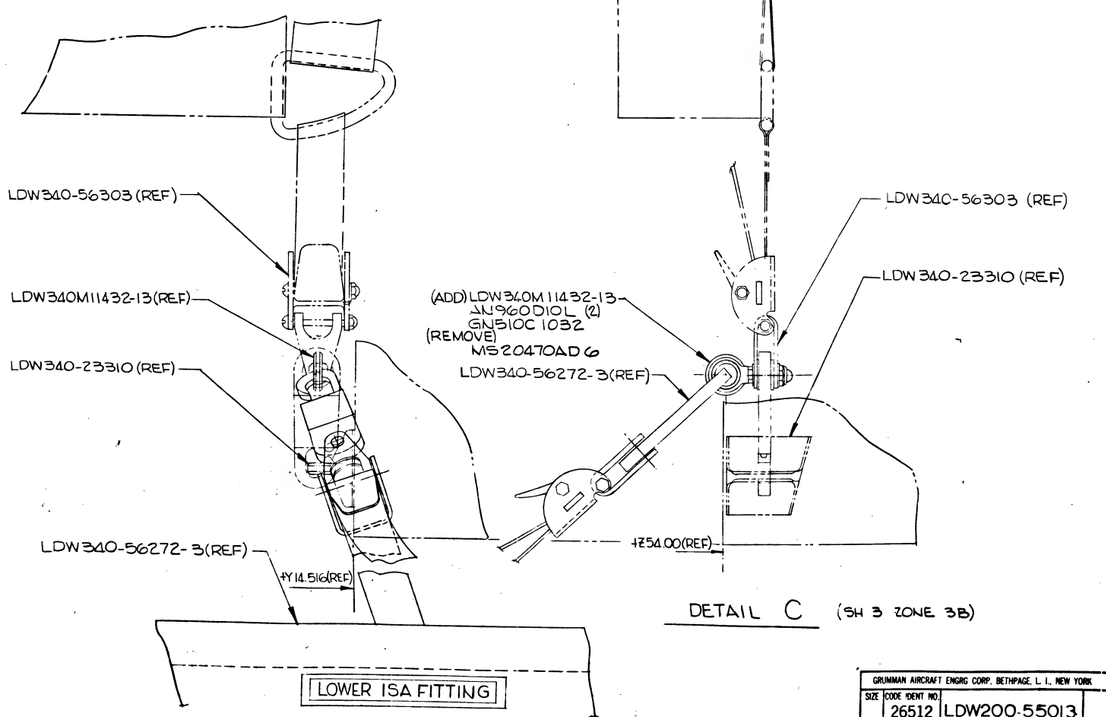
R
(SH 4 ZONE 12C)



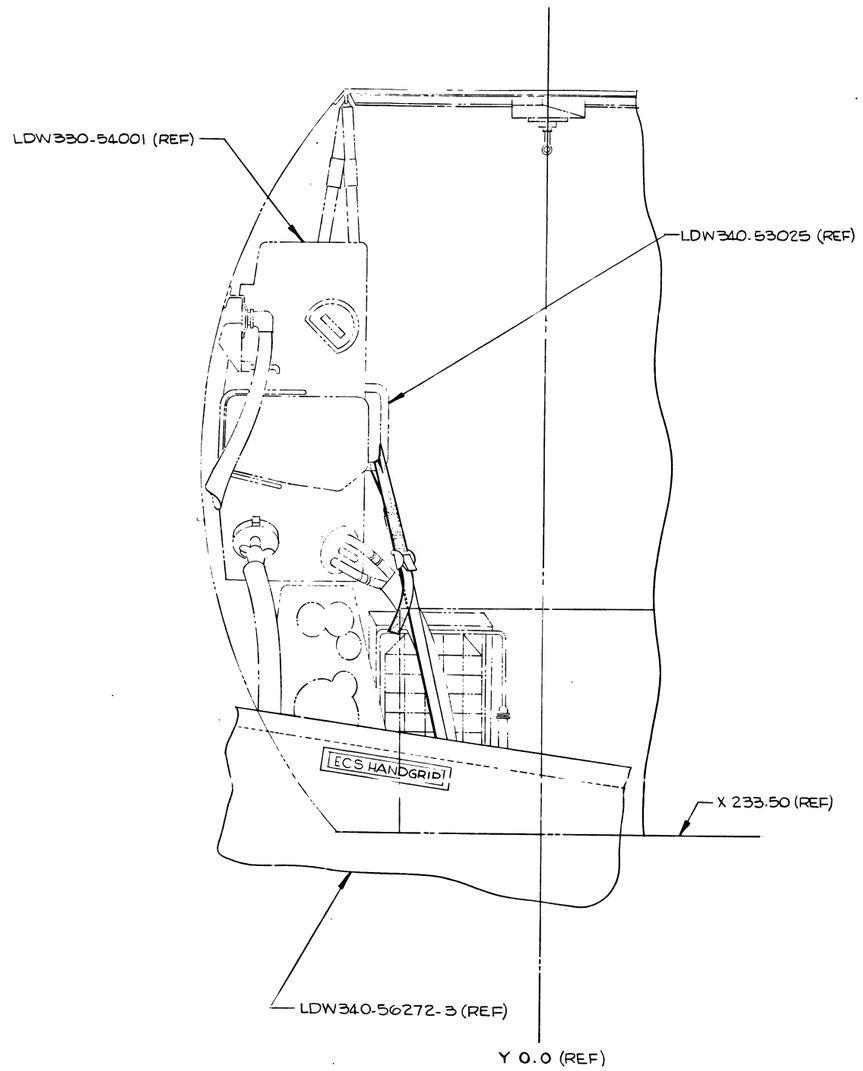


DETAIL S (SH 3 ZONE 3 B)

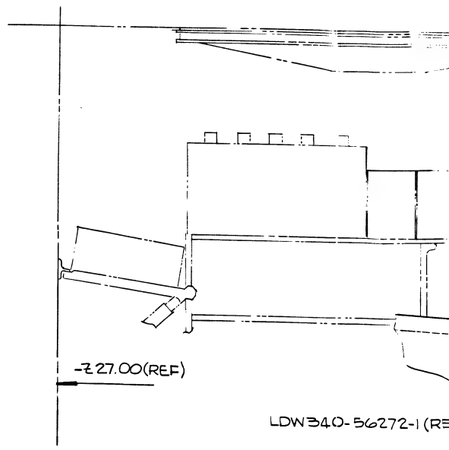
03703 NAS 9-1100



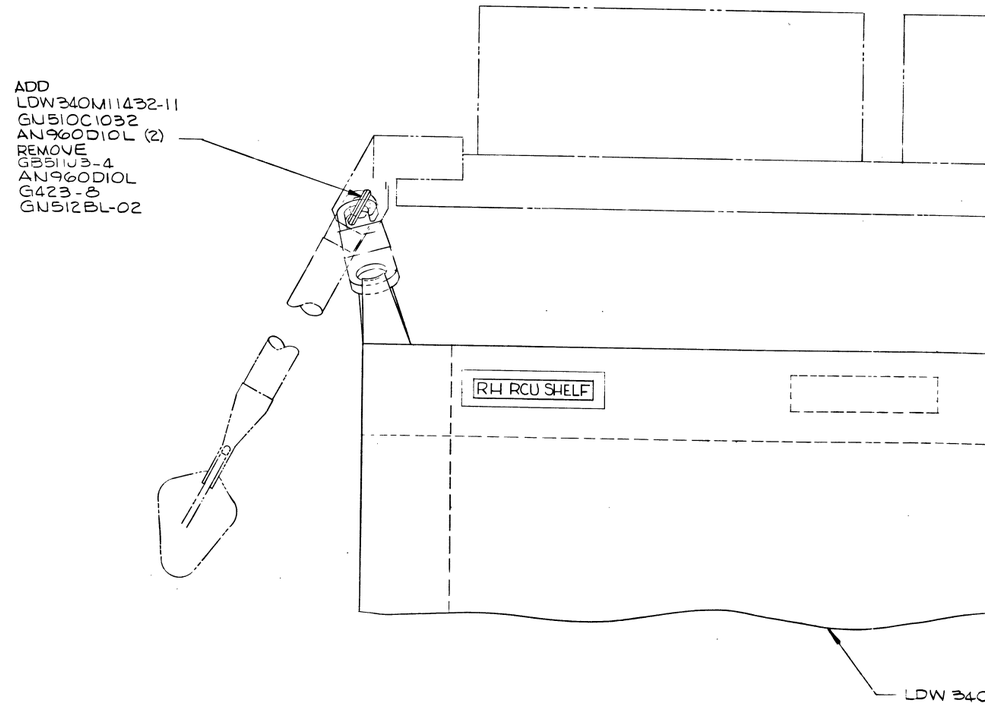
DETAIL C (SH 3 ZONE 3B)



DETAIL F (SH 3 ZONE 7C)
VIEW LOOKING AFT RH SIDE MID SECTION



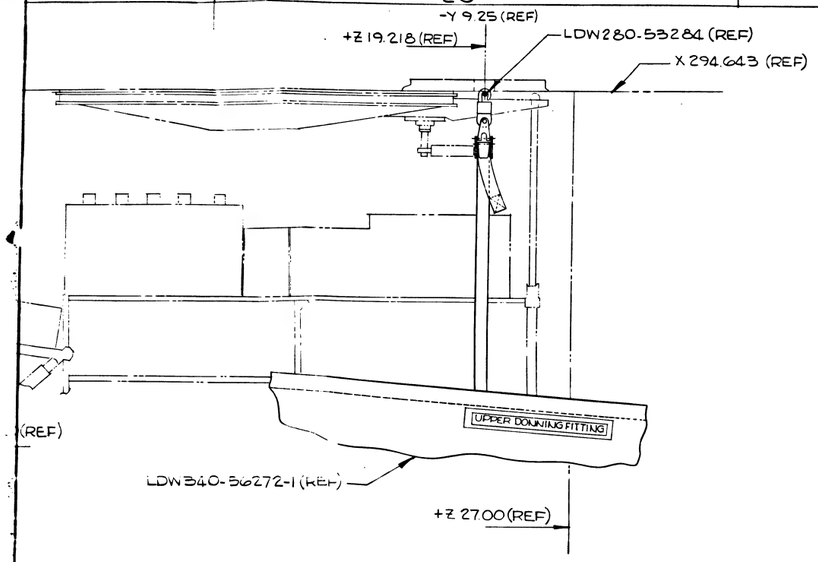
VIEW H - H
VIEW LOOKING OUTBOARD



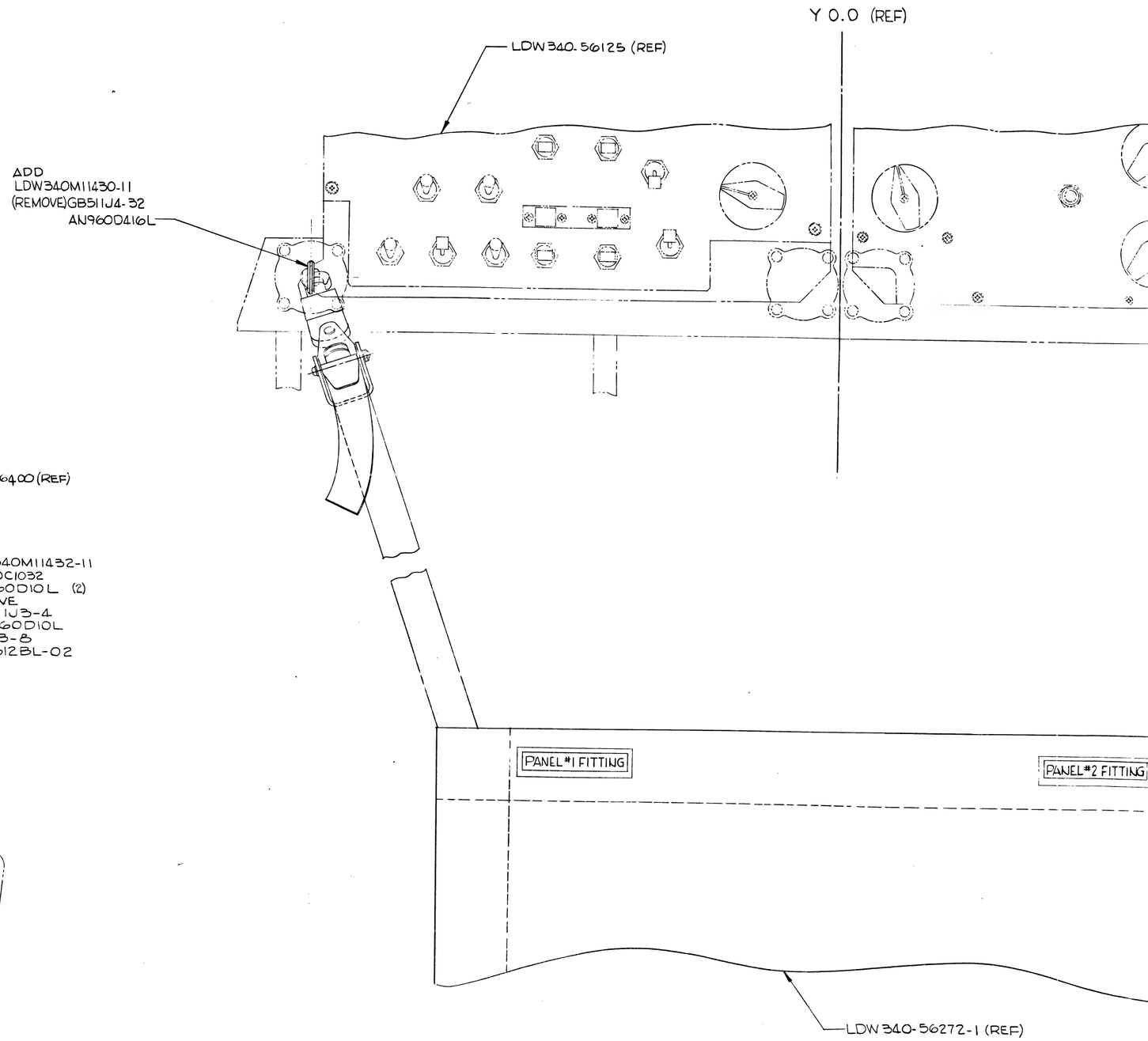
VIEW D-D
(SH 3 ZONE 4C)
SCALE FULL

01103 NAS 9-1100

CODE IDENT NO. 26512 | DWG NO. LDW200-55013 | SHEET 5
FRAME 1 | FRAME 2



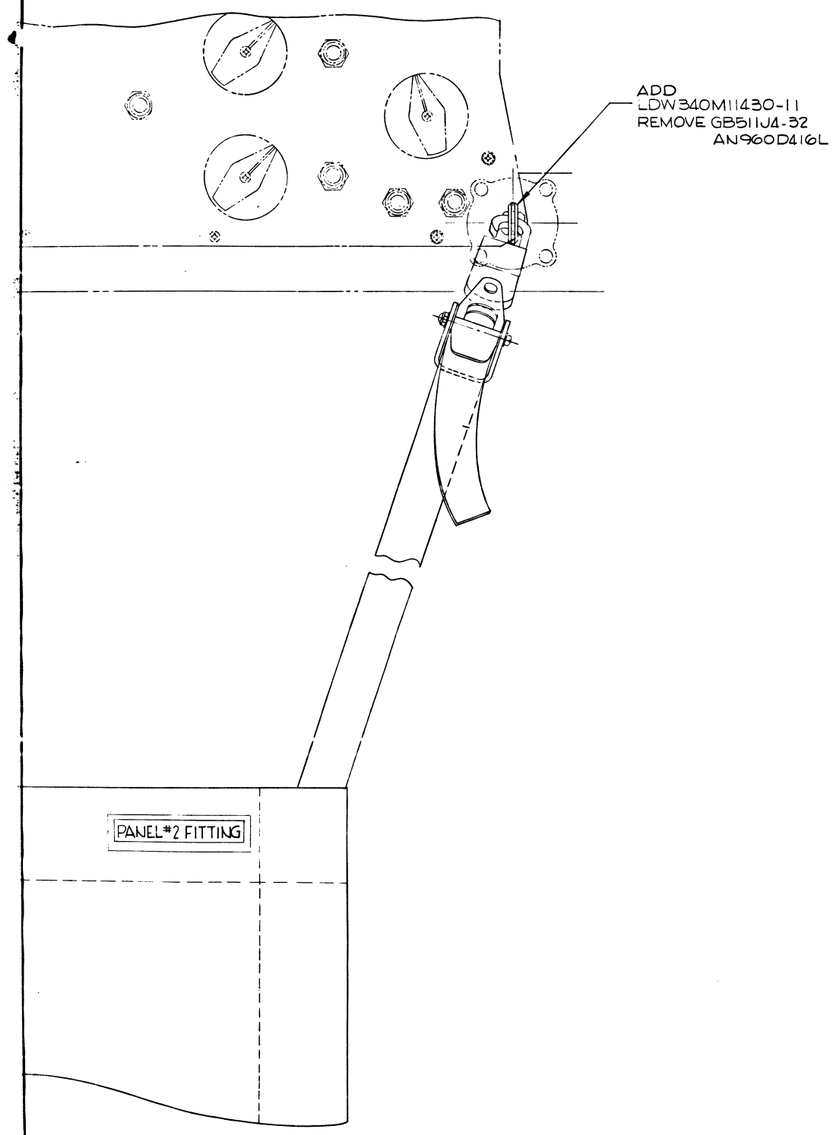
VIEW H - H (SH 3 ZONE 6D)
VIEW LOOKING OUTBOARD LH SIDE MID SECTION

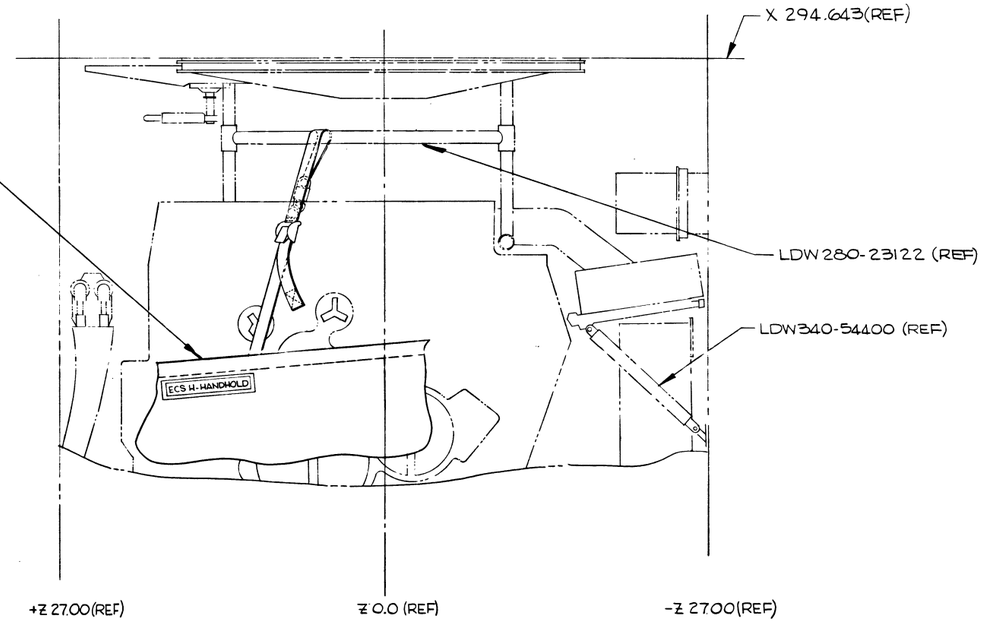


VIEW D-D
(SH 3 ZONE 4C)
SCALE FULL

VIEW E-E
(SH 3 ZONE 3C)
SCALE FULL

02/03 NAS 9-1100





VIEW G - G
(SH. 3 ZONE 6C)
VIEW LOOKING OUTBOARD RH SIDE- MIDSECTION

03/03 NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.2 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200-55013 | EO NO. A1
CONTROL INFO NO. LDW340-7463

IN FLD OF DWG VIEW L-L ZONE 20C

.436-.443 DIA HOLE IN LDW340-11675-19 AND LDW280-23013 (REF) .500 x 82° CSK IN LDW340-11675-19 N.S. LDW280-23013 F.S.	SHOULD BE	.436-.443 DIA HOLE IN LDW340-11675-19 AND LDW280-23013 (REF) .500 x 82° CSK IN LDW340-11675-19 N.S. BREAK SHARP EDGES .015-.032 IN LDW280-23013 F.S.

IN F/D AND B/M SECTION J-J ZONE 15D AND 17D

ADD NAS1221-08-10P REMOVE GB511J03-4 GW10A-1	SHOULD BE	ADD NAS1221-08-10P LDW340M11433-1 REMOVE NAS1221-08-13P LDW340M11633-1

IN F/D REVISE KICK PLATE PANEL DWG NO. (SECTION N-N & J-J AND VIEW A-A)
LDW340-55103 SHOULD BE LDW340-56103

IN F/D AND B/M VIEW E-E ZONE 27C AND 24C

ADD LDW340M11430-11 REMOVE GB511J4-32 AN960D416L	SHOULD BE	ADD LDW340M11430-11 AN960D416L (SEE NOTE *) POSITION OF EYEBOLT IRRELEVANT REMOVE GB511J4-32

IN F/D ADD NOTE *
*. BOND IN ACCORDANCE WITH LSP-14-13334

IN F/D AND B/M VIEW D-D ZONE 30B AND 27B

ADD LDW340M11432-11 GN510C1032 AN960D10L (2) REMOVE GB511J3-4 AN960D10L G423-8 GN512BL-02	SHOULD BE	ADD LDW340M11432-11 GN510C1032 AN960D10L (2) TORQUE 29-34 INCH POUNDS (REF MEPS-15000.019) POSITION EYEBOLT AS SHOWN REMOVE GB511J3-4 AN960D10L G423-3 GN512BL-02

IN FLD OF DWG VIEW K-K ZONE 20B

.436-.443 DIA HOLE IN LDW340-11675-19 AND LDW280-23013 (REF) .500 x 80° CSK IN LDW340-11675-19 N.S. LDW280-23013 (REF) F.S.	SHOULD BE	.436-.443 DIA HOLE IN LDW340-11675-19 AND LDW280-23013 (REF) .500 x 82° CSK IN LDW340-11675-19 N.S. BREAK SHARP EDGES .015-.032 IN LDW280-23013 F.S.

* INDICATES NEXT NOTE NUMBER.

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	LCD 3942
		✓	

REASON FOR EO: REVISE FOR CLARITY

DESCRIPTION OF EO: "NOTED ABOVE"

GAEC 1 EO RELEASE: 8/27/69

MODEL	EFFECTIVITY: PROCURING APPROPRIATION	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP
LM	LFM 446	LM-6(36) THRU	LM-9(39	✓		✓	

APPROVED BY								
DATE	8-26-69			8-26-69	8-26-69		8/27/69	8/27/69
	MATLS	SUPPORT	RELIAB. GROUP	GROUP LEADER	STR SS GRP UP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY: C
DRAWING TITLE: HAMMOCK INSTL REWORK OF LDW340-56001 - LFM No. 446
DRAWING NO.: LDW200-55013
EO NO.: A1

ISSUED BY M.L. EISENMAN X7277 SECTION CREW PROVISIONS GROUP NO. 340 PL 25

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENG 32.1 REV 3-65 **ENGINEERING ORDER**

DWG. NO. LDW200-55013 | EO NO. A2
CONTROL INFO NO. LM-5-21969

IN SECTION J-J (SHEET 4.00) CHANGE
NAS1221-08-10P TO NAS1221-08-9P (2 PLACES)
& GB511J08-4 TO GB511J08-2

ADD FOLLOWING NOTE TO GENERAL NOTES
(SHEET 3.00): *. GB510F08-9 MAY BE
USED AS AN ALTERNATE FOR NAS1221-08-9P

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCD 3942

REASON FOR EO: BOLT GRIP BOTTOMING IN NUT

DESCRIPTION OF EO: ON -1 NAS1221-08-9P WAS NAS1221-08-10P (2 PLACES) GB511J08-2 WAS GB511J08-4 ADDED NOTE *

(5) GAEC EO RELEASE: K 10669

MODEL	EFFECTIVITY M: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM446	LM-8 (38)	
	LFM446	LM-9 (39)	

DRAWING CHANGE REQD: ✓ REVISE DWG; RECORD EO
DISPOSITION OF PARTS: ✓ REWORK; SCRAP

APPROVED BY	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	SPEC ENGR
DATE			10-6-69	9-16-69	9/16/69	10/6/69	9-18-69

PRIORITY: C
DRAWING TITLE: HAMMOCK INSTL REWORK OF LDW340-56001
DRAWING NO.: LDW200-55013
EO NO.: A2

ISSUED BY LIAISON E.V. BERGEMAN X-86755 SECTION CREW PROV GROUP NO. 343 PL 25

01
NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200-55013 | EO NO. A3

CONTROL INFO NO. LM-5-22106

IN FLD/DWG & B/M ON-1

IN ZONE 30B AND 27B

REMOVE: G423-8 S/B ADD: G423-8

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG
		X LCD 3042

REASON FOR EO: SPACER ERRONEOUSLY REMOVED

DESCRIPTION OF EO: IN FLD & B/M ON-1 ADDED G423-8 WAS REMOVED G423-8

GAEC EO RELEASE: X | X

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LEM 446	LM-7(37) & LM-8(38)	
		LM-9(39)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO | REWORK ✓ | SCRAP

DISPOSITION OF PARTS

APPROVED BY / DATE: 11-12-69

SUPPORT | RELIAB. GROUP

GROUP LEADER: 11/12/69 | STRESS GROUP: 11/12/69 | LIAISON ENGRG: 11/12/69 | PROJ ENGRG: 11/13/69

PRIORITY: C

DRAWING TITLE: HAMMOCK INSTL REWORK OF 340-56001 LEM #446

DRAWING NO.: LDW200-53013

EO NO.: A3

ISSUED BY: LIAISON, P. HUSTED, 86955 SECTION: CREW PROV. GROUP NO. 343 PL 25

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200-55013		EO NO. A4
CONTROL INFO NO. LDW340-8030		

IN F/D, B/M & M/B CREATE -1-1 INSTL IDENTICAL TO -1 INSTL EXCEPT
LDW340-56272-1-1 ASSY REPLACES LDW340-56272-1 ASSY

EFF LFM560 LM-7(37) ONLY
N/A NONE QTY 1

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD 5412 PKG #1

(5)

REASON FOR EO: LENGTHENING OF HAMMOCK

DESCRIPTION OF EO: IN B/M, F/D & M/B CREATE -1-1 INSTL IDENTICAL TO -1 INSTL EXCEPT LDW340-56272-1-1 ASSY REPLACES LDW340-56272-1 ASSY

GAEC \ EO RELEASE: 1/23/70

MODEL	EFFECTIVITY			DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
	EI [redacted]	GAEC UNIT NO.	SUB CONTR UNIT NO.	REVISE DWG	RECORD EO	REWORK	SCRAP	DATE								
LM	LFM560	LM-7(37)							MTLS	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~QUAL~~
				✓		✓		1/23/70				1-23-70	1-23-70		1/23/70	1/23/70

PRIORITY: C

DRAWING TITLE: HAMMOCK INSTL REWORK OF LDW340-56001, LFM 446

DRAWING NO.: LDW200-55013

EO NO.: A4

ISSUED BY M.C. EISENMAN 1-23-70 X7277

SECTION CREW PROV. (MECH. SYS.) GROUP NO. 356 PL 25

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200-55013		EO NO. A6
CONTROL INFO NO. LDW340-8454		

ON SHEET 4, ZONE 9B & ZONE 10B:

"LDW340-56303 (REF)" SHOULD BE "LDW340-56303 (REF)"
LDW340-57303 (REF)

DETAIL SPEC REQ		CL II ENGRG CHG	✓	CL I ENGRG CHG

REASON FOR EO: REFERENCE DWG OMITTED ON INITIAL RELEASE

DESCRIPTION OF EO: ON SH.4, ZONE 9A & 10A, "LDW340-56303 (REF)" WAS "LDW340-56303 (REF)" LDW340-57303 (REF)

GAEC EO RELEASE: (R)

MODEL	EFFECTIVITY	SUB CONTR UNIT NO.
LM	NOT REQD	

DRAWING CHANGE REQD		DISPOSITION OF PARTS			APPROVED BY							
REVISE DWG	REQUIRE EO	REWORK	SCRAP	NOT REQD	DATE	MTLS	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
✓					4/20/70	—	—	4-16-70	4/20/70	—	4/20/70	4/14/70

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
E	CONTAINER ASSY	LDW200-55013	A6

4-23-70
ISSUED BY M.W. BECKER x1618 SECTION CREW PROVISIONS GROUP NO. 356 PL 25

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200-55013 | EO NO. A7

CONTROL INFO NO. LDW 340-8611

CREATE -1-2 FOR EFF LM-8(38)(LFM 573) & LM-9(39)(LFM 573)
N/A NONE , 1 REQ'D / MODULE
(SAME AS -1 EXCEPT AS FOLLOWS)
OMIT FROM -1-2

LDW 340-11366-3	LDW340-11675-11	MS20426AD3
LDW 340-11366-1	LDW340-1167513	NAS674V1D
LDW 340-56272-3	LDW340-11675-14	GB511J08-4
LDW 340-56272-1	AN 960 D8	GN510CT42B
LDW 340-56272-1-2	AN 960 416L	GN510CT832
LDW 340-56272-3-1	AN 509 DD8R4	

ON -1 FOR LM-8(38)(LFM 446) & LM-9(39)(LFM 446) IN H/B
RESTRICTED -1 TO LM-6 ONLY & REMOVED LM-8 & LM-9 EFF.

* NEXT AVAILABLE NOTE NO.

DETAIL SPEC REQ | CL II ENGNG CHG | CL I ENGNG CHG | X LCD 5450 PKG #2

REASON FOR EO: REVISED VEHICLE REQUIREMENTS

DESCRIPTION OF EO: CREATED -1-2
RESTRICTED -1 TO LM-6 ONLY & REMOVED LM-8 & LM-9 EFF.

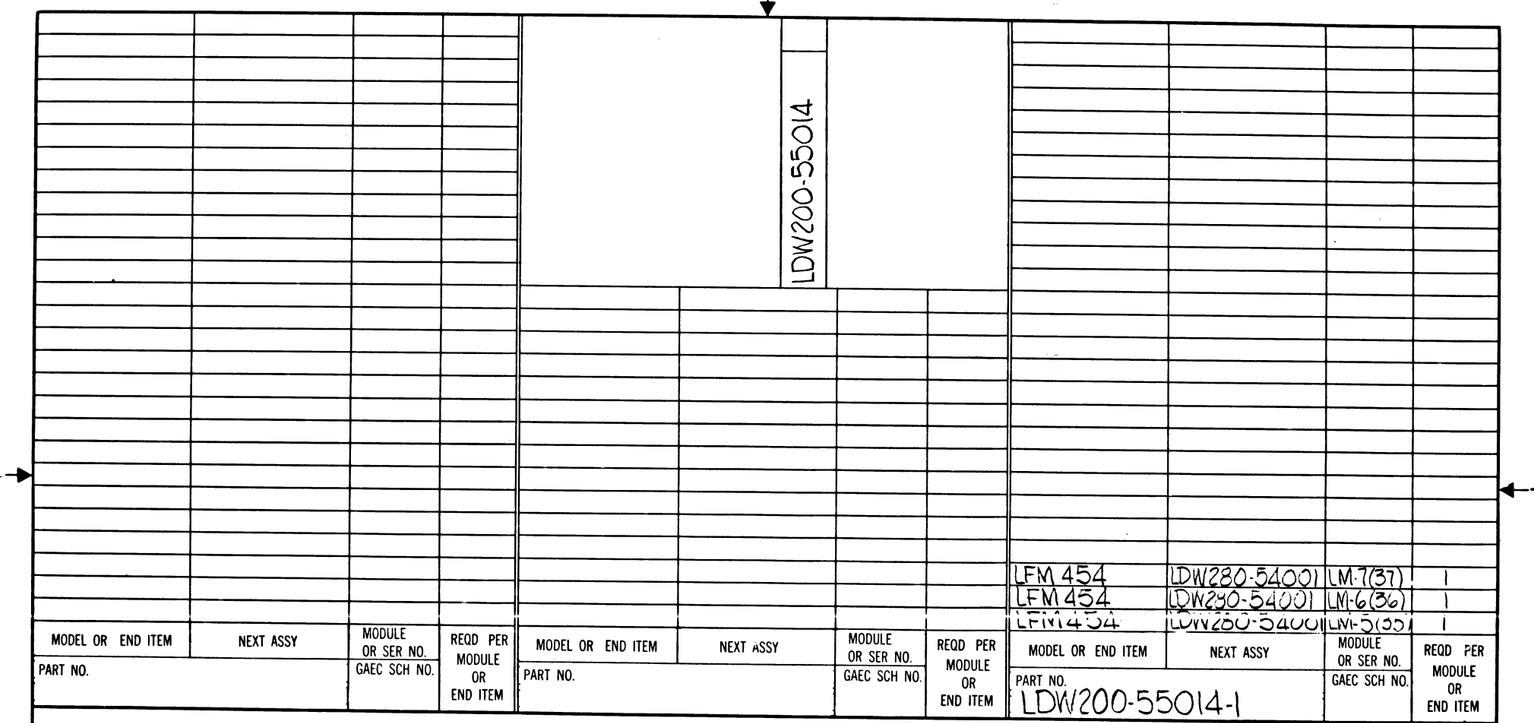
GAEC EO RELEASE: B

MODEL	EFFECTIVITY EI	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD	DISPOSITION OF PARTS	APPROVED BY								
				REVISE DWG	RECORD EO	Rt w/wk	SCRAP	DATE	MTLS	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ. ENGRG	EO NO.
LM	LFM 573	LM-8(38)&	LM-9(39)	X		X		5/21/70	MWB 5-21-70			MWB 5-21-70	mk 5/22/70		NH 5-21-70	B
									MTLS							8/17/70
				PRIORITY C	DRAWING TITLE: HAMMOCK INSTL							DRAWING NO. LDW200-55013				EO NO. A7

ISSUED BY A. NADIG X7277 SECTION CREW PROVISIONS GROUP NO. 256 PL 25

01

NAS 9-1100



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
	LFM 454	LDW280-54001	LM-7(37) 1
	LFM 454	LDW280-54001	LM-6(36) 1
	LFM 454	LDW280-54001	LM-5(35) 1
PART NO. LDW200-55014-1		GAEC SCH NO.	

WORK PKG FUNCTION NO. 111 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00		2.00		3.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	B
LAST DASH NO. USED	-1

GRUMMAN REF INFO

PRIM NO.		
10240	227	ME-K (024) 6/2/69

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓ LCD3777A

CONTRACT NO. NAS9-1100 LINE ITEM - DOCUMENTATION TYPE II

DRAWN BY	R.BIDONDE			
LAYOUT BY	R.BIDONDE			
CHECKED BY	W. Agee 6-19-69			
GR LDR	R. Gustafson 6-17-69			
VDI	[illegible] 6/19/69	KSC	B.C.	
STRUCT		PROJ ENGR	R. Gustafson 6/19/69	
STRUCT	GP 6/19/69	REL GROUP	J. Marsh 6-20-69	

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

LINES INSTL ROUTING PATH
REWORK OF LDW280-54360
LFM #454

SIZE	CODE IDENT NO.	
B	26512	LDW200-55014

SCALE NONE SHEET 1.00 OF 3

ENG 77.1 12-66

01 NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
A/R		GT835AR-2	E	TAPE, INSUL	GRUMMAN STD	SEE NOTE 1			—	—	—
A/R		GT835AM-1	E	TAPE, LACING	GRUMMAN STD	SEE NOTE 1			—	—	—
-1		LDW200-55014-1	E	LINES INSTL ROUTING					—	—	—

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55014

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

LDW200-55015

LFM

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	RFQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		LFM* 268	LDW280-54001	LM-6 (36)	1 EA
								PART NO. LDW200-55015 -1 & -3		GAEC SCH NO.	

WORK PKG. FUNCTION NO. 110 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00		2.00		3.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REC INFO	
LAST DASH NO. USED	-13	PRIM NO.	JK(024)
		215	ME-16-4/23/69

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 3499	

CONTRACT NO. NAS 9-1100 LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	F. SHANLEY	THERMO	M. Pavlinoff 6/26/69	GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE, L. I., NEW YORK
LAYOUT BY	F. SHANLEY			
CHECKED BY	J.D. COBB 6-23-69			SHIELD INSTALLATION
GR. LDR.	[illegible] 6-24-69			ASCENT STAGE-MID SECT. FWD & AFT BHD
YEH. DES. INT.	[illegible] 6/24/69			REWORK OF LDW280-54001 LFM* 268
STRUCTURES	C L 6/26/69 Concurred	PROJ ENGR	[illegible]	SIZE B | CODE IDENT NO. 26512 | LDW200-55015
STRUCTURES	A. P. 6/24/69	REL GROUP	[illegible]	SCALE NONE | SHEET 1.00 OF 3
WEIGHTS				

ENG 77.1 12-65

CDR 7-8-69

01

NAS 9-1100

QTY PER ASSEMBLY			CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		2		AN960D10L	E	WASHER	GOV. STD.						
		A/R		MS20426B3		RIVET	GOV. STD.						
		A/R		MS20470A3		RIVET	GOV. STD.						
		5		GW10N-3		SPACER	GRUMMAN STD.						
		2		GN512C-04-060		NUT	GRUMMAN STD.						
		27		GW10S-8PSIC		WASHER	GRUMMAN STD.						
			3	GS550K-04-5		SCREW	GRUMMAN STD.						
			1	GS550K-04-7		SCREW	GRUMMAN STD.						
				MS20470B3		RIVET	GOV. STD.						
			3	GW10S-10KSIC		WASHER	GOV. STD.						
			13	GB511J-04-3		BOLT	GRUMMAN STD.						
			13	AN960C4		WASHER	GOV. STD.						
			3	GB511J-04-1		BOLT	GRUMMAN STD.						
		2		LDW280-54965-5		SHIELD ASSY.	SEE DWG						
		1		LDW280-54965-15		SHIELD	SEE DWG.						
	1	1		LDW200-55015 -13		WASHER	CRES SH	MIL-S-6721 COMP 321	321 ANN	.125 x 1 x 1	NONE	NONE	
	1			-11		FRAME	AL ALLOY SH	QQ-A-250/4	2024-T3	.090 x 23 x 37	NONE	88 & NOTE 1	
				-5		PANEL ASSY.							
		1		-3		SHIELD INSTL.							
-5	-3	-1		LDW200-55015 -1	E	SHIELD INSTL.							

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
88	ANODIZE	LSP 14-9030

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55015

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

6 5 4 3

A B C

LDW200-550I5-1 INSTL.
¾ SIZE
VIEW LOOKING FWD AT L.H. AFT BHD SHIELDING

LDW200-550I5-3 INSTL.
¾ SIZE
VIEW LOOKING FWD AT RH AFT BHD SHIELDING.

EXTERIOR SURFACE - NEAR SIDE

.127-133(DRILL #30)
⅝ DIA.
.125(REF)
-13 WASHER

LDW200-550I5-5
REPLACES
LDW280-54965-29
(REF. LDW280-54851-15)

LDW200-550I5-13 NS
LDW280-12008-13 NS
GS550K-04-7
REPLACE
GS550K-04-5
(REF. LDW280-54851-11)

LDW280-54965-15

LDW280-54965-5

.097-102(#40 DRILL)

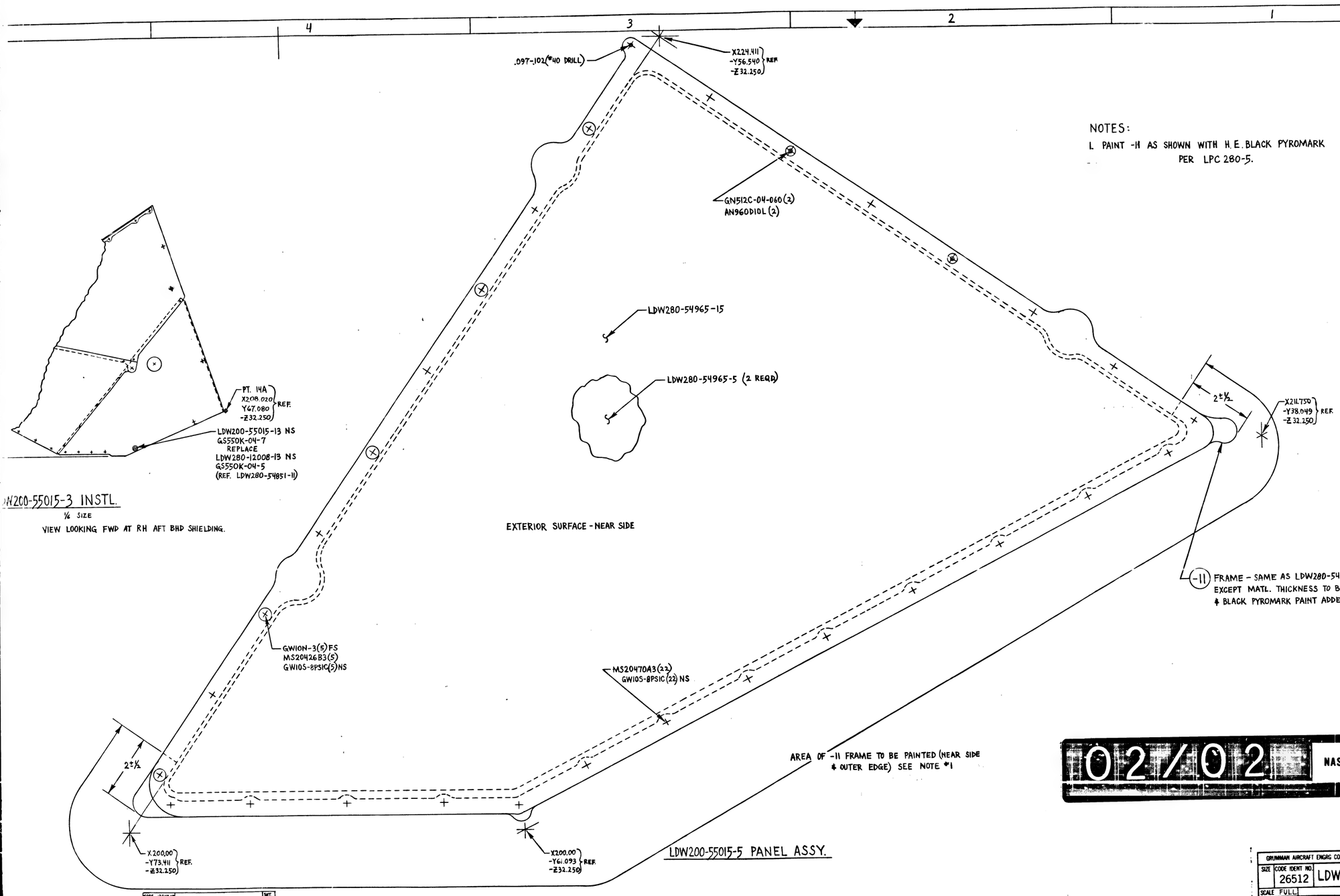
GW10N-3(S)FS
MS20426B3(S)
GW10S-8PSIC(S)NS

MS20470A3(2)
GW10S-8PSIC(2)NS

LDW200-550I5

LDW200-550I5 | 3 | SHT | LDW200-550I5 | CODE IDENT NO. 26512 | SIZE

PANEL 1 PANEL 2



NOTES:

1. PAINT -11 AS SHOWN WITH H.E. BLACK PYROMARK PER LPC 280-5.

LDW200-55015-3 INSTL.

½ SIZE

VIEW LOOKING FWD AT RH AFT BHD SHIELDING.

EXTERIOR SURFACE - NEAR SIDE

(-11) FRAME - SAME AS LDW280-54965-31 EXCEPT MATL. THICKNESS TO BE .090 & BLACK PYROMARK PAINT ADDED.

AREA OF -11 FRAME TO BE PAINTED (NEAR SIDE & OUTER EDGE) SEE NOTE #1

LDW200-55015-5 PANEL ASSY.

02/02

NAS 9-1100

PRINT TRIM LINE
FULL SIZE SHEET AREA 70 x 30 = 11.6 SQ FT
¼ SIZE SHEET AREA (¼ OF FULL) = 2.7 SQ FT
PRINTING INFO ONLY

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE	CODE IDENT NO.	LDW200-55015	
	26512		
SCALE FULL		SHEET 3 OF 6	

CODE IDENT NO. 26512 | DWG NO. LDW200-55015 | SHT 3

FRAME 1 | FRAME 2

LDW200-55016 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LFM 470	SEE NOTE 1	LM-5(35)	1
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW200-55016-1		GAEC SCH NO.	

WORK PKG FUNCTION NO. 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH											
SHEET	1.00		1.10								
REV	A		A								
SHEET	2.00										
REV	A										
SHEET	3.00										
REV	A										
LAST SECT LTR USED	A-A		GRUMMAN REL INFO N.A.S.								
LAST DASH NO. USED	-1		PRIM NO. 301								

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
XX: ±.03 .XXX: ±.020 ±0°30'
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE ✓ LCD 5096 PKG 1

CONTRACT NO. NAS 9-1100 LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	HERB. SCHWETER 1/26/71	RELABILITY			
LAYOUT BY	J. MONTFORT				
CHECKED BY	March 2-17-71				
GR. LEADER	5-10-71				
STRUCTURES		PROJ ENGR			
STRUCTURES		REL GROUP	L. MARSH 3-17-71		
WEIGHTS					

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

WINDOW ASSEMBLY
EAS-FDAI, CONTINGENCY
REPAIR KIT

SIZE	CODE IDENT NO.		
B	26512	LDW200-55016	A

SCALE NONE SHEET 1.00 OF 4

ENG 77.1 12-68

01
NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00 1.10 2.00 3.00		LFM 470		✓		EO A1 LCD 5096	INITIAL DWG RELEASE. PARTS MADE PER EO. ADDED SH 1.10	SEE NOTE 1	NOT	REQD	H. SCHWETER 1-26-71		
	2	1.00				✓		LCD 5669 LCD 5414	DELETED LM-13 (43) & LM-14 (44) EFF FROM -1	LM-13 LM-14		✓		T. SCHWARTZ 7-13-71	March 24-71
	3	1.00 3.00				✓		LCD 5096	ON -1 ASSY IN MOD/BLK EFF. (WAS) LM-6 (35) THRU LM-12 (42). IN FLD NOTE 1 (WAS) ---- CONTINGENCY KIT IN SUPPORT OF LM-6 (35) THRU LM-12 (42). IN MOD/BLK LFM 470 WAS LM.	LM-5	NOT	REQ'D	M. SARFATY 07-13-71		

CHG APPROVED	LTR	GROUP LDR	EAS	STRUCT	PROJ.
	A			7-15-71	

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW200-55016	A

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01 NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
									NONE	NONE	
-1		LDW200-55016-1	E	WINDOW ASSY							
1		LDW355M10509-11		RETAINER	SEE DWG						
1	35351	144001		WINDOW	SEE NOTE 2						
8		AN507C440R6	E	SCREW	GOVT STD						

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

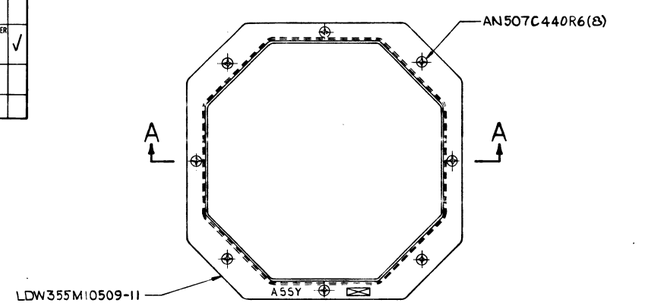
SIZE	CODE IDENT NO.		
B	26512	LDW200-55016	A

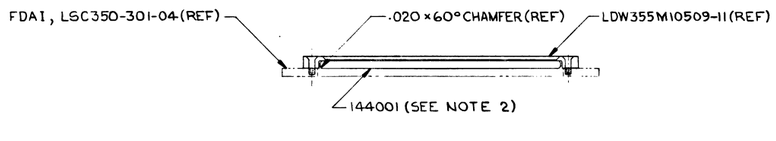
SCALE NONE SHEET 2.00

ENG 77.2 7-65

01 NAS 9-1100

SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ~~USE BOTH SIDES IF NECESSARY~~	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL RIVETS IN ACCORDANCE WITH	





SECTION A-A

LDW200-55016-1 ASSY

NOTES:

1. THIS ASSY IS REQ'D AS A CONTINGENCY KIT IN SUPPORT OF LM-5(35), PNL I (LDW340-55130) AND PNL II (LDW340-55135).
2. WINDOW (OPTICAL CROWN GLASS) SUPPLIED BY LEAR SIEGLER, INC. INSTRUMENT DIV. GRAND RAPIDS, MICH, 49500. CODE IDENT NO. 35351. (PART OF LSC350-301-04)

01

NAS 9-1100

GRUMMAN AEROSPACE CORPORATION BETHPAGE, NEW YORK 11714			
SIZE D	CODE IDENT NO. 26512	LDW200-55016	A
SCALE		SHEET 3 OF 3	

LDW200-55016 A

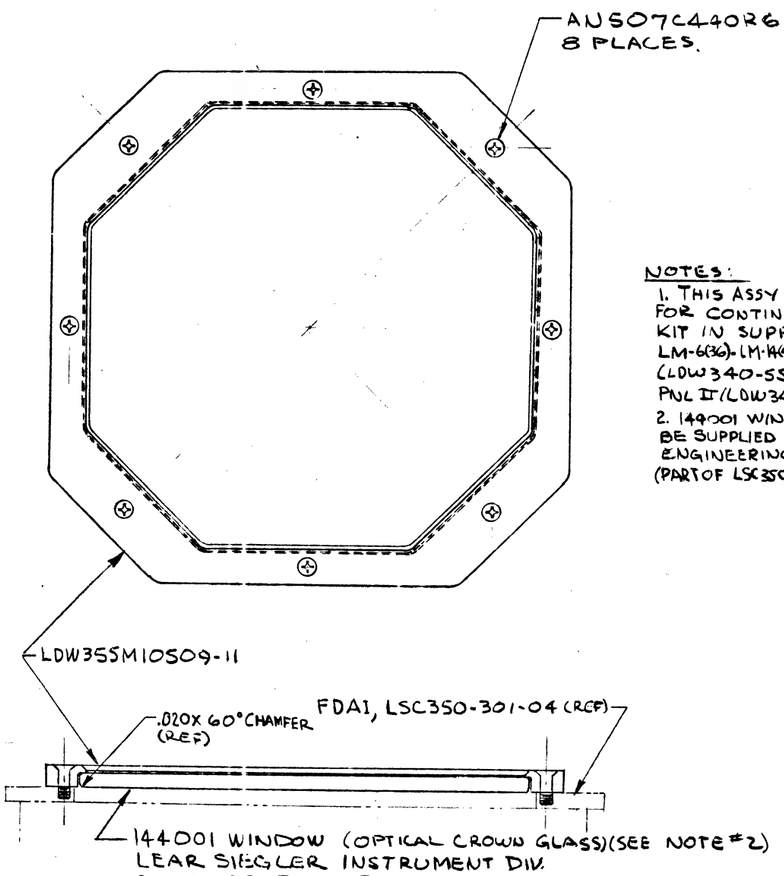
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.2 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200-55016		EO NO. A1
CONTROL INFO NO. LDW355-5520		

CREATE - 1 ASSY AS SHOWN BELOW; EFF: SEE NOTE #1,
N/A SEE NOTE #1, 1 REQ'D.



NOTES:
1. THIS ASSY IS REQ'D FOR CONTINGENCY KIT IN SUPPORT OF LM-6(36)-LM-A(44) PNL I (LDW340-55130) AND PNL II (LDW340-55135)
2. 144001 WINDOW TO BE SUPPLIED BY ENGINEERING. (PART OF LSC350-301-04)

SECT. A-A

LDW200-55016-1 WINDOW ASSY
I&T: E
TOL: ± 1/32, ± .020, ± 1/2°
WORK PKG # 110, DOC TYPE II, PRIM No. 301

* DWG NOT MADE

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD 5096, PKG 1	(5)

REASON FOR EO: TO PROVIDE REPAIR KIT FOR FDAI

DESCRIPTION OF EO: E.O. A1 - INITIAL DWG RELEASE PARTS MADE PER E.O.

GAEC EO RELEASE: HF 7/25/69; RKB 7/15/69

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM# 470	SEE NOTE 1	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY / DATE	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
*		NOT REQD			—	—	7/16/69	—	—	7/15/69

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	EAS - FDAI, CONTINGENCY REPAIR KIT WINDOW ASSY	LDW200-55016	A1

ISSUED BY MONTFORT X-9834 7/16/69 SECTION EAS GROUP NO. 355 PL 25

NAS 9-1100

LDW200-55017 B

LFM *671		LM12(42)	1
LFM *671		LM11(41)	1
LFM *671		LM10(40)	1
MODEL OR END ITEM	NEXT ASSY	MOD. SER. NO.	REQD PER MODULE OR END ITEM
PART NO. LDW200-55017-7		GAEC SCH NO.	

LFM

LFM501		LM9(39)	1
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-55017-5		GAEC SCH NO.	

LFM501		LM9(39)	1
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW280-55017-3		GAEC SCH NO.	

LFM *501		LM7(37)	1
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW200-55017-1		GAEC SCH NO.	

WORK PACKAGE FUNCTION NO. 111 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00	1.10								
REV	B	B								
SHEET	2.00									
REV	B									
SHEET	3.00									
REV	B									
LAST SECT LTR USED	B									
LAST DASH NO. USED	-11									

GRUMMAN REL INFO	A		
PRIM NO.	SK(024)	ME-16-10/3/69	
240	227	227	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
—— ±.010 ±½°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE ✓
LCD5226

CONTRACT NO. NAS 9-1100 LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	G. SIMPSON		
LAYOUT BY	BIDONDE/VALENTINE		
CHECKED BY	J. Solowiej 9/29/69		
GR LDR	P Gutman 9/29/69		
GR LDR	W 9-30-69		
VDI	Rejected 10-1-69	PROJ ENGR	
STRUCT	CW 10-30-69	REL GROUP	
STRUCT	11/20/69		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

LINES & BRACKET INSTL
(REWORK OF DWG LDW280-54001 & 60001 (LFM501 & 671)

SIZE	CODE IDENT NO.	
B	26512	LDW200-55017 B
SCALE	NONE	SHEET 1.00 OF 4

NG 77.1 12-65

LCD5805 PKG5 CDR 4-6-71

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
									ADDED SHEET 1.10 SHEET 1 OF 4 WAS 1 OF 3						
A	1	1.00 2.00 3.00		LFM501		✓		LCD5226 PK 5	ADDED -3 & -5 INSTL E Szakwenski 6-26-70	LM8 (38) LM9 (39)	✓		ROSADO 6-25-70		
B	1	2.00, 3.00		LFM501		✓		E.O. B1 LCD5226	IN F/D & B/M ON -3 & -5 LDW360-57307-3 WAS LDW360-57307-1.	LM8 (38) LM9 (39)	✓		A. PRESTINARI 4-1-71		
	2	1.00 2.00 3.00		LFM671		✓		LCD5805	ADDED -7 INSTL IDENTICAL TO -1 EXCEPT AS NOTED. ADDED LDW280-60001 & LFM671 TO DWG TITLE.	LM10 (40) LM11 (41) LM12 (42)	✓				

CHG APPROVED	LTR	GROUP LDR	VDI	STRUCT	STRUCT
	A	[illegible] 6/26/70	6-26-70	~	CW 6-26-70
	B	[illegible] 4/1/71	4-2-71		CW 4-2-71

ENG 77.16 3-66

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW200-55017	B

SCALE NONE SHEET 1.10

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
A/R	GT835AR	E	TAPE	GRUMMAN STD							
9	GR500A-4D		RIVET	GRUMMAN STD							
1	GT11J-BR08-10		TERMINAL INSTL	GRUMMAN STD							
1	LDW360-57307-5		AMPLIFIER INSTL	SEE DWG							
1	LDW360-57307-3		AMPLIFIER INSTL	SEE DWG							
1	LDW360-57307-1		AMPLIFIER INSTL	SEE DWG							
1	LDW200-55017-7		LINES & BRKT INSTL								
1	LDW200-55017-5		LINES & BRKT INSTL								
1	LDW200-55017-11	1	STIFFENER	AL ALY SH	QQ-A-250/12	7075-O	.040 x 2 x 8	T6	88	3E
1	LDW200-55017-3		LINES & BRKT INSTL								
1	LDW200-55017-1	E	LINES & BRKT INSTL						NONE	NONE	A5
-7	-5	-3	-1								

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
T6	HEAT TREAT	MIL-H-6088
88	ANODIZE	LSP14-9030

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW200-55017	B

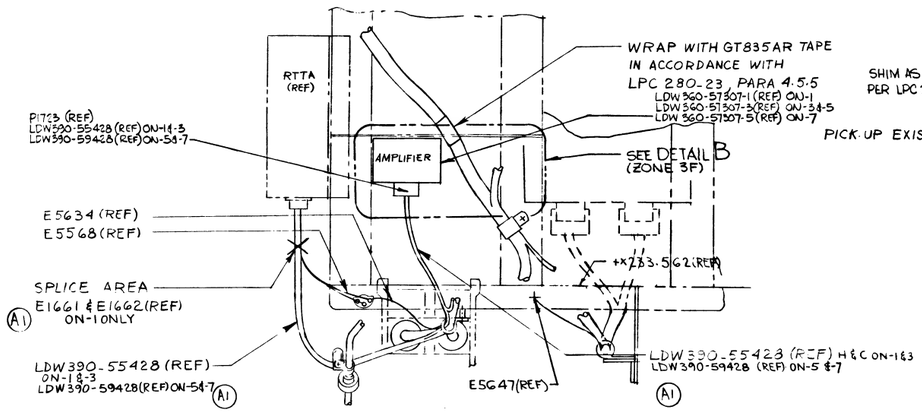
SCALE NONE SHEET 2.00

ENG 77.2 7-65

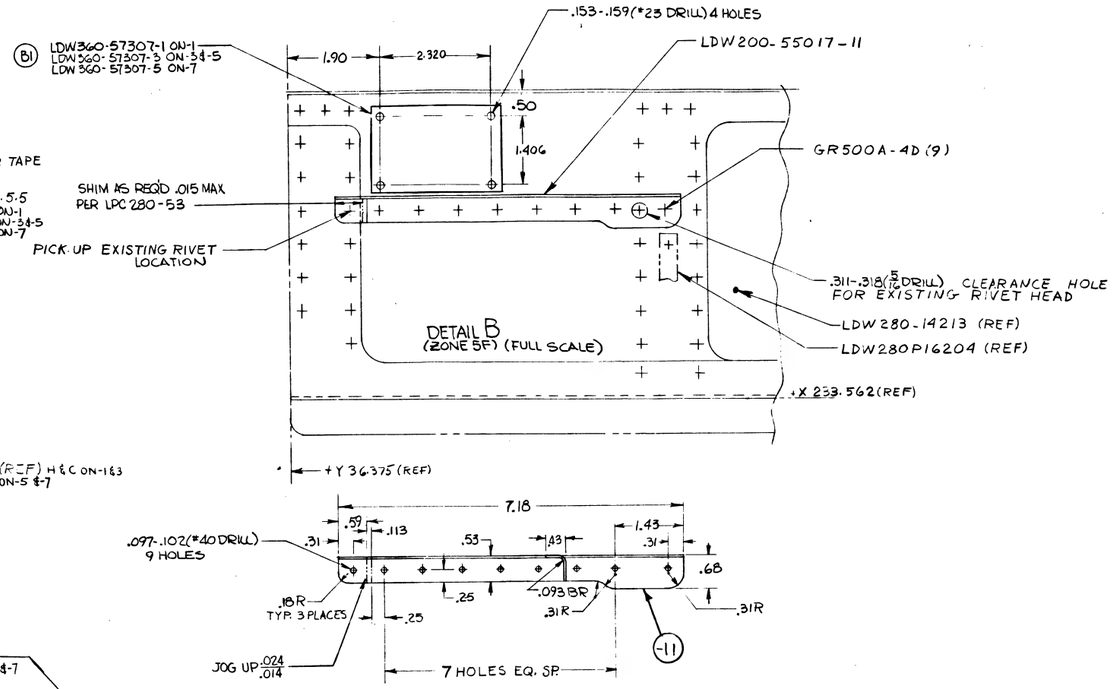
01

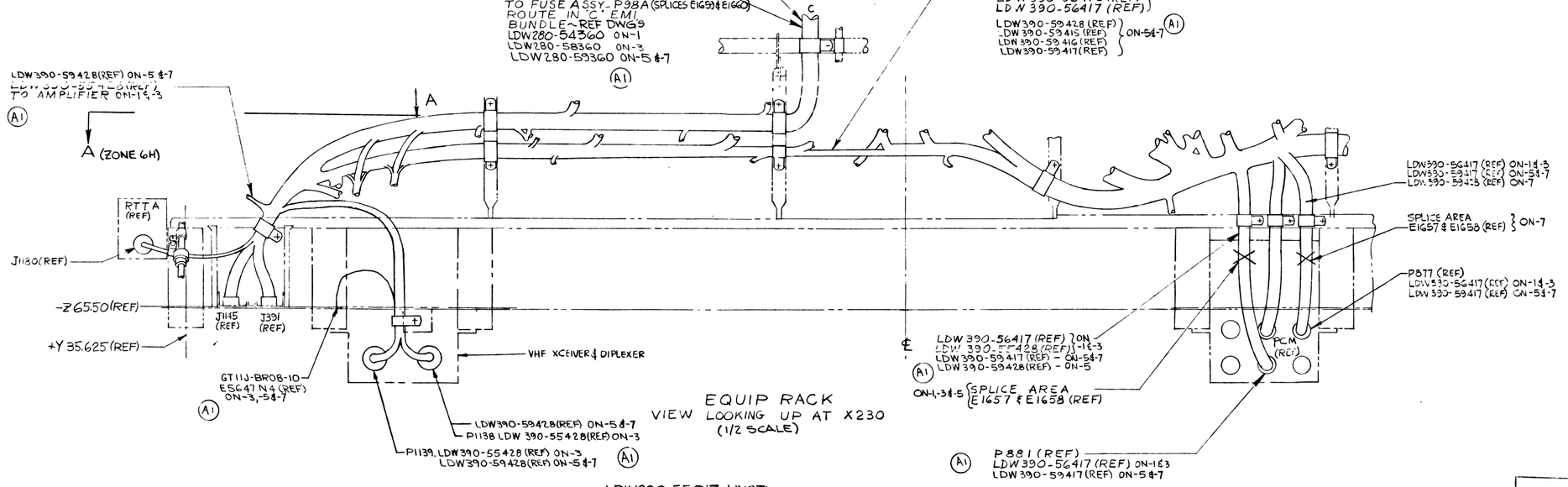
NAS 9-1100

SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130	✓
AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY	PART NUMBER
LENGTHS OF AN NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL RIVETS IN ACCORDANCE WITH	



SECT A-A (ZONE 7C)
VIEW LOOKING AFT
(1/2 SCALE)





EQUIP RACK
VIEW LOOKING UP AT X230
(1/2 SCALE)

LDW200-55017-1 INSTL
A1 LDW200-55017-3 } SAME AS -1
A1 LDW200-55017-5 } EXCEPT AS NOTED
B2 LDW200-55017-7 }

LFM

01 NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714		
SIZE E	CODE IDENT NO 26512	LDW200-55017
SCALE NOTED		SHEET 3 OF

ENG 73-4 REV 3-67

GRUMMAN AEROSPACE CORPORATION

CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO.	LDW200-55017
EO NO.	B1
CONTROL INFO NO.	LDW280-C0774

DESCRIP OF EO
INF/D & B/M ON-3&-5 LDW360-57307-3 WAS
LDW360-57307-11NSTL

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	
			V LCD5226 PKG 5

REASON FOR EO: REVISED COMMUNICATION REQUIREMENTS

DESCRIPTION OF EO: NOTED ABOVE

GAEC EO RELEASE: 7/15/70

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM501	LM8(38)	
LM	LFM501	LM9(39)	

DRAWING CHANGE REQD: ✓ REVISE DWG; RECORD EO

DISPOSITION OF PARTS: ✓ REWORK; SCRAP

PRIORITY: C

DRAWING TITLE: LINES & BRACKET INSTL REWORK

DRAWING NO.: LDW200-55017

EO NO.: B1

	APPROVED BY	DATE
VDI SUPPORT	RBT	7-15-70
RELIAB GROUP		
GROUP LEADER	[illegible]	7/15/70
STRESS GROUP	W/H	7/15/70
LIAISON ENGRG		
PROJ ENGRG	RBT	7-15-70
	Bolte	7-15-70

ISSUED BY ROSADO x87224
CDR 7-16-70

SECTION EQUIP LINES GROUP NO. 332 PL 25

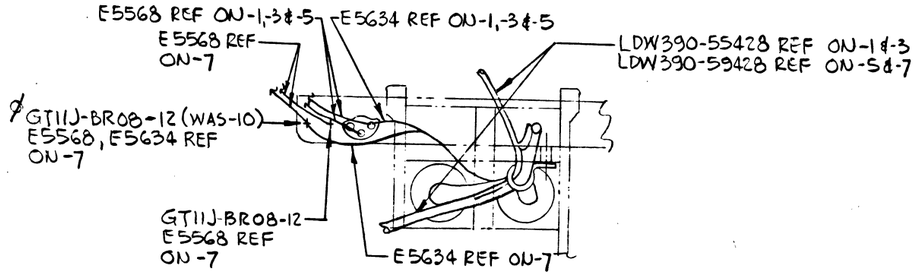
01

NAS 9-1100

GRUMMAN AEROSPACE CORPORATION

ENG 32.1 REV 3-65 | CODE IDENT NO. 26512 | DWG NO. LDW200-55017 | EO NO. C1

ENGINEERING ORDER | CONTROL INFO NO. LDW280C1385



SECT A-A
VIEW LKG AFT
SH. 3.00 ZONE GF

Ø = ADD TO B/M

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCD 5305 PKG 5

REASON FOR EO: LM 10 THRU 12 HAVE GROUND STUDS IN LIEU OF GROUND WHEEL.

DESCRIPTION OF EO: ON-7 INSTL RELOCATED GROUNDS E5568 & E5634 IN B/M ADDED GT11J-BR08-12

GAEC EO RELEASE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM	LFM671	LM10 (40)	
LM	LFM671	LM11 (41)	
LM	LFM671	LM12 (42)	

DRAWING CHANGE REQD: ✓ REVISE DWG; RECORD EO
DISPOSITION OF PARTS: ✓ REWORK; SCRAP
PRIORITY: C
DRAWING TITLE: LINES & BRACKET INSTL (REWORK OF LDW280-54001 & 60001 LFM 501 & 671)
DRAWING NO.: LDW200-55017
EO NO.: C1

APPROVED BY	DATE	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
	4/14/71				4-13-71	4/14/71		4/14/71

CDR 4-14-71
ISSUED BY: A. PRESTINARI X1443
SECTION: VDI (EQUIP LINES)
GROUP NO.: 0332 PL: 025

01

NAS 9-1100

LDW 200-55018

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REWD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REWD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REWD PER MODULE OR END ITEM
PART NO. LDW 200-55018-1 & -3	LFM NO. 518	GAEC SCH NO.	

LFM NO. 518	LM-14 (44)	1 EA.
	LM-13 (43)	
	LM-12 (42)	
	LM-11 (41)	
	LM-10 (40)	
	LM-9 (39)	
	LM-8 (38)	
	LM-7 (37)	
LFM NO. 518	LM-6 (36)	1 EA.

WORK PACKAGE FUNCTION NO. 110 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00	2.00	3.00							
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED	E	GRUMMAN REF INFO	
LAST DASH NO. USED	-15	PRIM NO.	JK/024
		215	MIE-16 10/24/69

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ±.010 ±0°30'

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD NO. 5272 PKG 10	

CONTRACT NO. NAS 9-1100		LINE ITEM	DOCUMENTATION TYPE II
DRAWN BY	KLINGENER/ROCKLEIN		
LAYOUT BY			
CHECKED BY	10/24/69		
GROUP LDR	10/23/69		
VDI	10-28-69		
STRUCTURES		PROJ ENGR	10/23/69
STRUCTURES	10/23/69	REL GROUP	

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

FINAL ASSY - ASCENT STAGE
REWORK OF LDW 280-54001
LFM NO. 518

SIZE	CODE IDENT NO.	
B	26512	LDW 200-55018

SCALE NONE SHEET 1.00 OF 3

CDR 10-24-69

-3 77.1 12-65

01

NAS 9-1100

| | | |

11 10 9 8 7

D C B A

Pr C Pr D Pr E Pr G Pr H Pr I Pr K Pr L Pr N Pr O Pr P Pr V Pr W Pr X

CUT HERE SEE DETAIL "C" (ZONE 5A)

3.0 ±.05 (TRUE)

LDW280-53382-53 (REF)

CUT HERE (SEE SECT. E-E)

LDW280-53164 (REF)

Pr "R"

LDW280-53382-39 (REF)

Pr "S"

E (ZONE 11A)

LDW280-11361-19 (REF) E TENSION STRAP

LDW280-53382-37 (REF)

LDW280-53164 (REF)

LDW280-23053-9 (REF)

3.0 ±.5 (TRUE)

CUT HERE SEE DETAIL "C" (ZONE 5A)

A (ZONE 3A)

LDW280-53382-19 (REF)

LDW280-54027 (REF) (X 310.50 DECK)

-Y 15.25 (REF)

+Y 15.25 (REF)

LDW280-53164 (REF)

LDW280-53382-18 (REF)

LDW280-23053-11 (REF)

LDW280-53382-28 (REF)

LDW280-53382-30 (REF)

Pr L

D

LDW280-53382-54 (REF)

Z 0.00 (REF)

FWD.

LDW200-55018-1 INST'L.

LDW200-55018-3 INST'L.

VIEW LOOKING DOWN @ MID-SECTION TOP DE

Pr L

Pr K

X 307.5 (REF)

CHEM-MILL LINE (REF)

EPON 934 (REF)

(.165-.171) 4 HOLES THRU GBS11J-08-17 (4) MS21042L08 (4) (SEE NOTE 3)

"L"/2 ±.25

EPON 934 (TYP) (NOTE 3)

.375 ±.06

"L"

.010 MILL-.020 MAX GAP (TYP)

CUT THRU TUBE HERE .062 MAX. WIDTH OF CUT

LDW200-55018-15 (SEE NOTE 2)

CHEM-MILL LINE (REF)

LDW280-53382-37 (REF)

Pr J

SECT. D-D (SHOWN) (ZONE 7C)

SECT. E-E (OPP) (ZONE 9B)

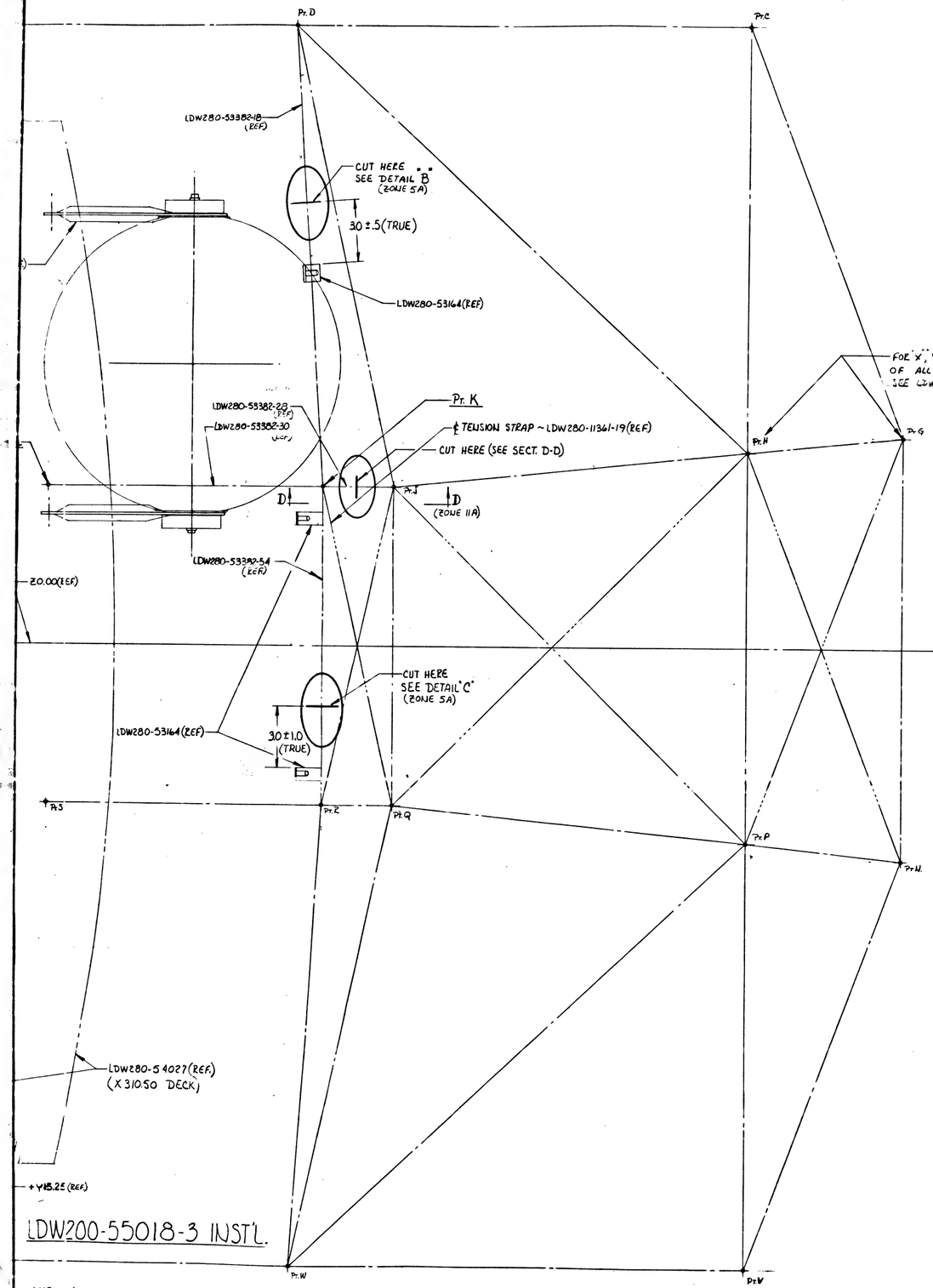
(FULL SCALE)

EPON 934 (SEE NOTE 2)

LDW200-55018-15 (REF)

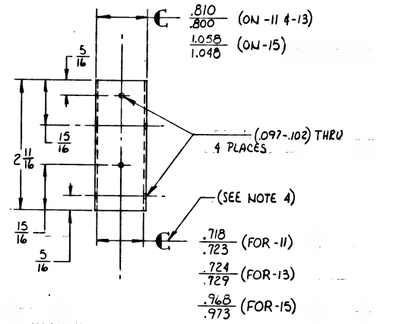
LDW280-53382-37 (REF)

01Z03 NAS 9-1100

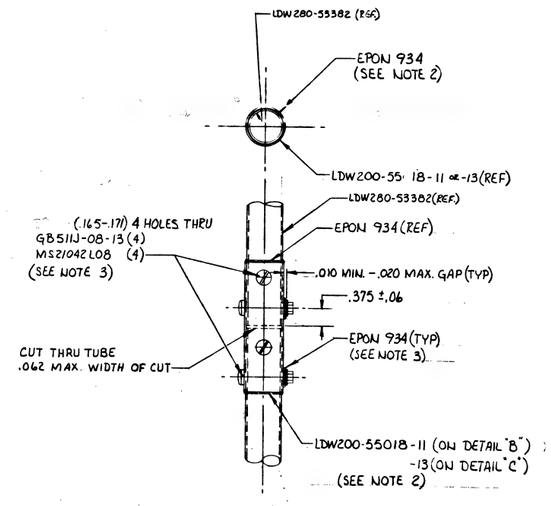


LDW200-55018-3 INST'L.

VIEW LOOKING DOWN @ MID-SECTION TOP DECK

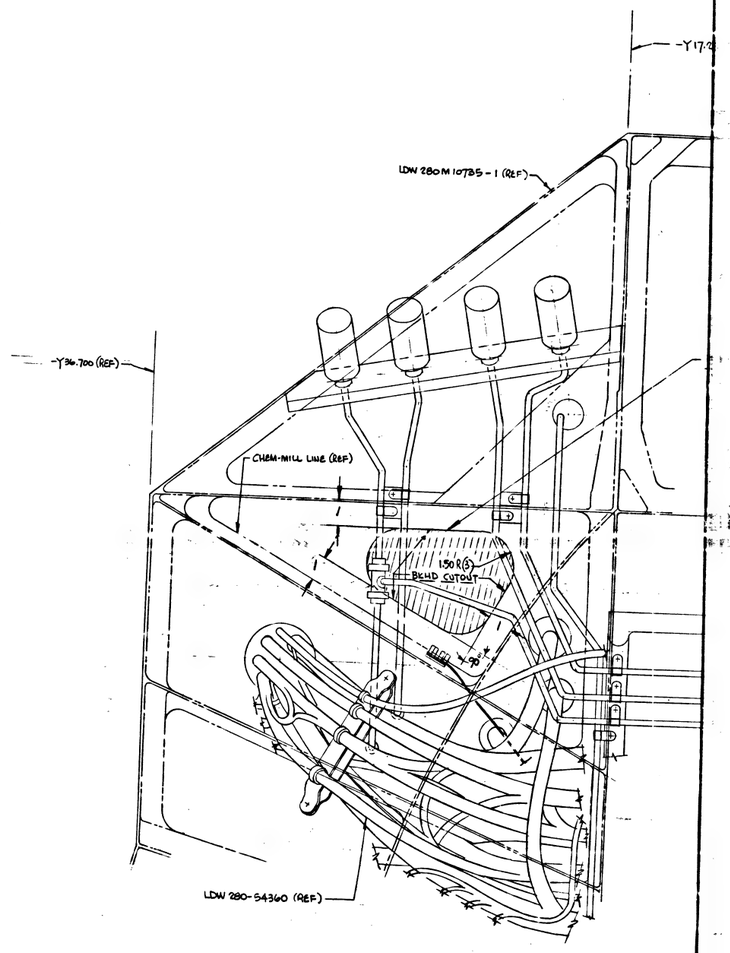


LDW200-55018 -11 SHOWN
-13 IDENT (EXCEPT AS NOTED)
-15 IDENT (EXCEPT AS NOTED)



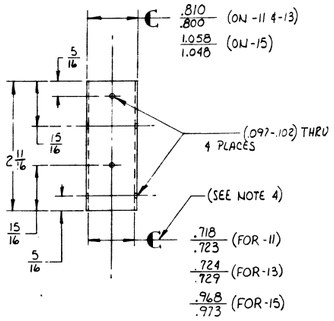
DETAIL "B" (ZONE 7D)

DETAIL "C" (ZONES 7B, 9A & 9C) (TYP. 3 PLACES)



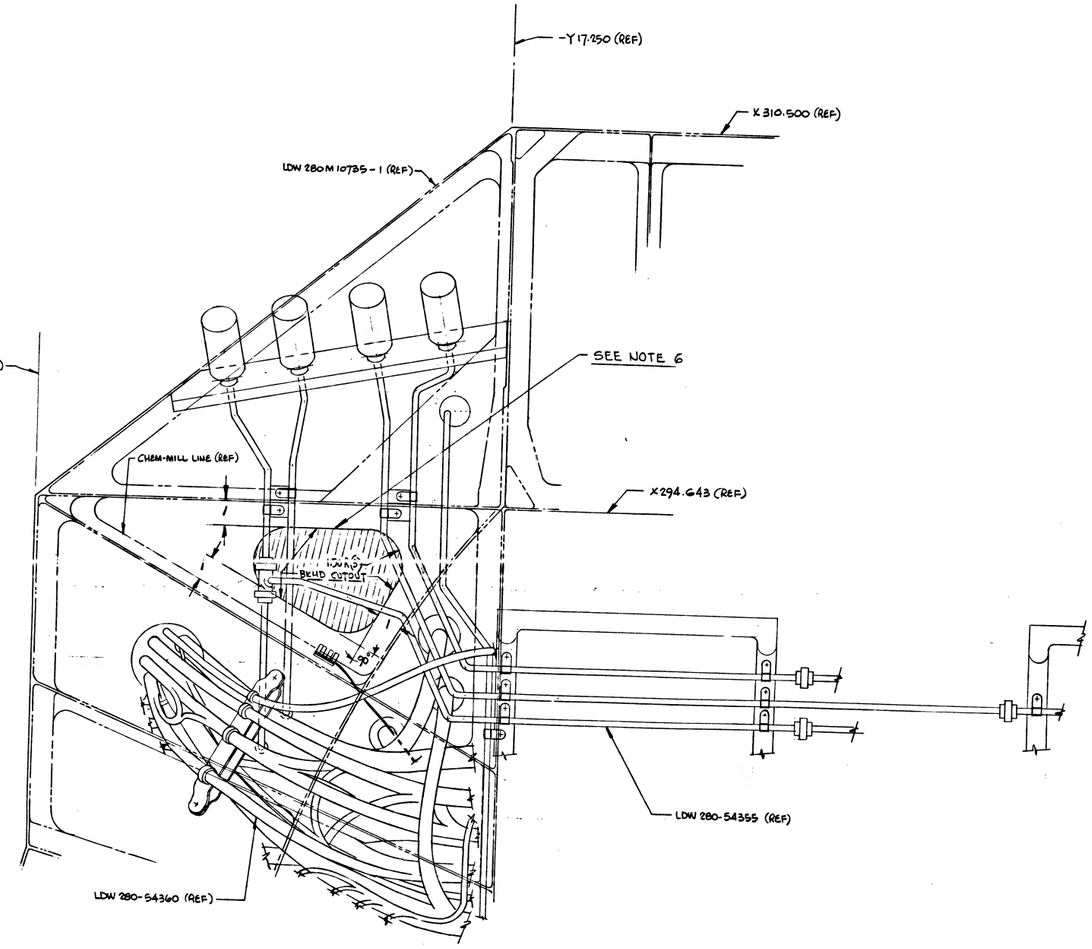
VIEW A-A
VIEW LOOKING FWD - L.H. SIDE
-727 BKHD (ZONE 8A)
(SHOWN HALF SIZE)

02403 NAS 9-1100

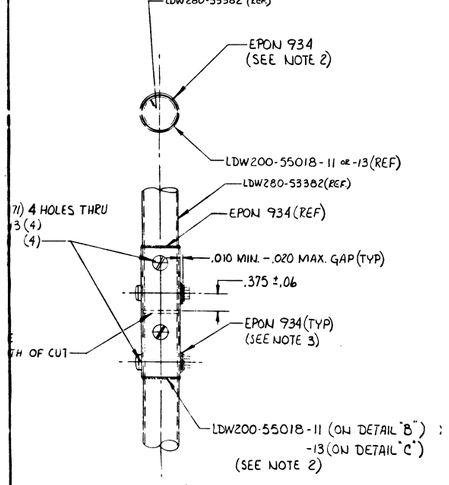


DWG.

LDW200-55018 -11 SHOWN
-13 IDENT (EXCEPT AS NOTED)
-15 IDENT (EXCEPT AS NOTED)



VIEW A-A
VIEW LOOKING FWD - L.H. SIDE
-727 BKHD (ZONE 8A)
(SHOWN HALF SIZE)



DETAIL "B" (ZONE 7D)

DETAIL "C" (ZONES 7B, 9A & 9C) (TYP. 3 PLACES)

Notes:

1. This installation is to be incorporated on a vehicle only in the event that an Ascent Stage Water Tank requires removal and replacement after final assembly is completed.
2. Bond -11, -13, and -15 sleeves to tubes as shown (see Detail's "B" and "C" and Sections "D-D" and "E-E") using EPON 934 per LSP14-22500 cure range I.
3. Install fasteners as shown in Details "B" and "C" and Sections "D-D" and "E-E". Do not clamp up on tube. Nut to be installed such that .010 min -.020 max gap occurs between nut and tube. This gap to be filled with EPON 934. (Fastener orientation optional) per LSP14-22500 cure range I.
4. Dimensions on -11, -13, -15 marked ℄ to be concentric to .005 TIR.
5. Fasteners (G) which secure retainer and replacement water tank to X294 deck are to be installed using "Lok-Tite" on threads per MIL-S-22473C, Grade G, in lieu of lockwire.
6. Caution must be exercised when cutout in -727 bulkhead is made. Cutting tool penetration end of -727 to be kept to a minimum due to the possible presence of electrical wiring. (A preliminary exploratory penetration may be advisable.)
7. The parts listed are replacement parts to be used in the event damage occurs during rework of the vehicle.

03/03 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK		
SIZE	CODE IDENT NO. 26512	LDW 200-55018
SCALE 1/2 & 1/4 FCD		SHEET 3.00

D LDW200-55018
C
B LDW200-55018
A LDW200-55018

PRINTING INFO ONLY
PRINT TRIM LINE
FULL SIZE SHEET AREA (A) 34 X 1.08 = 27 SQ FT
½ SIZE SHEET AREA (A) OF FIGURE 6.5 SQ FT

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENG 32.1 REV 3-65
ENGINEERING ORDER

DWG. NO. LDW200-55018 | EO NO. A1
CONTROL INFO NO. LDW280B 9265

ADD NOTE * (USE NEXT AVAIL. NOTE NO.)

"IN THE EVENT AL. ALLOY TUBING ~ WW-T-700/3 ~ 2024-T3
IS NOT AVAILABLE, -15 CAN BE MADE FROM
AL. ALLOY BAR ~ QQ-A-250/4 ~ 2024 T351 AS AN ALTERNATE MAT'L."

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD 5271 (5)

REASON FOR EO: MIN-MAX MAT'L. NOT AVAILABLE AT GAEC.

DESCRIPTION OF EO: ADDED NOTE *

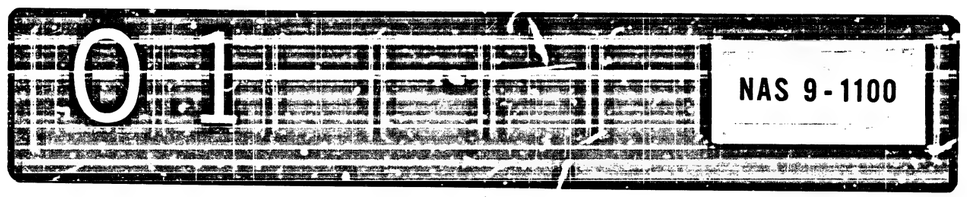
GAEC EO RELEASE: (2) VK 10/29/69 (5)

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO. EI	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 518	LM-6(36)	
		THRU	
LM	LFM 518	LM-14(44)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: NOT REWORK | ZERO'D SCRAP
PRIORITY: C
DRAWING TITLE: A/S ~ FINAL ASSY REWORK OF LDW280-54001
DRAWING NO.: LDW200-55018
EO NO.: A1

APPROVED BY	DATE	
	10/29/69	VDI
SUPPORT		
RELIAB GROUP		
GROUP LEADER	10/29/69	
STRESS GROUP	10/30/69	
LIAISON ENGRG		
PROJ ENGRG	10/30/69	10/25/69

10-30-69 ISSUED BY D. KLINGENER X86048 SECTION VDI GROUP NO. 335 PL 25



LDW200-55019

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		LFM*524	LDW280-54001	LM6(36)	1
								PART NO. LDW200-55019-1		GAEC SCH NO.	

WORK PACKAGE FUNCTION 110 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00	2.00	3.00	4.00						
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED		GRUMMAN REL INFO	
LAST DASH NO. USED	15	PRIM NO.	JK(124) ME-16 11/5/69
		215	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ± .010 ± 1/2°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 5289 PKG II	

CONTRACT NO. NAS9-1100 LINE ITEM NM DOCUMENTATION TYPE II

DRAWN BY	P. CURASI 11/4/69	MAT'L	11-4-69
LAYOUT BY			
CHECKED BY			
G.R. LEADER	11-4-69		
VEH. DES INT	11/4/69		
STRUCT.	11/4/69	PROJ ENGR	11/4/69
CREW SYST.	11/4/69	REL GROUP	11/4/69
Insp Pilot	11/4/69		

(E) GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

MARKING INSTALLATION
REWORK OF LDW280-54001
LFM 524

SIZE	CODE IDENT NO.	
B	26512	LDW200-55019
SCALE NONE		SHEET 1.00 OF 4

ENG 77.1 12-65

CDR 11/4/69

01

NAS 9-1100

QTY PER ASSEMBLY				CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
A/R	A/R	A/R			GT535A4-8	E	TAPE	GRUM. STD.						
A/R	A/R	A/R			GT535A4-4	A	TAPE	GRUM. STD.						
1					LDW200-55019-15		TEMPLATE	CORR. RES. STL.	MIL-S-5059	301-½ HARD	.016 x 4 x 8	SEE NOTES	NONE	
	1				-13		TEMPLATE	CORR RES. STL.	MIL-S-5059	301-½ HARD	.016 x 4 x 8	SEE NOTES	NONE	
		1			-11		TEMPLATE	CORR. RES STL.	MIL-S-5059	301-½ HARD	.016 x 4 x 8	SEE NOTES	NONE	
			1		-7		TEMPLATE ASSY							
			1		-5		TEMPLATE ASSY							
			1		-3		TEMPLATE ASSY							
					LDW200-55019-1	E	MARKING INSTL.	(SEE NOTE 6&9)						

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55019

SCALE NONE SHEET 2.00

ENG 77.2 7-65

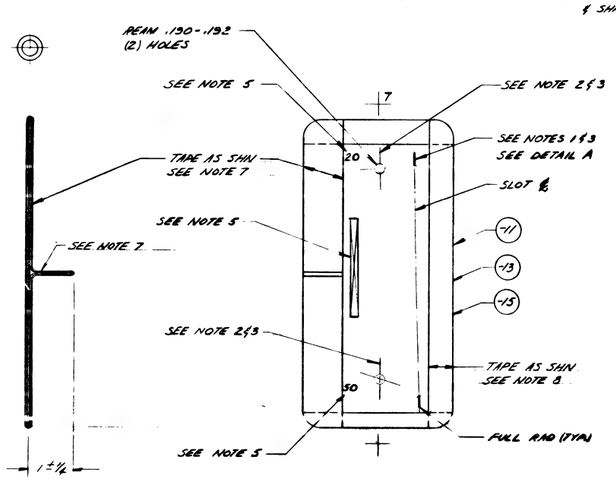
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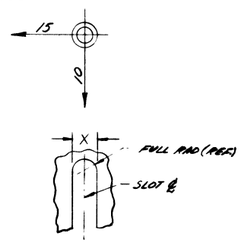
NAS 9-1100

5. ELECTRO-ETCH 20 & 50 MARKING & PART NO. AS SHN. - MIN HEIGHT 1/8 IN. PER LSP14-002, TYPE I, GLASS I

NOTES CONT ON SH. NO. 4.

NOTES:
1. -11-13 & -15 SLOT & TO BE WITHIN .010 OF LOFTED LINE
2. -11-13 & -15 SCRIBE INDEX MARKS MAX. DEPTH .010
3. 20 & 50 INDEX MARKING TO BE WITHIN ±.010 OF LOFTED SLOT & & EACH OTHER
4. -11-13-15 CRITICAL PARTS - REMOVE ALL BURRS & SHARP EDGES.





DETAIL A
NO SCALE

	X
-11	.025 -.015
-13	.035 -.025
-15	.050 -.040

LDW 200-55019-3 TEMPLATE (ASSY.)
-5 TEMPLATE (IDENT. TO -3 EXCEPT AS NOTED)
-7 TEMPLATE (IDENT. TO -5 EXCEPT AS NOTED)

	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK		
	SIZE	CODE IDENT NO.	LDW 200-55019
LEM	C	26512	
MODEL OR END ITEM	SCALE FULL		SHEET 3.00

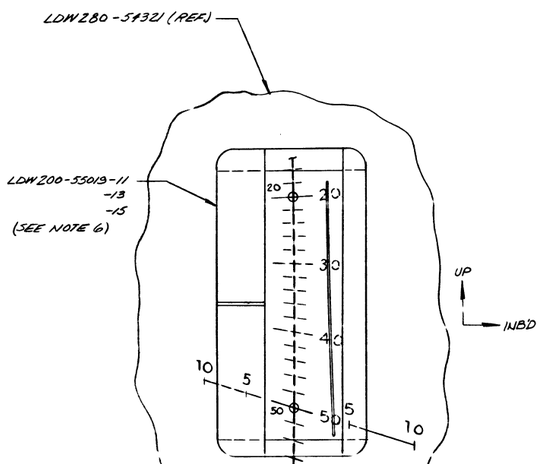
LDW 200-55019

FOR PHOTO REPRODUCTION

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NAS 9-1100

REVISIONS						
ZONE	LTR	DESCRIPTION	EFF CODE	MODEL	DATE	APPROVED



LDW200-55019-1 MARKING INSTL.
VIEW LOOKING FWD
IN PLANE OF WINDOW

NOTES: CONT. FROM SHT. NO 3

6. FOR MARKING LINE DEFINITION (WIDTH) THE CHOICE OF -3 -5 OR -7 IS AT THE DESCRETION OF CONSULTING PILOT.
7. WRAP -11 -13 & -15 USING GT 535AH-8 TO FORM TAB AS SHN. - 1 TO 6 LAYERS AS REQD.
8. TAPE ALL EDGES & ENTIRE FAR SIDE OF -11 -13 & -15 USING GT-535AH & TAPE & /OR GT535AH-8 TAPE. SLOT & (2)(.190-.192) REAMED HOLES TO BE FREE OF TAPE WITHIN 1/16 TO 1/8 OF EDGES - 1 TO 6 LAYERS AS REQ.
9. INSTL. MARKING PROCEDURE:
   POSITION -11 -13 OR -15 TEMPLATE OVER EXISTING INNER LPD 20 & 50 MARKING & MARK WINDOW PANEL USING (BLACK) MARKER PEN NO. SEB 121000 82-301. (GFF, REF)

FOR PARTS LIST, USAGE DATA, AND DWG SH STATUS, SEE DOCUMENT SAME NUMBER PREFIXED PL

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES		
LINEAR TOL	XX	± .03
	XXX	± .010
ANGULAR TOL		± 0°30'
TOL ON LOFTED DELINEATIONS IS		

CONTRACT NO.	
DRAWN BY	
LAYOUT BY	
CHECKED BY	
GR LEADER	
REL GROUP	
PROJ ENGR	
GOVT APPD	

GRUMMAN AIRCRAFT ENGINEERING CORPORATION
BETHPAGE, NEW YORK 11714

SIZE	CODE IDENT NO.	
C	26512	LDW200-55019

SCALE FULL SHEET 4 OF 6

1 DISTR LIST *

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200-55019 | EO NO. A1

CONTROL INFO NO. LM-5-22092

ON -3, -5 & -7 ASSY

IN B/M & SHEET 4.00, NOTES 7 & 8

GT535AH-4 S/B GT835AH-4
GT535AH-8 S/B GT835AH-8

REWORK INFO (REF ONLY)
IT IS PERMISSIBLE TO USE GT835AH-9G IF
GT835AH-4 & GT835AH-8 ARE NOT AVAILABLE

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | X | LCD 5289

REASON FOR EO: INCORRECT TAPE P/N CALLED-OUT

DESCRIPTION OF EO: -3, -5 & -7 ASSY
GT835AH-4 WAS GT535AH-4;
GT835AH-8 WAS GT535AH-8

(5)

GAEC EO RELEASE: R

MODEL	E/I PROCURING ACTIVITY NO.	EFFECTIVITY GAEC UNIT NO.	EFFECTIVITY SUB CONTR UNIT NO.
LM	LFM#524	LM-6(36)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: REWORK ✓ | SCRAP

PRIORITY: C

DRAWING TITLE: MARKING INSTR
REWORK OF LDW280-54001 -LFM524

DRAWING NO.: LDW200-55019

EO NO.: A1

APPROVED BY	DATE	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
D.V.	11-4-69		11/5/69	11-5-69	11/7/69	
SKAT	11-4-69					11/4/69

ISSUED BY LIAISON JIM McCORMACK, X-86755 SECTION VDI GROUP NO. 335 PL 25

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
A/R		G-101600	E	TAPE	GFE				NONE	NONE	
-1		LDW200.55021-1	E	TAPE INSTL.							

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

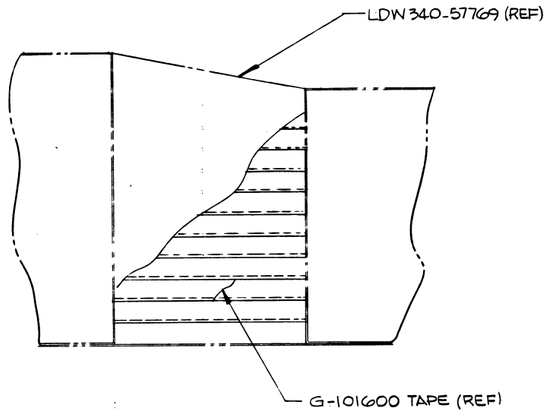
SIZE	CODE IDENT NO.	
B	26512	LDW200-55021

SCALE NONE SHEET 2.00

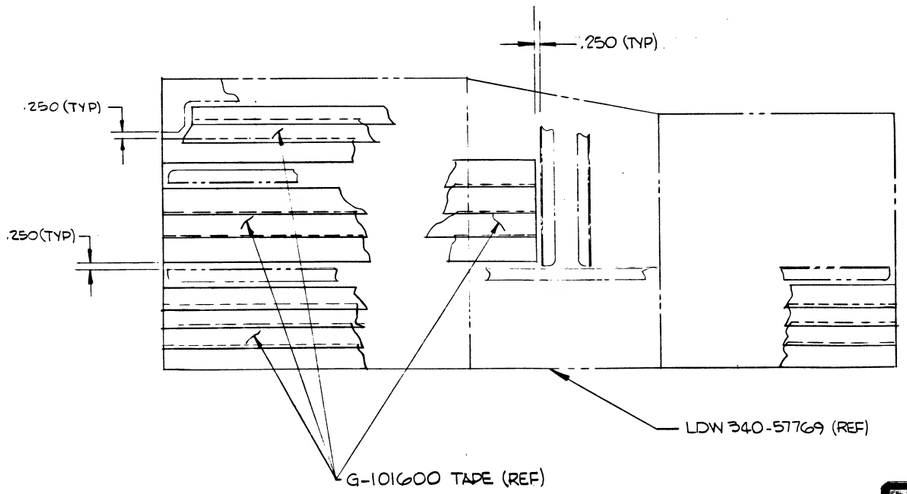
ENG 77.2 7-65

01

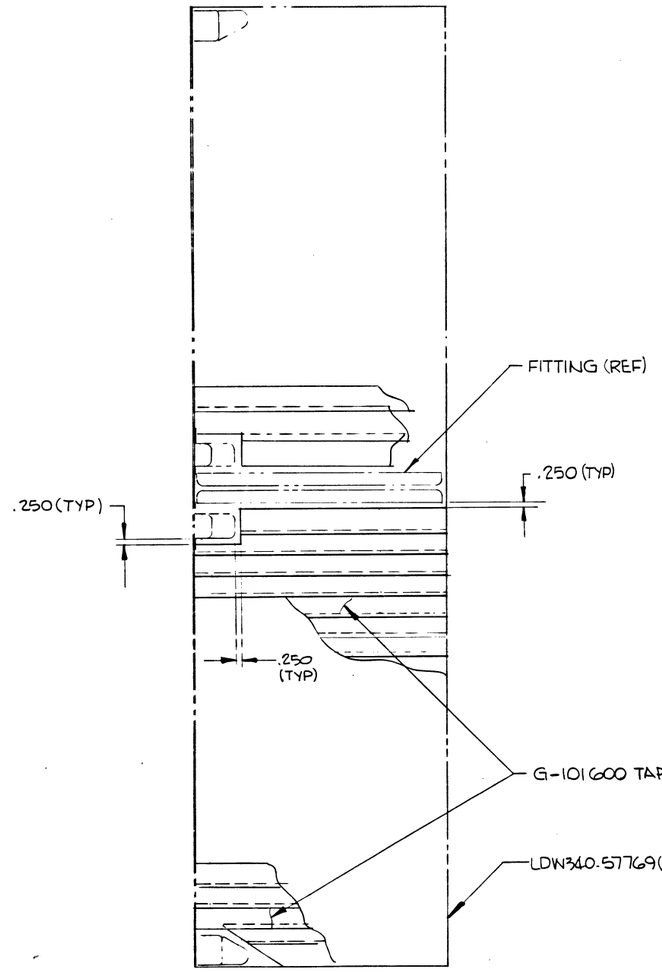
NAS 9-1100



VIEW F-F (ZONE 6D)



VIEW E-E (ZONE 5A)

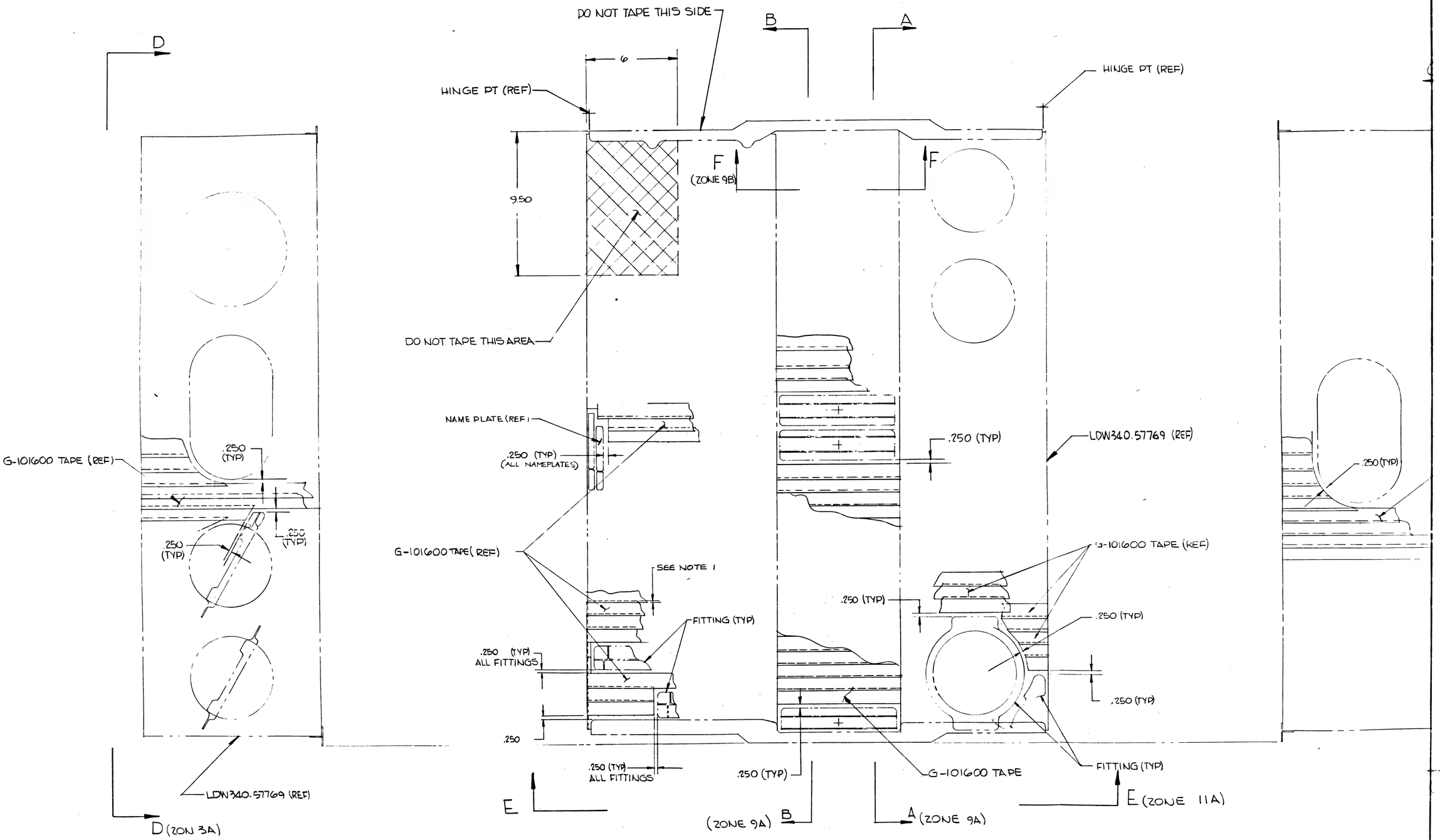


VIEW A-A (SHOWN)(ZONE 6A)
B-B (OPP) (ZONE 6A)

01403 NAS 9-1100

CODE IDENT NO.	DWG NO.	SHEET
26512	LDW200-55021	3

FRAME 1 FRAME 2

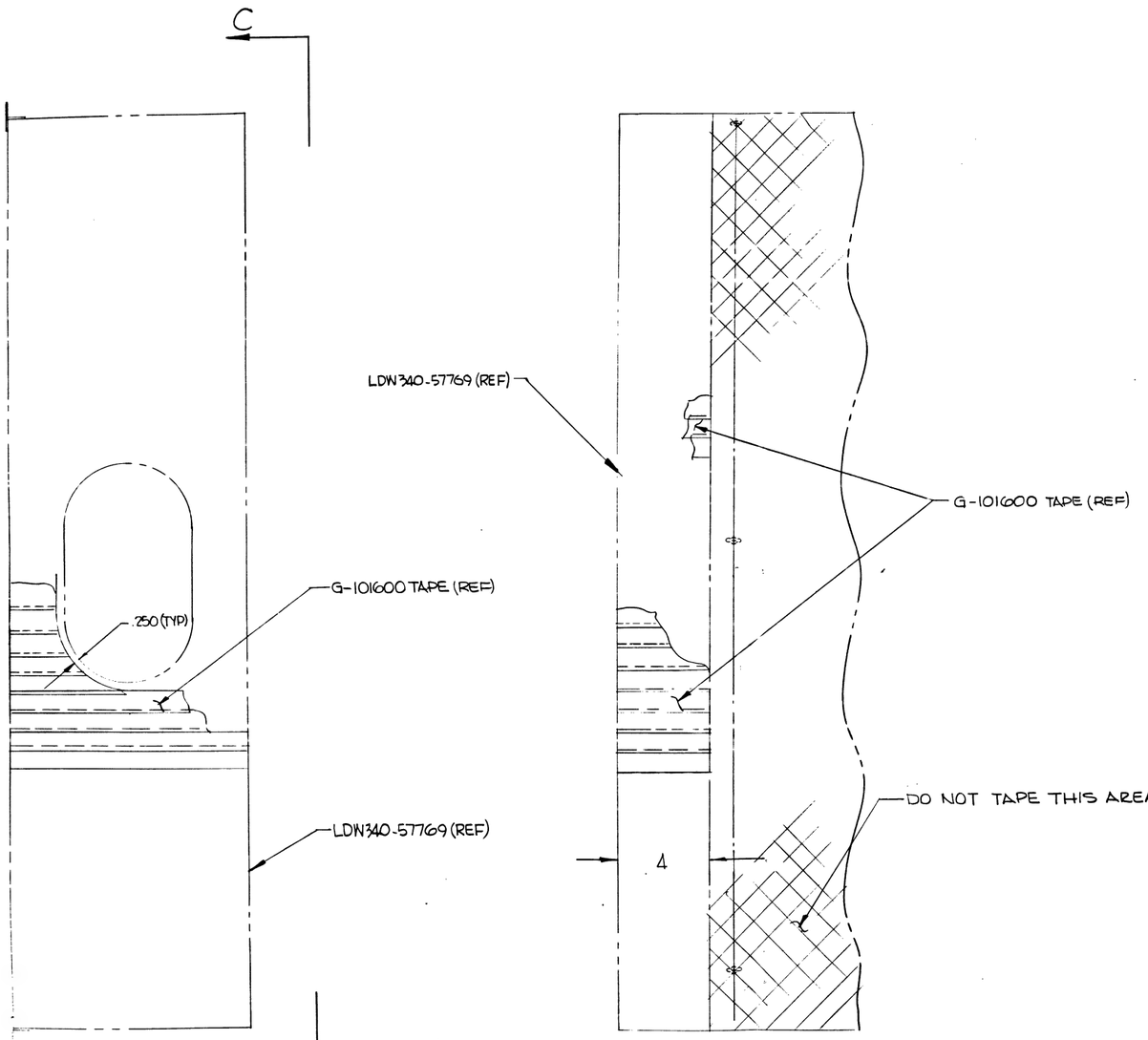


02/03 NAS 9-1100

LDW 200-55021-1 INSTL
(MESA DEPLOYED) (REF)

NOTE:

1. INSUL. TAPE DIRECTION OF WRAP OPTIONAL OVERLAP 1/8 APPROX.



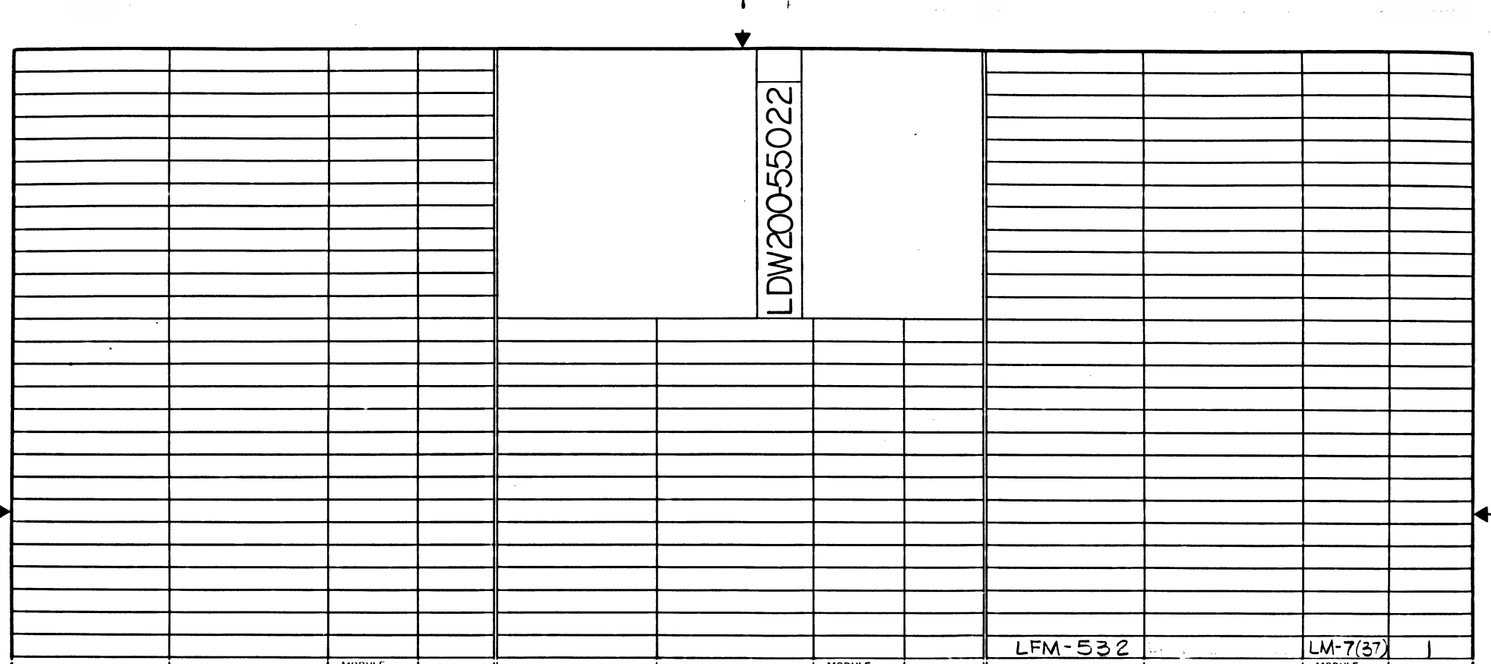
VIEW C-C (SHOWN)(ZONE 4A)
D-D (OPP) (ZONE 8A)

03/03 NAS 9-1100

LDW200-55021 SHEET 3
FRAME 2 FRAME 3

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK
SIZE J | CODE IDENT NO. 26512 | LDW200-55021
SCALE 1/2 | SHEET 3.00

3FR



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.			LFM-532	LM-7(37)	1
								PART NO. LDW200-55022-1		GAEC SCH NO.	

WORK PACKAGE FUNCTION. 110 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH											
SHEET	1.00		2.00		3.00						
REV											
SHEET											
REV											
SHEET											
REV											

LAST SECT LTR USED	B	GRUMMAN REL INFO	
LAST DASH NO. USED	-1	PRIM NO.	UC(024) 292 ME-16

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
~~FRACTIONS DECIMALS ANGLES~~
XX ±.03 XXX ±.020 —
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE ✓
LCD-5346 PKG 7

CONTRACT NO. NAS9-1100 | LINE ITEM | DOCUMENTATION TYPE II

DRAWN BY	M. MULLER 12/6/69				
LAYOUT BY	N. CIOFFI 12/6/69				
CHECKED BY	L. ATLAS 12/6/69				
GR LEADER	C. Varno 12-5-69				
SUB.SYS.ENG.					
STRUCTURES	w/B 12/10/69	PROJ ENGR			
STRUCTURES	w/H 12/10/69	REL GROUP		12/10/69	
MATL'S	12/10/69				

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SUPPORT INSTL-WRENCH, DRILL STRING
REWORK OF LDW340-57769
(LFM NO. 532)

SIZE	CODE IDENT NO.	
B	26512	LDW200-55022

SCALE NONE | SHEET 1.00 OF 3

12-15-69

ENG 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
3		AN960D8L	E	WASHER	GOVT STD						
2		MS27983-8N	E	STUD	GOVT STD						
2		MS27983-7N		SOCKET	GOVT STD						
2		MS27983-6N		BUTTON	GOVT STD						
		SEE NOTE 2		SHIM							
1		MS21042-L08		NUT	GOVT STD						
1		GR501A-5F		RIVET	GRUMMAN STD						
1		GR501A-5D		RIVET							
A/R		GT535B-8R		TAPE							
1		GR500A-5H		RIVET							
1		GR500A-5D									
2		GR500A-4J									
2		GR500A-4H									
2		GR500A-4F		RIVET							
1		GN|BE-178		NAMEPLATE							
1		GB511J-08-9		BOLT							
1		GB511J-08-3		BOLT	GRUMMAN STD						
1		LDW340P11936-15		SUPPORT	SEE DWG						5A
1		LDW340P11936-13		SUPPORT	SEE DWG						6C
1		LDW340P11936-11		SUPPORT	SEE DWG						4B
1		LDW340-56019-125		STRAP ASSY							6C
1		LDW340-56019-123		STRAP ASSY							4B
		LDW200-55022-1	E	SUPPORT INSTL					NONE	NONE	4B

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

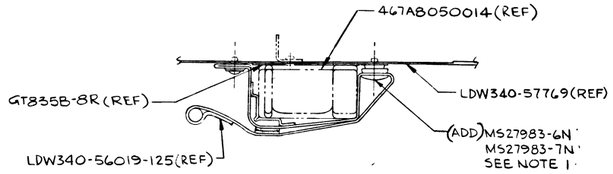
SIZE	CODE IDENT NO.	
B	26512	LDW200-55022

SCALE NONE SHEET 200

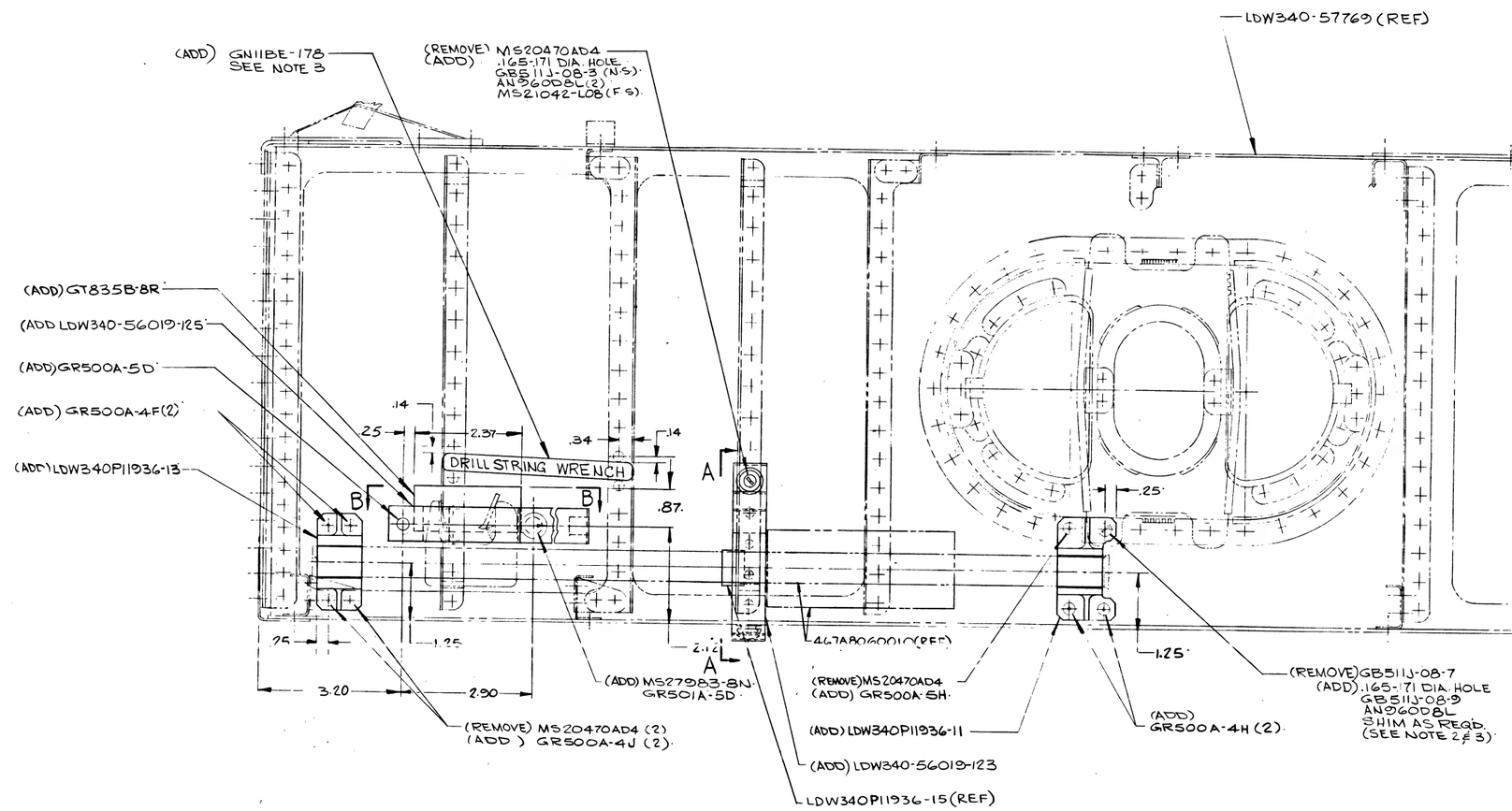
ENG 77.2 7-65

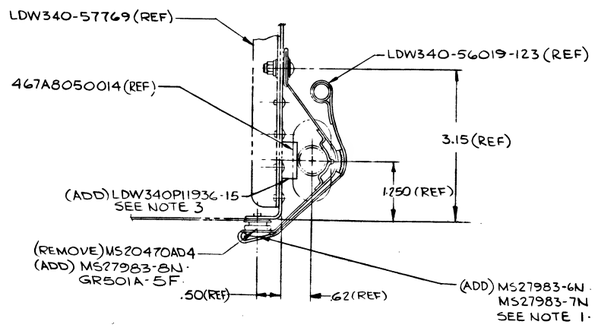
01

NAS 9-1100



SECTION B-B





SECTION A-A

LDW200-55022-1 INSTL
VIEW LOOKING INBD - R H SIDE MESA

01 / 02

NAS 9-1100

CODE IDENT NO.	DWG NO.	SHEET
26512	LDW200-55022	3

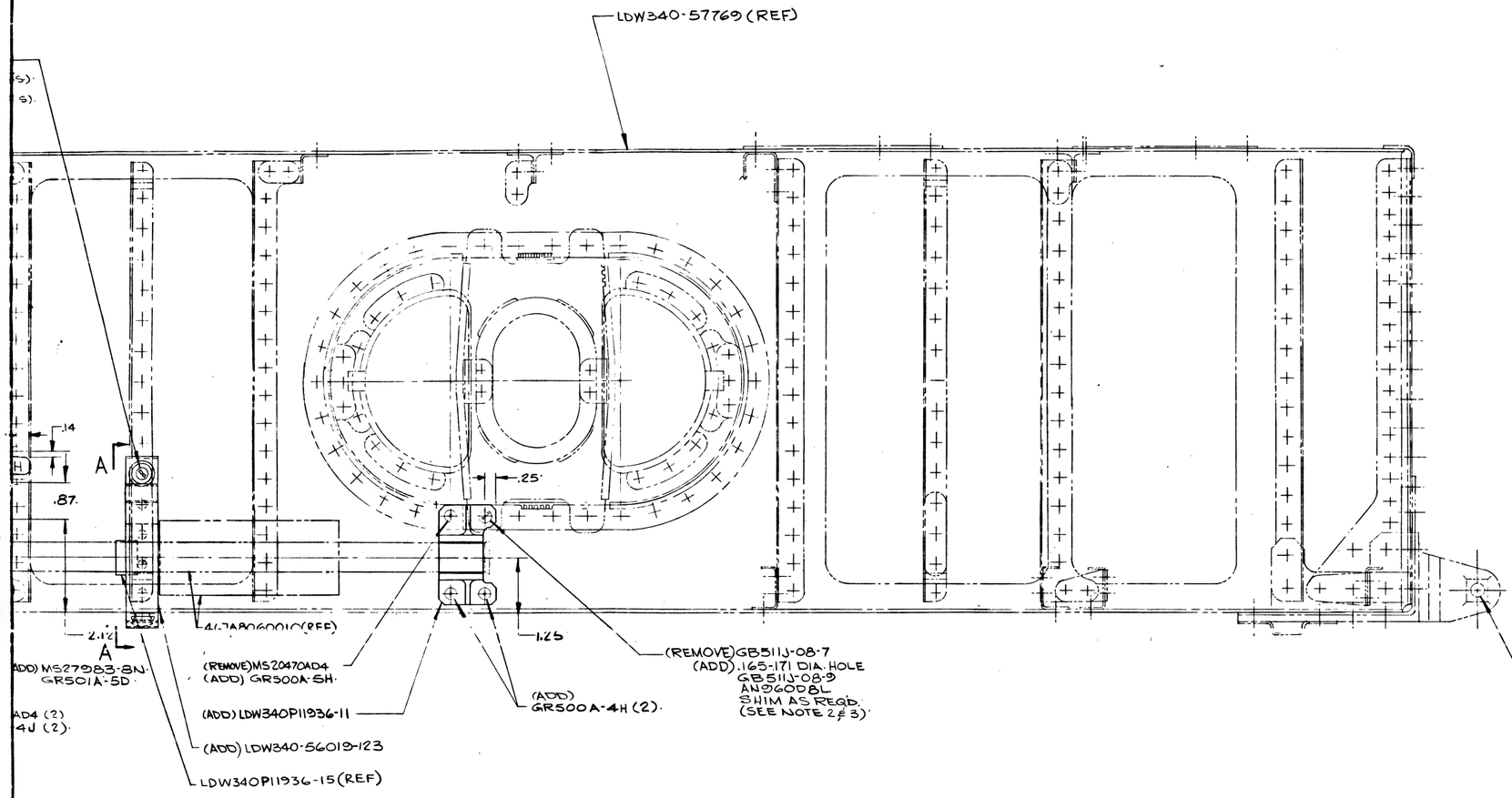
FRAME 3 FRAME 2

014(REF)

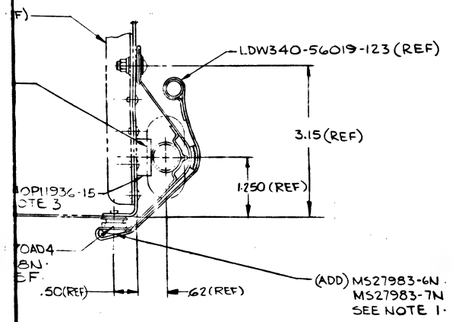
LDW340-57769(REF)

DD)MS27983-6N
MS27983-7N
SEE NOTE 1

NOTES:
1. PULL STRAP TAUT BEFORE INSTALLING BUTTON TO INSURE SNUG FIT.
2. SHIM AS REQ'D USING LAMINATED SHIM PER MIL-S-22499, COMP I, TYPE I, CLASS II.
3. BOND IN PLACE USING EPON 934 IN ACCORDANCE WITH LSP14-22500, CURE RANG I.
4. INSTALL FASTENERS GR500A & GR501A PER LSP-14-15303.



LDW200-55022-1 INSTL
VIEW LOOKING INBD - R H SIDE MESA



SECTION A-A

02/Q2 NAS 9-1100

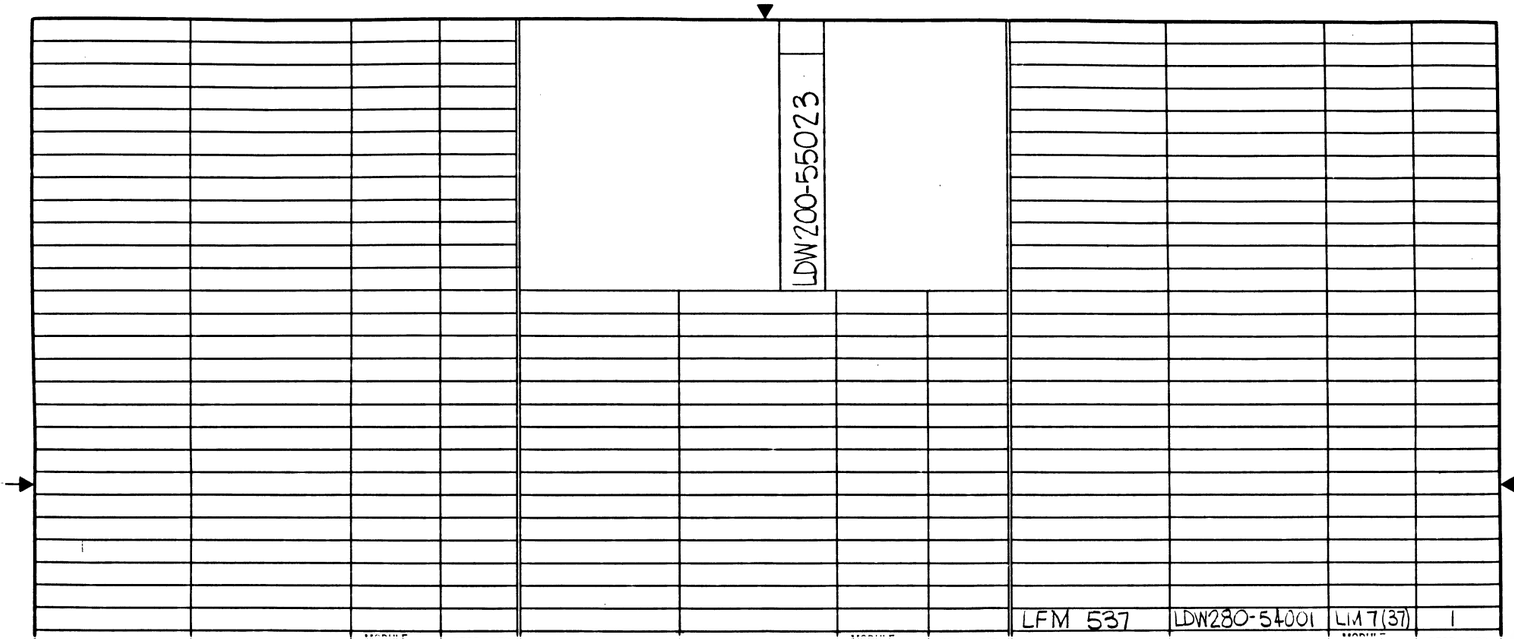
CODE IDENT NO	DWG NO	SHEET
26512	LDW200-55022	3

FRAME 1 FRAME 2

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO	
	26512	LDW200-55022

SCALE: FULL SHEET 3 OF 3



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.			LFM 537	LDW280-54001	LM 7(37)	1
								PART NO. LDW200-55023 -1		GAEC SCH NO.	

WORK PKG #110 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00			2.00			3.00			
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED	B	GRUMMAN RE INFO	
LAST DASH NO. USED	-1	PRIM NO.	215

JK(024) ME-16 12/19/69

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
~~FRACTIONS~~ DECIMALS – ANGLES
.XX±.03 .XXX±.010 ±1/2°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	√
LCD# 5370 PKG 10	

CONTRACT NO. NAS 9-1100 LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	L. BERLINQUETTE		
LAYOUT BY	L. BERLINQUETTE		
CHECKED BY	12-18-69		
GRP LDR	JV 12/17/69		
VDI	12-18-69		
STRUCT	CW 12-18-69	PROJ ENGR	12-18-69
		REL GROUP	12-17-69

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET INSTALLATION
ASCENT STAGE-MID SECT-TV CAMERA SUPT
-727~ REWORK OF LDW280-54019 LFM 537

SIZE	CODE IDENT NO.	
B	26512	LDW200-55023

SCALE NONE SHEET 1.00 OF 3

ENG 77.1 12-65

CDR 12/19/69

01 NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
24		GW10G-2	E	WASHER	GRUMMAN STD						
24		GS570P-08	E	SEAL							
24		GN512H-08	E	NUT-COLLAR							
24		GB511K-08-3	E	BOLT	GRUMMAN STD						
2		LDW280-12184-1	E	BRACKET	SEE DWG						3D
-1		LDW200-55023-1	E	BRACKET INSTL					NONE	NONE	3B

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55023

SCALE NONE SHEET 2.00

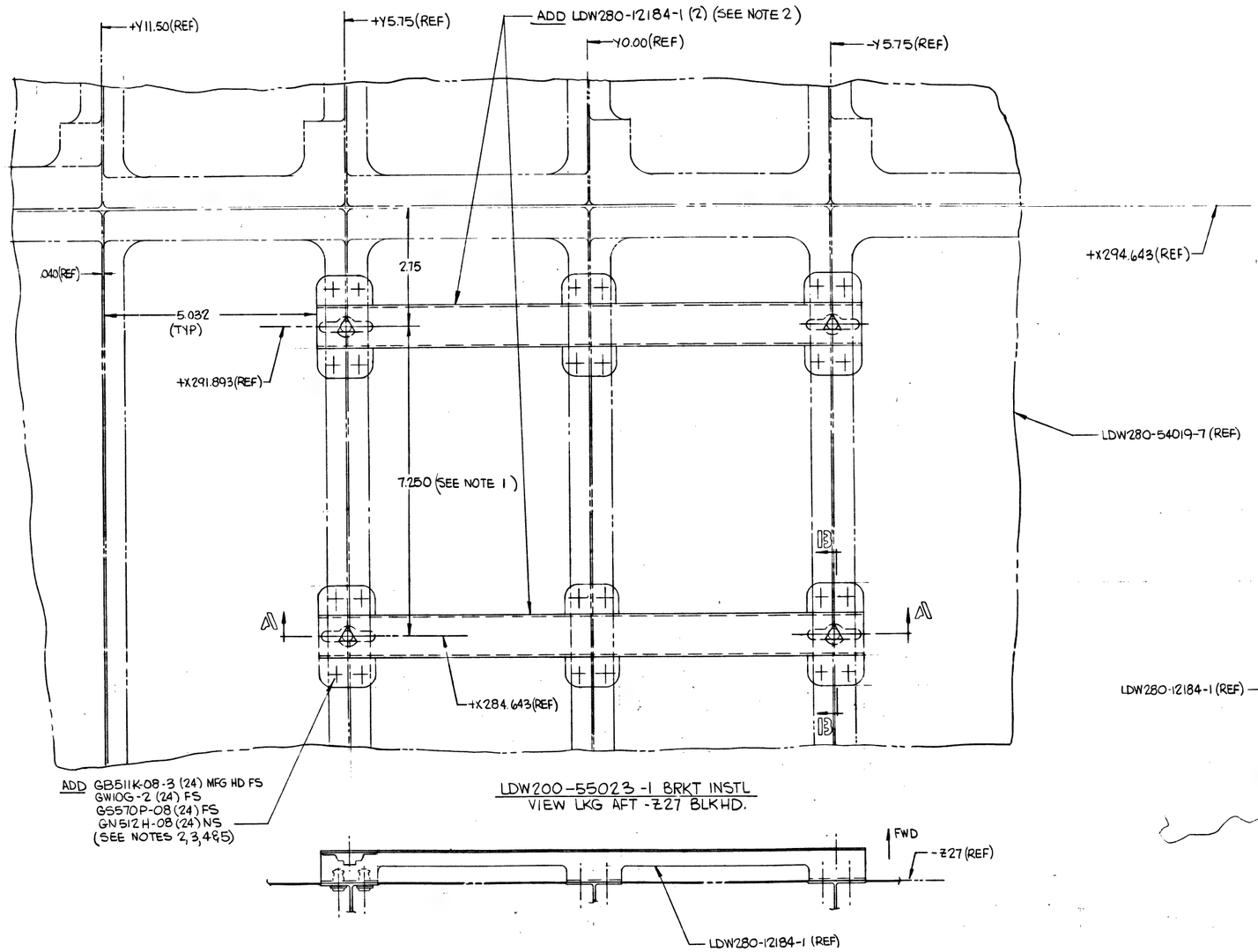
ENG 77.2 7-65

01

NAS 9-1100

NOTES

1. FOR HOLES MARKED △ SEE DWG 3.3R378G01 (GFE) FOR CORRESPONDING HOLE PATTERN
2. INSTALL FASTENERS PER LSP 14-13306
3. APPLY EPON 919 PER LSP 14-14102 AT MATING SURFACE PRIOR TO INSTALLING PARTS
4. INSTALL FASTENERS WET
5. OVERCOAT FASTENERS PER LSP 14-14.02

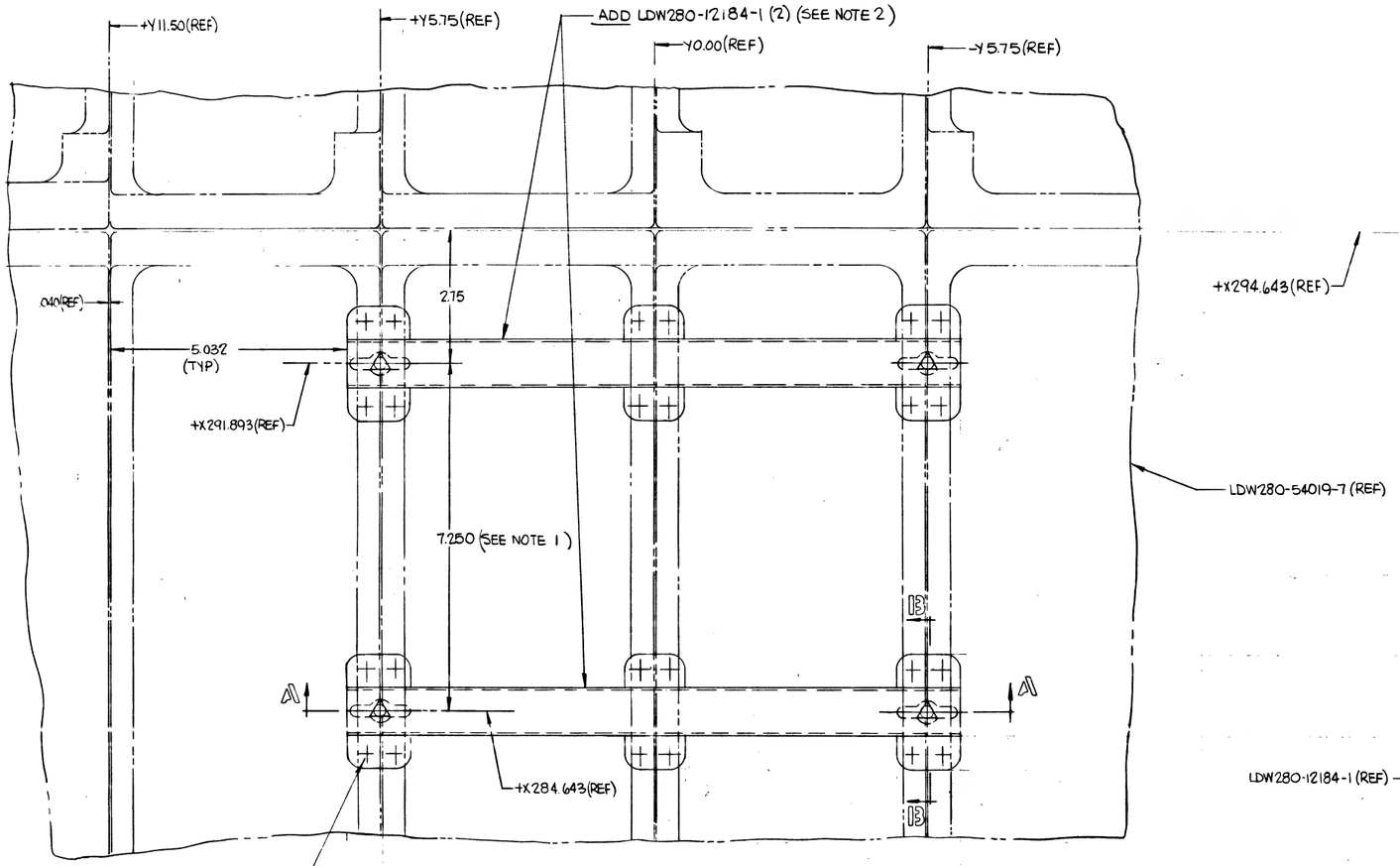


01/02 NAS 9-1100

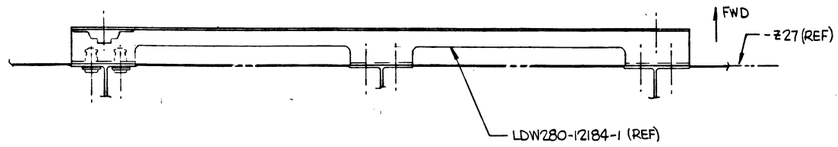
GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE		
SIZE	CODE IDENT NO.	LDW200-
	26512	
SCALE		

NOTES

1. FOR HOLES MARKED △ SEE DWG 618R378G01 (GFE) FOR CORRESPONDING HOLE PATTERN
2. INSTALL FASTENERS PER LSP 14-15306
3. APPLY EPON 919 PER LSP 14-14102 AT MATING SURFACE PRIOR TO INSTALLING PARTS
4. INSTALL FASTENERS WET
5. OVERCOAT FASTENERS PER LSP 14-14102



LDW200-55023-1 BRKT INSTL
VIEW LKG AFT -Z27 BLKHD.



SECT A-A

SECT B-B

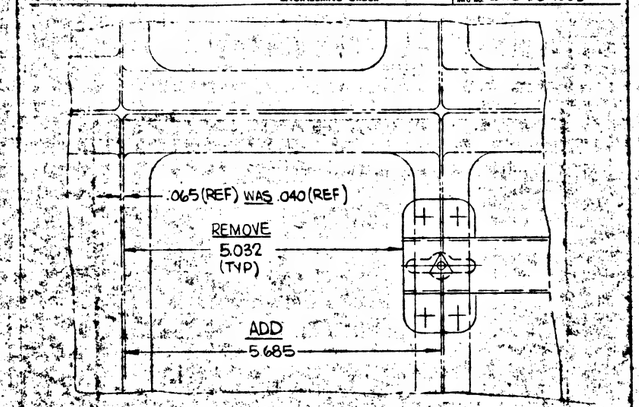
02/02 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK		
SIZE J	CODE IDENT NO. 26512	LDW200-55023
SCALE FULL		SHEET 3.00

LDW200-55023 A
LDW200-55013 B

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO LDW200-55023 | ECO NO A
CONTROL INFO NO LDW90B3633



LDW200-55023 A1

LDW200-55023-1 BRKT INSTL (ZONE 38)
VIEW LKG AFT -Z27 BLKHD

DETAIL SPEC NO.	CL. III DRAWING SYS	CL. II DRAWING SYS	V LCD 5370 PKG 10

REASON FOR ECO: DIM REQD FOR INSTL OF BLACK & WHITE T.V.

DESCRIPTION OF ECO: IN ZONE 38 REMOVED 5.032 (TYP) DIM & ADDED 5.685 DIM .065(REF) WAS .040 (REF)

EFFECTIVITY: MODEL LM; SERIES/IDENTIFICATION NO. LFM 537; BASIC UNIT NO. LM-1 (37); SUB CONTR UNIT NO.

DISPOSITION OF PARTS: USE AS IS / REWORK / SCRAP

APPROVED BY: DATE 4-7-77; VDI; SUPPORT; TOOLING; QUALITY; LOGISTICS; CONTRACTS

PRIORITY C

BRACKET INSTL, W/S M.S. TV CAMERA SUPT
#27 REWK OF LDW200-54004 LFM 537

ASSEMBLY OR INSTALLATION NO. LDW200-55023 A1

ISSUED BY L. [illegible]NOUETTE X36048 SECTION VDI GROUP NO. 335 PG 25

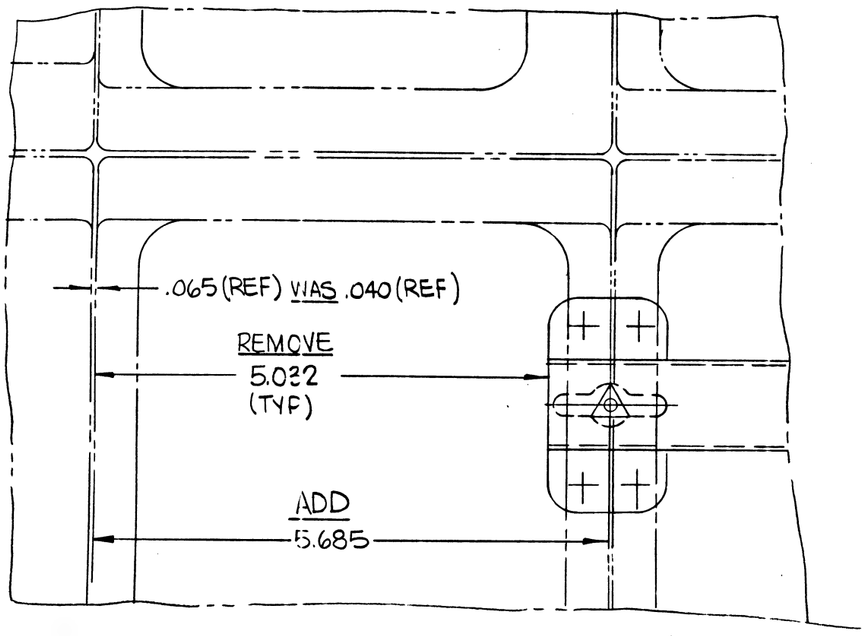
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.2 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200-55023 | EO NO. A1

CONTROL INFO NO. LDW280B-9633



LDW200-55023-1 BRKT INSTL (ZONE 3B)
VIEW LKG AFT - Z27 BLKHD

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD 5370 PKG 10

REASON FOR EO: DIM REQ'D FOR INSTL OF BLACK & WHITE T.V.

DESCRIPTION OF EO: IN ZONE 3B REMOVED 5.032 (TYP) DIM & ADDED 5.685 DIM .065 (REF) WAS .040 (REF)

GAEC EO RELEASE (3)

MODEL	EFFECTIVITY: ~~PROCURING ACTIVITY NO.~~ EI	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 537	LM-7 (37)	

DRAWING CHANGE REQD: ✓ REVISE DWG | RECORD EO | ✓ REWORK | SCRAP

DISPOSITION OF PARTS

	APPROVED BY				CW		
	DATE	12-31-69			1/2/70		1-8-70
	VDI	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG

PRIORITY: C

DRAWING TITLE: BRACKET INSTL - A/S M/S-TV CAMERA SUPT -Z27-REWK OF LDW280-54319 LFM 537

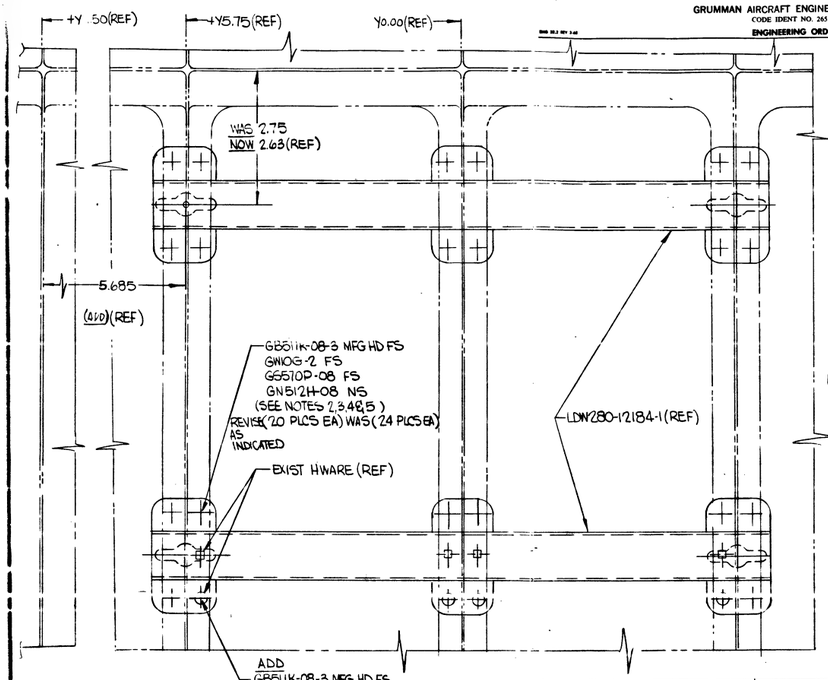
DRAWING NO.: LDW200-55023 | EO NO.: A1

010970
ISSUED BY L. BERLINQUETTE X86048 SECTION VDI GROUP NO. 335 PL 25

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LDW200-55023 | REV NO. A2
CONTROL DEV NO. LDW280B 9739



DO NOT INCOPORATE ON DWG
LFM INFO ONLY

⊕ REMOVE EXISTING PLUGGED HARDWARE (REF EO D5)
GL500-5-3(2)
GL500-5-5(2)
GS570J-3D(4)
GS570P-08(4)
GW10G-2(4)
NAS1080 D5(4)

LDW200-55023-1 BRKT INSTL
VIEW LKG AFT -Z27 BLKHD.

EXIST HWARE LOCATION TO BE UTILIZED FOR INSTL OF BRKT INSTL TV

ADDED EXISTING HWARE LOCATIONS (4) PLACES. ADDED (REF) TO 5.685 DIM. 2.63 (REF) WAS 2.75

LCD 5370 PKG 10

MATERIAL SPEC NO.	CL. 2E ENGRG CHG	CL. 2 ENGRG CHG

MODEL	APPLICABILITY (EFFECTIVITY)			BASIC UNIT NO.	SUB ASSEMBLY UNIT NO.	DISPOSITION OF PARTS: SALVAGE	SCRAP	RETURN	STORE	APPROVED BY (DATE)											
LM	LFM 537	LM-7(537)						✓		VD1											

PROPERTY OF: C

SUBJECT: BRACKET, INSTL, TV CAMERA SUPT -Z27 - REWK OF LDW280-54019 LFM 537

DRAWING NO. LDW200-55023 | REV NO. A2

211470 ISSUED BY L. BERLINQUETTE x86048 SECTION VD1 GROUP NO. 335 PL 25

FOLD

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AEROSPACE CORPORATION
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW200-55023 | EO NO. A3
CONTROL INFO NO. LDW280C0183

IN MOD BLK OF -1 ADD LM-8(38) EFFECTIVITY

LFM 537, NEXT ASSY LDW280-54001 ~ (1) REQ'D

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	V	LCD 5370 PKG 10

REASON FOR EO: ADDITION OF BLACK & WHITE TV

DESCRIPTION OF EO: IN MOD BLK OF-1 ADDED LM-8(38) EFF.

GAEC EO RELEASE: 3-19-70

MODEL	EFFECTIVITY: PROCURING ACTIVITY RQ.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP	APPROVED BY	DATE	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	EO NO.
LM	LFM 537	LM-8(38)		✓		NOT REQD		3-18-70	3-18-70			3/18/70	3/18/70		3/15/70	A3
								VDI	VDI							

PRIORITY: C

DRAWING TITLE: BRACKET INSTL - A/S M/S-TV CAMERA SUPT-727-REWK OF LDW280-54019

DRAWING NO.: LDW200-55023

3-19-70
ISSUED BY L. BERLINQUETTE x86048 - SECTION VDI GROUP NO. 335 PL 25

01

NAS 9-1100

ENG 32.1 REV 3-66

GRUMMAN AEROSPACE CORPORATION
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW200-55023 | ED NO. A4
CONTROL INFO NO. LDW280C0184

IN MOD BLK OF -1 ADD LM-9 (39) EFFECTIVITY

LFM 537, NEXT ASSY LDW280-54001 ~ (1) REQ'D

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD 5370 PKG 10

REASON FOR EO: ADDITION OF BLACK & WHITE TV

DESCRIPTION OF EO: IN MOD BLK OF -1 ADDED LM-9 (39) EFF

GAEC EO RELEASE

MODEL	EFFECTIVITY: ~~PREVIOUS~~ NEW EI	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 537	LM-9 (39)	

DRAWING CHANGE REQD: ✓ REVISE DWG | RECORD EO

DISPOSITION OF PARTS: NOT REWORK | REQD SCRAP

APPROVED BY: DSH | DATE 3-27-70 | VDI | SUPPORT | RELIAB GROUP | GROUP LEADER JW 3/23/70 | STRESS GROUP CW 3/24/70 | LIAISON ENGRG | PROJ ENGRG 3/25/70

PRIORITY: C

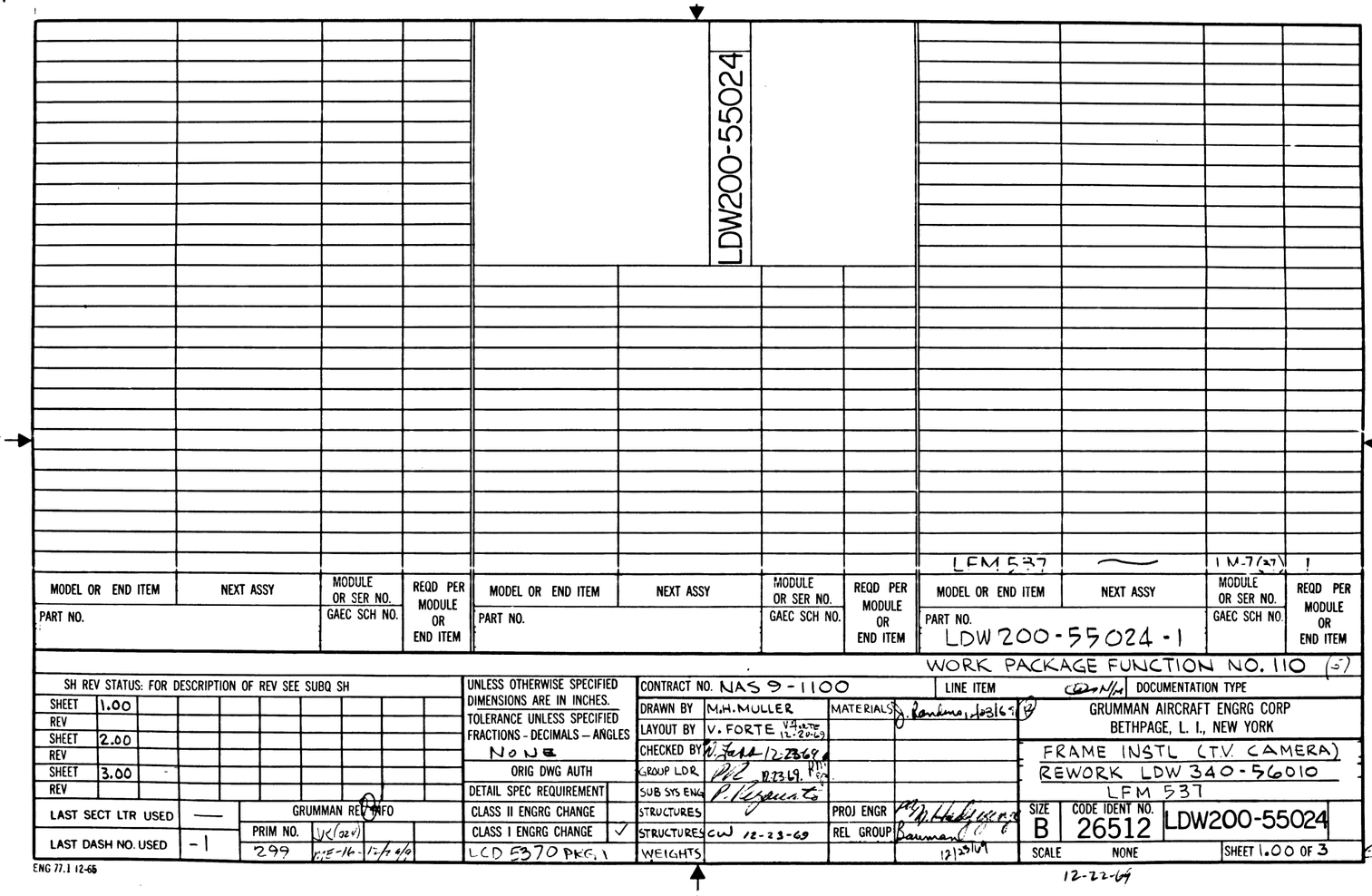
DRAWING TITLE: BRACKET INSTL ~A/S M/S~TV CAMERA SUPT -727-REWK OF LDW280-54019

DRAWING NO.: LDW200-55023 | EO NO. A4

3/25/70 ISSUED BY L. BERLINQUETTE x 86048 SECTION VDI GROUP NO. 335 PL 25

01

NAS 9-1100



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LEM 537	—	LM-7(2V)	1
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW200-55024-1		GAEC SCH NO.	

WORK PACKAGE FUNCTION NO. 110 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH											
SHEET	1.00										
REV											
SHEET	2.00										
REV											
SHEET	3.00										
REV											

LAST SECT LTR USED	—	GRUMMAN REV INFO	
LAST DASH NO. USED	-1	PRIM NO.	299

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES
NONE
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE ✓
LCD 5370 PKG. 1

CONTRACT NO. NAS 9-1100		LINE ITEM	DOCUMENTATION TYPE
DRAWN BY	M.H. MULLER	MATERIALS	
LAYOUT BY	V. FORTE 12-20-69		
CHECKED BY	12-23-69		
GROUP LDR	12-23-69		
SUB SYS ENG	P. Esposito		
STRUCTURES		PROJ ENGR	
STRUCTURES	CW 12-23-69	REL GROUP	12/23/69
WEIGHTS			

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

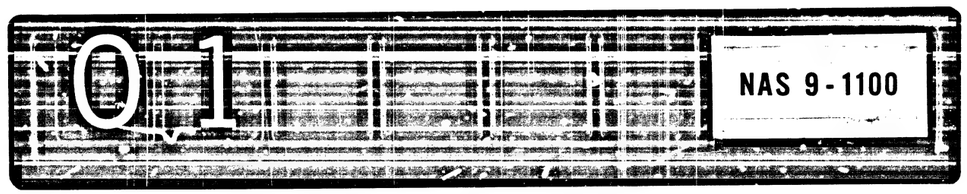
FRAME INSTL (T.V. CAMERA)
REWORK LDW340-56010
LEM 537

SIZE	CODE IDENT NO.	
B	26512	LDW200-55024

SCALE NONE SHEET 1.00 OF 3

ENG 77.1 12-65

12-22-69



QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
AR		GT835J-8	E	TAPE	GRUMMAN STD						
4		NAS674V22		BOLT	IND. STD						4C
4		MS2002C4		WASHER	GOVT. STD						4C
1		618R378G01		CAMERA MOUNTING FRAME	GFE						4B
4		LDW340P10972-35		PAD	SEE DWG.						1B
- 1		LDW200-55024-1	E	FRAME INSTL							

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

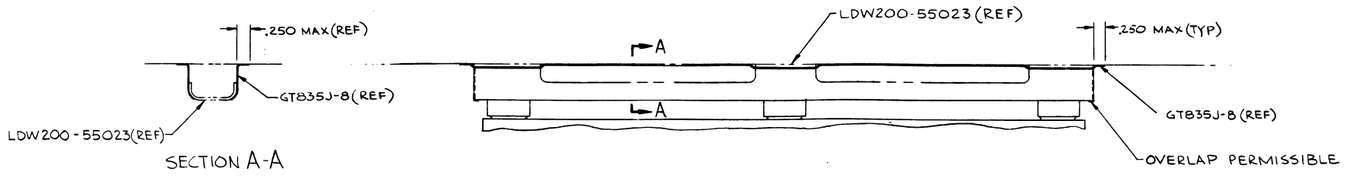
SIZE	CODE IDENT NO.	
B	26512	LDW200-55024

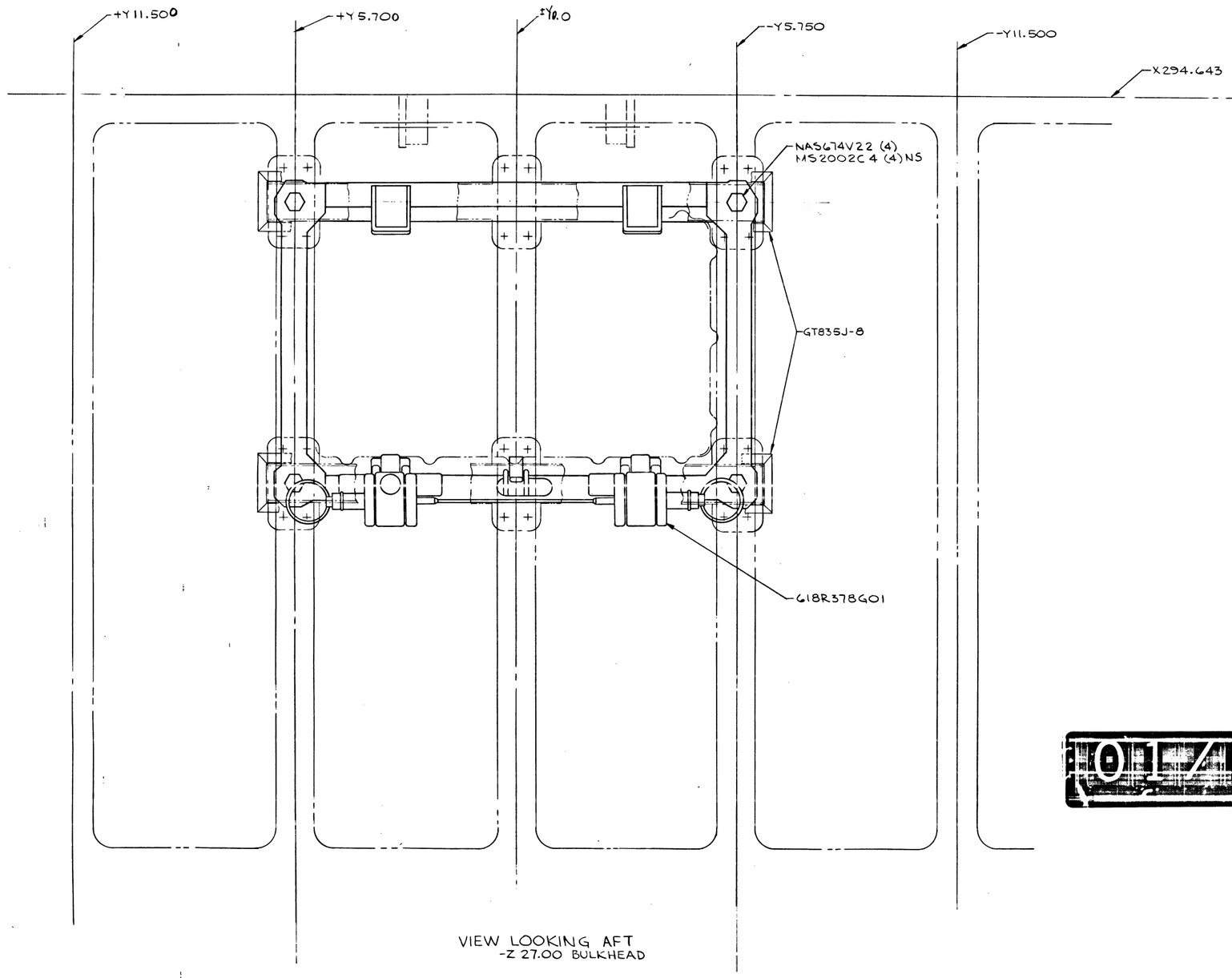
SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100





VIEW LOOKING AFT
-Z 27.00 BULKHEAD

CODE IDENT NO	DWG NO	SHEET
26512	LDW200-55024	3

FRAME 1 FRAME 2

NAS 9-1100

.250 MAX (TYP)

GT835J-8 (REF)

OVERLAP PERMISSIBLE

5.750

-Y11.500

X294.643

-Z 27.00

NAS674V22 (4)
MS2002C4 (4) NS

GT835J-8

618R378G01

GT835J-8 (REF)

607R962 (REF)

2.79 (REF)

7.25 (REF)

618R378G01 (REF)

LDW340P10972-35(4)

LDW200-55023 (REF)

02702 NAS 9-1100

PRINTING INFO ONLY
PRINT TRIM LINE
FULL SIZE SHEET AREA (34.00 in 17.00 in) 578 SQ IN
½ SIZE SHEET AREA (½ OF FULL) = 4.75 SQ IN

DWG SIZE X

LDW200-55024 B

LDW200-55024 A

CODE IDENT NO	DWG NO	SHEET
26512	LDW200-55024	3

FRAME 1 FRAME 2

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
	26512	LDW200-55024

SCALE FULL SHEET 3.00

ENG 32.1 REV 3-68

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW200-55024 | EO NO. A1
CONTROL INFJ NO. LDW 340-7769

IN B/M & F/D OF -1 INSTL
CALL OUT NAS 674 V22 (4)
M2002C4 (4)NS

S/B NAS 674 V22 (4)
AN960C416 (4)NS

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD 5370 PGK #1

REASON FOR EO
SUBSTITUTE READ FOR HARDWARE

DESCRIPTION OF EO
FOR -1 INSTL. B/M & F/D
NAS 674 V22(4)
AN960C416(4)NS WAS NAS 674 V22(4)
MS2002C4(4)NS

GAEC EO RELEASE
1-13-70

MODEL	EFFECTIVITY PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM [37]	LM7 (37)	

B&M

DRAWING CHANGE REQD: ✓ REVISE DWG | RECORD EO
DISPOSITION OF PARTS: ✓ REWORK | SCRAP

APPROVED BY								
DATE				1-27-70	1/27/70	—	1-27-70	1/29/70
	WJS	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	QCM

PRIORITY: C
DRAWING TITLE: FRAME INSTALLATION
DRAWING NO.: LDW200-55024
EO NO.: A1

1-12-70
ISSUED BY VICTOR FORTE X7277
SECTION CREW PROV
GROUP NO. 343 PL 25

01

NAS 9-1100

GRUMMAN AEROSPACE CORPORATION

ENG 22.1 REV 3-65

CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LDW200-55024 | EO NO. A2

CONTROL INFO NO. LDW340 - 8601

IN M/B FOR -1
ADD LFM537 LM8(38) } EFFECTIVITY
LFM537 LM9(39) }

DETAIL SPEC REQ | CL II ENGRG CNG | CL I ENGRG CNG | ✓ LDW5370C Rev 1

REASON FOR EO: TO ASSURE PROPER FASTENING OF NETTING

DESCRIPTION OF EO: IN M/B FOR -1 ADDED (LFM537) (LM8(38)) EFFECTIVITY (LFM537) (LM9(39))

GAEC EO RELEASE: B

MODEL	EFFECTIVITY: EI PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM537	LM8(38)	
LM	LFM537	LM9(39)	

N/M

DRAWING CHANGE REQD: ✓ REVISE DWG | RECORD EO

DISPOSITION OF PARTS: NOT REQ'D | REWORK | SCRAP

APPROVED BY										
DATE										
	MATL'S	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG			
M&M	SA	—								

PRIORITY: C

DRAWING TITLE: FRAME INSTL CTV (CAMERA) REWORK LDW380-56010 LFM 537

DRAWING NO.: LDW200-5502d

EO NO.: A2

ISSUED BY T. SALDARELLI x 7277 5-21-70

SECTION CREW PROV

GROUP NO. 343

PL 25

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200-55024 | EO NO. A3

CONTROL INFO NO. LM 63-528A

FOR -1

IN FLD. AND BM "NAS674V22 (4)"
SHOULD BE "NAS674V18D (4)"

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	LCD 5370 LFH 537
		X	

REASON FOR EO: Correct Bolt Callout

DESCRIPTION OF EO: Noted

GAEC EO RELEASE: 9/10/70

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP	APPROVED BY	DATE	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	ENGRG	COMP
LM	LFH 537	LM 8 (38)		✓		✓		LPD	9/11/70			9/10/70				

PRIORITY: C

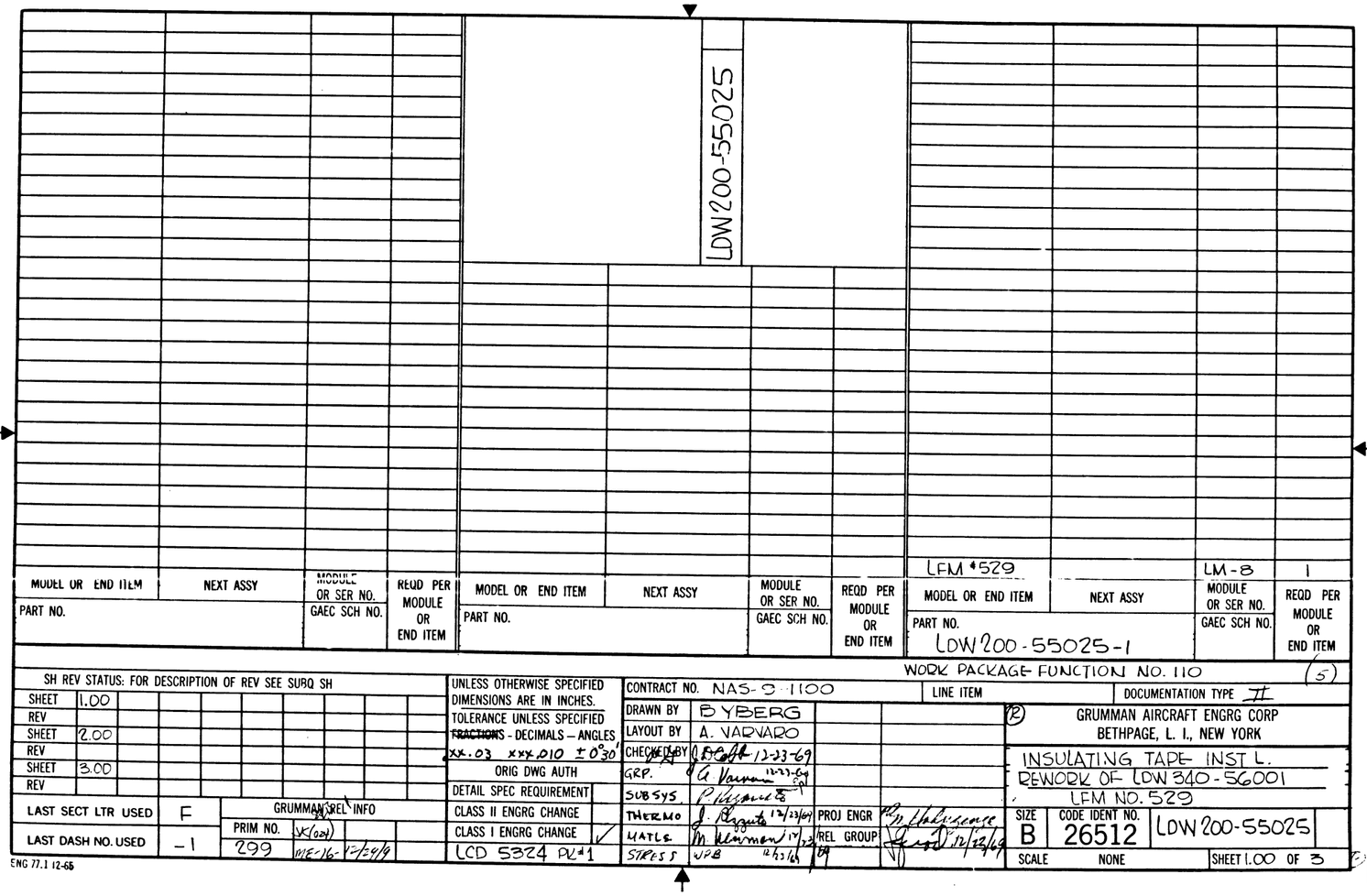
DRAWING TITLE: FRAME INST. (TV CAMERA) REWORK LDW340-56010 LFH537

DRAWING NO.: LDW200-55024 | EO NO.: A3

ISSUED BY R. PRITCHARD X8750 SECTION CREW SYS GROUP NO. 812 PL 83

01

NAS 9-1100



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		LEM #529		LM-8	1
								PART NO. LDW200-55025-1		GAEC SCH NO.	

WORK PACKAGE FUNCTION NO. 110 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00									
REV										
SHEET	2.00									
REV										
SHEET	3.00									
REV										

LAST SECT LTR USED	F	GRUMMAN REL INFO	
LAST DASH NO. USED	-1	PRIM NO.	299

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
~~FRACTIONS~~ - DECIMALS – ANGLES
.xx .03 .xxx .010 ± 0°30'

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE ✓ LCD 5324 PL #1

CONTRACT NO. NAS-9-1100 | LINE ITEM | DOCUMENTATION TYPE II

DRAWN BY	BYBERG			
LAYOUT BY	A. VARVARO			
CHECKED BY		12-23-69		
GRP.				
SUBSYS.				
THERMO			PROJ ENGR	
MATLS.			REL GROUP	
STRESS				

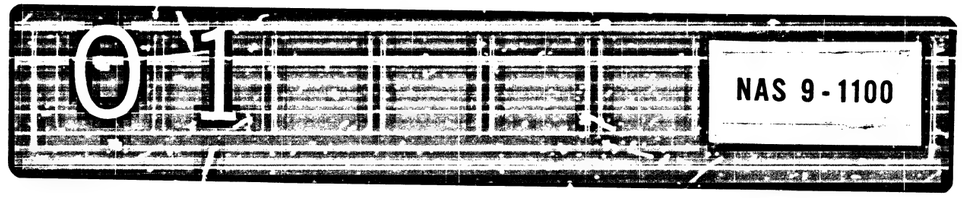
(12) GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

INSULATING TAPE INST L.
REWORK OF LDW340-56001
LEM NO. 529

SIZE	CODE IDENT NO.	
B	26512	LDW200-55025

SCALE NONE | SHEET 1.00 OF 3

ENG 77.1 12-65



QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
A/R		# 4011	E	SEE NOTE 2					NONE	NONE	
A/R		# 4040	E	SEE NOTE 2							
A/R		Y-9040	E	TAPE	SEE NOTE 2						
-1		LDW 200-55025-1	E	TAPE INST'L.							

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

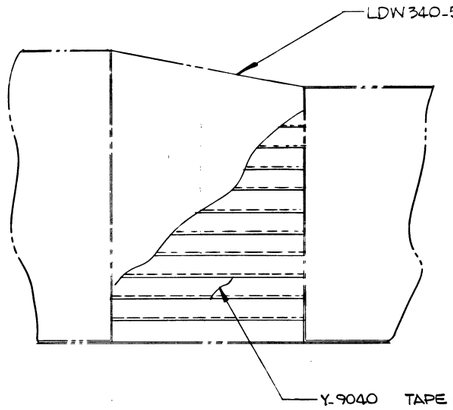
SIZE	CODE IDENT NO.	
B	26512	LDW 200-55025

SCALE NONE SHEET 2.00

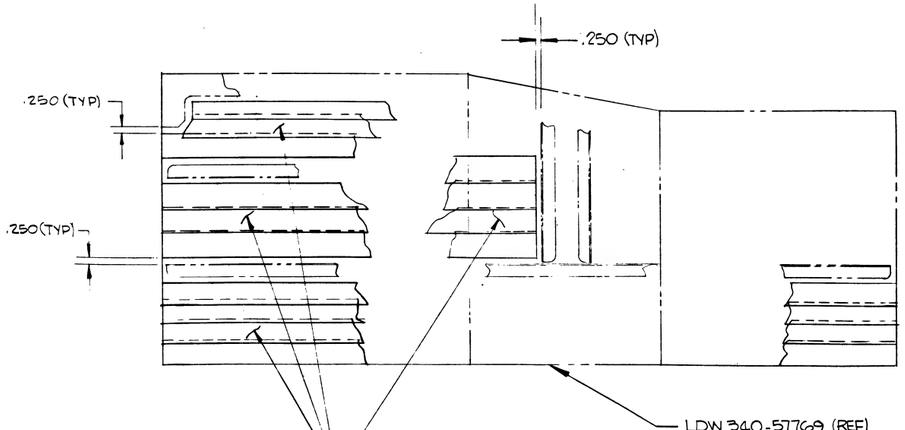
ENG 77.2 7-65

01

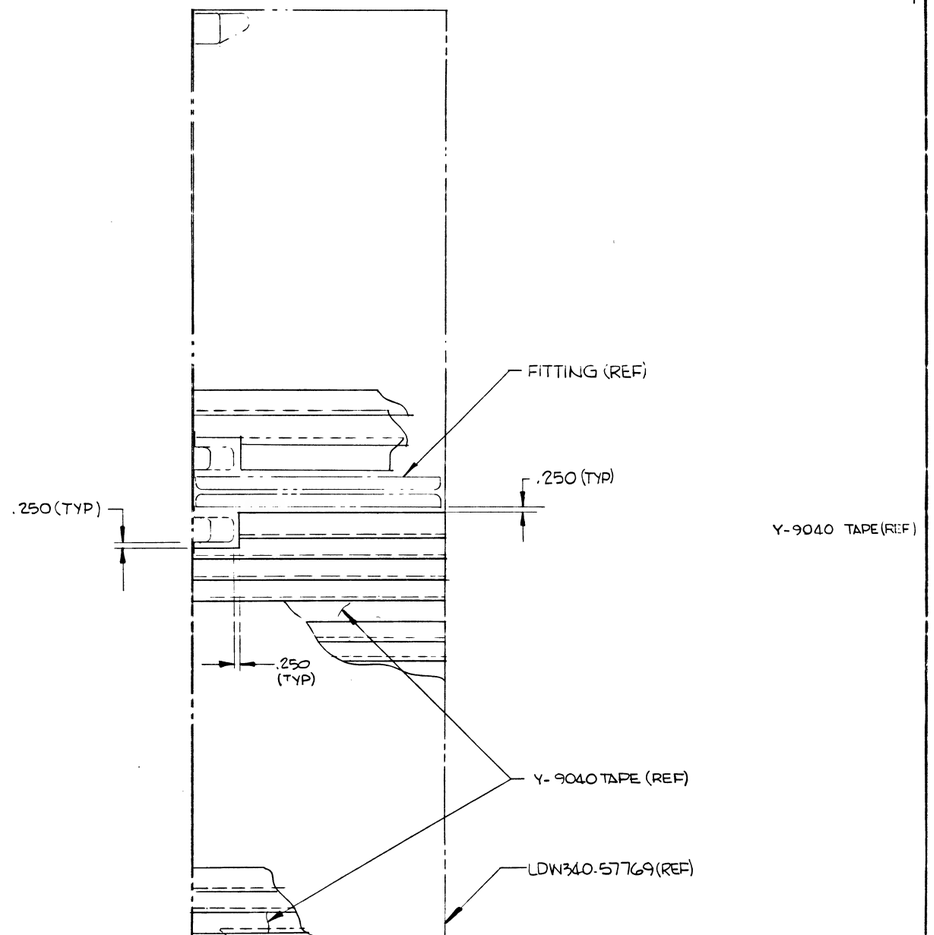
NAS 9-1100



VIEW F-F (ZONE 6D)



VIEW E-E (ZONE 5A)

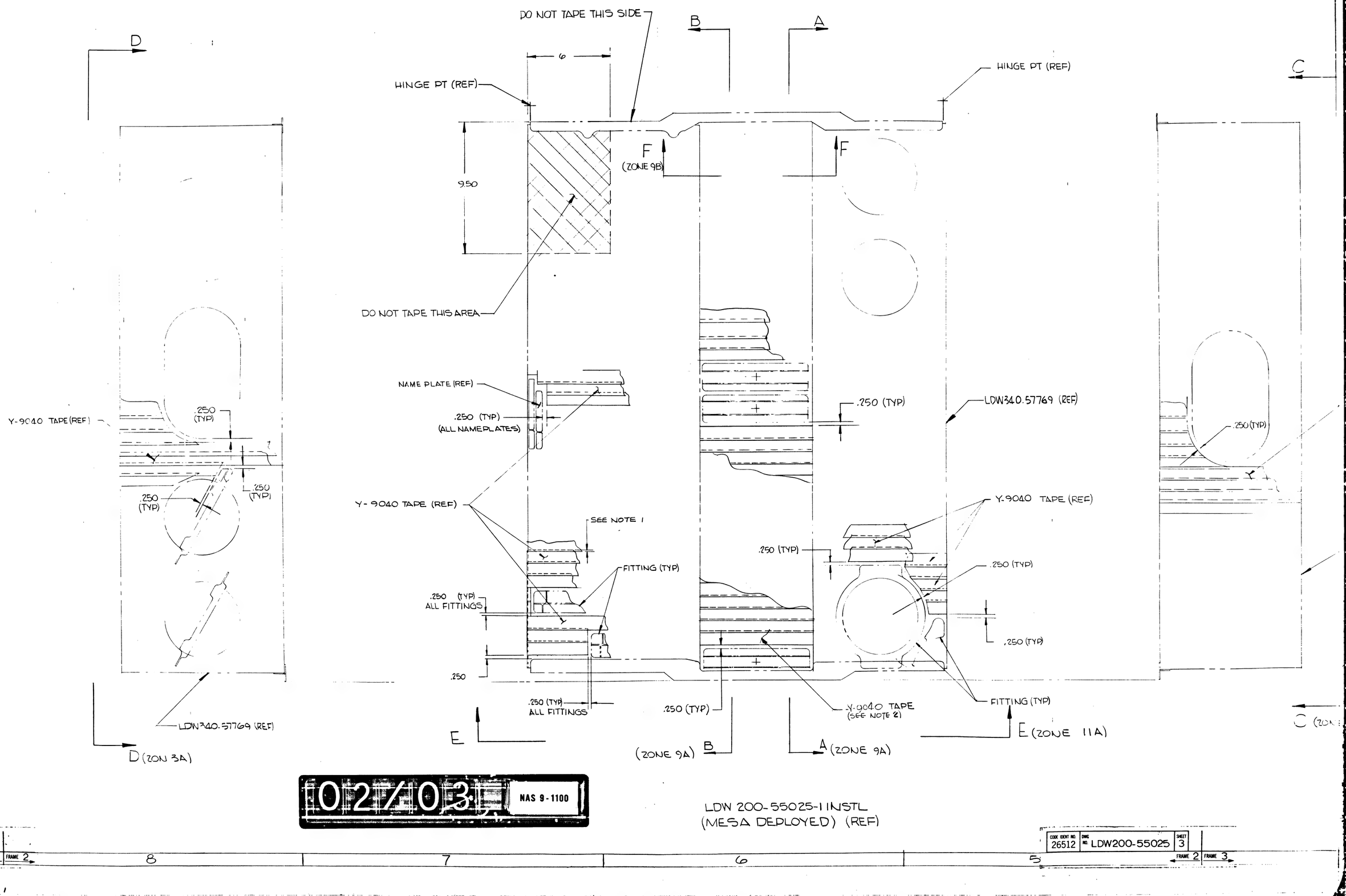


VIEW A-A (SHOWN) (ZONE 6A)
B-B (OPP) (ZONE 6A)

01/03 NAS 9-1100

CODE IDENT NO	DWG NO	SHEET
26512	LDW200-55025	3

FRAME 1 FRAME 2



027/03 NAS 9-1100

LDW 200-55025-1 INSTL
(MESA DEPLOYED) (REF)

NOTES:

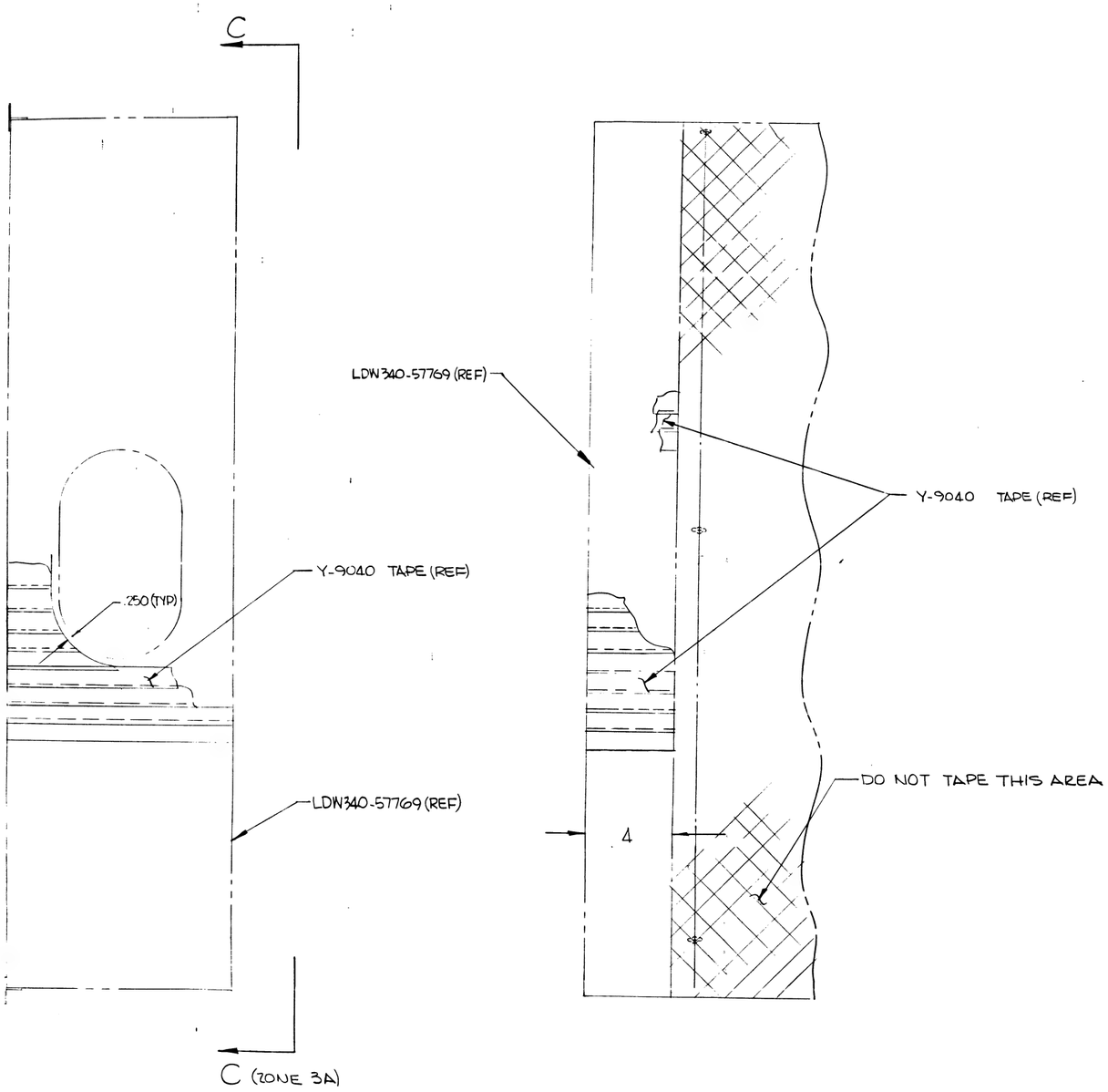
1. INSUL. TAPE DIRECTION OF WRAP OPTIONAL
   OVERLAP 1/8 APPROX. WIDTH OF TAPE OPTIONAL

2. (A) MATERIALS -
   Y-9040 - ALUMINUM FOIL PRESSURE SENSITIVE TAPE - 3M COMPANY. CODE IDENT 76381
   #4040 - CLEAR SCOTCHED SCREN PROCESS PASTE. 3M COMPANY. CODE IDENT 76381
   #4011 - THINNER - 3M COMPANY. VENDOR CODE 76381

   (B) PROCEDURE:
   1. SOLVENT WIPE AREAS TO RECEIVE TAPE WITH A CLEAN CLOTH DAMPENED WITH MEK; WIPE DRY IMMEDIATELY WITH CLEAN DRY CLOTH. APPLY TAPE AS REQUIRED. CLEAN WHITE GLOVES MUST BE WORN SO THAT FINGER-PRINTS ON ALUMINUM TAPE ARE AVOIDED. DURING TAPE APPLICATION, TAPE SHALL BE APPLIED TAUTLY. AFTER APPLICATION, COARSE AND AIR POCKETS SHALL BE REMOVED BY FIRMLY PRESSING A SQUEEGEE OR HARD SURFACED PLASTIC ROLLER OVER THE TAPE TO OBTAIN AS SMOOTH A SURFACE AS POSSIBLE.
   2. COATING APPLICATION:
      A) THIN THE #4040 PASTE WITH EQUAL VOLUME OF #4011 THINNER - MIX THOROUGHLY. FILTER THROUGH PAINT FILTER.
      B) SOLVENT WIPE TAPE SURFACES WITH CLEAN CLOTH DAMPENED WITH MEK, AND DRY IMMEDIATELY WITH CLEAN DRY CLOTH.
      C) SPRAY ONE CROSS COAT OF THE THINNED PASTE, ALLOWING 10-15 MINUTE INTERVAL BETWEEN THE COATS. ONLY ALUMINUM TAPE AREAS ARE TO BE SPRAYED WITH COATING.
      D) AIR DRY FOR MINIMUM OF 2 HRS. BEFORE HANDLING.

   (C) TEST PANELS - 2 PANELS - 3"x6"x.040" 2024 ANODIZED AL. ALLOY SHALL BE PROCESSED IN CONJUNCTION WITH THE PRODUCTION PART.

   (D) END ITEM REQ'TS:
   1) TEST PANELS TO BE SUBMITTED TO Q.C. FOR EMISSIVITY TESTS, ETC.
   2) PRODUCTION PART SHALL BE VISUALLY EXAMINED FOR PROPER TAPE APPLICATION I.E. REQUIRED AREAS TAPED, TAPE TO BE FIRMLY ADHERED TO THE SURFACE; SPRAYED COATING TO BE UNIFORM IN APPEARANCE - FREE OF RUNS, SAGS, BLISTERS - DO NOT TAPE TEST
   3) ACCEPTABLE TEST VALUES:
      α (ABSORPTIVITY) $= 0.25 \pm 0.10$
      ε (EMISSIVITY) $= 0.25 \pm 0.10$
      $\alpha/\varepsilon = 1.00 \ {}^{+0.15}_{-0.25}$



VIEW C-C (SHOWN)(ZONE 4A)
D-D (OPP) (ZONE 8A)

03403 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I. NEW YORK			
SIZE J	CODE IDENT NO. 26512	LDW200-55025	
SCALE 1/2		SHEET 3.00	

LDW200-55025 C
LDW200-55025 B
A

025 SHEET 3
FRAME 2 FRAME 3
4 3 2 1
3FR

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200-55025 | EO NO. A1
CONTROL INFO NO. LDW340-7937

FOR -1 INSTL:

IN FLD, ADD NOTE * (NEXT AVAILABLE NOTE NO.)
*: "AS AN ALTERNATE, GT835J-8, -16, AND -24 TAPE MAY BE USED IN LIEU OF Y-9040 TAPE AS REQUIRED."

IN B/M, FOR CALLOUT OF Y-9040 TAPE "SEE NOTES 2 & *" WAS "SEE NOTE 2."

IN FLD, FOR ALL DIMENSION CALLOUTS, ADD TOLERANCE ±.06

ADD NOTE *-*: "TAPE TO BE TRIMMED AS REQUIRED TO CLEAR MS21266 GROMMETS, FITTINGS & OBSTRUCTIONS."

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | LCD 5324 PKG 1

REASON FOR EO: TO FACILITATE APPLICATION OF INSULATING TAPE

DESCRIPTION OF EO: FOR -1: ADDED NOTES*/**IN B/M, FOR C/O Y-9040, SEE NOTES 2 & * WAS SEE NOTE 2. ADD DIM. TOL ±.06

(10) GAEC EO RELEASE (5)

MODEL	EFFECTIVITY: EI PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM529	LM-8(38)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO | DISPOSITION OF PARTS: REWORK ✓ | SCRAP

PRIORITY: C

DRAWING TITLE: INSULATING TAPE INSTL. REWORK OF LDW340-56001

DRAWING NO.: LDW200-55025 | EO NO.: A1

APPROVED BY	PD	—	—	PR	VH	—	WJH
DATE	12/31/69	—	—	12/30/69	12/31/69	—	12/30/69 12/31/69
	THERMO	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG

ISSUED BY P. REGANATO X1618 SECTION CREW PROV. GROUP NO. 343 PL 25

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200-55025 | EO NO. A2

CONTROL INFO NO. LDW340-7948

F/D OF DWG.
IN NOTES: * DISCRIPTION OF EO

TO NOTE 2D, ITEM 3 ADD: IT IS PERMISSIBLE FOR A MAX. OF 30 SQ. IN. OF THE TAPED AREA OF THE MESA TO HAVE SPRAYED COATING SCUFFED OFF. NO SCUFF MARKS TO BE LARGER THAN ½" IN DIA. SCUFF MARKS LARGER THAN 1/2" DIA TO BE BRUSH COATED WITH PASTE & THINNER OR SPRAY COATED IF PERMITTED & AIR DRYED

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCD 5324 PKG #1 (E)

REASON FOR EO: TO FACILITATE MANUFACTURING

DESCRIPTION OF EO: * SEE ABOVE

(R) GAEC EO RELEASE: K 1/6/70

MODEL	EFFECTIVITY			DRAWING CHANGE REQD		DISPOSITION OF PARTS	APPROVED BY	JR	—	—	MW	WPK	—		
	EI PROGRAMING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	REVISE DWG	RECORD EO		DATE	1-7-70	—	—	1-7-70	1/7/70	—	1/7/70	1-7-70
LM	LEM 529	LMB (38)				NOT REQ'D REWORK / SCRAP		THRU CMD	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY: C

DRAWING TITLE: INSULATING TAPE INSTL REWORK OF LDW 340-56001

DRAWING NO.: LDW200-55025

EO NO.: A2

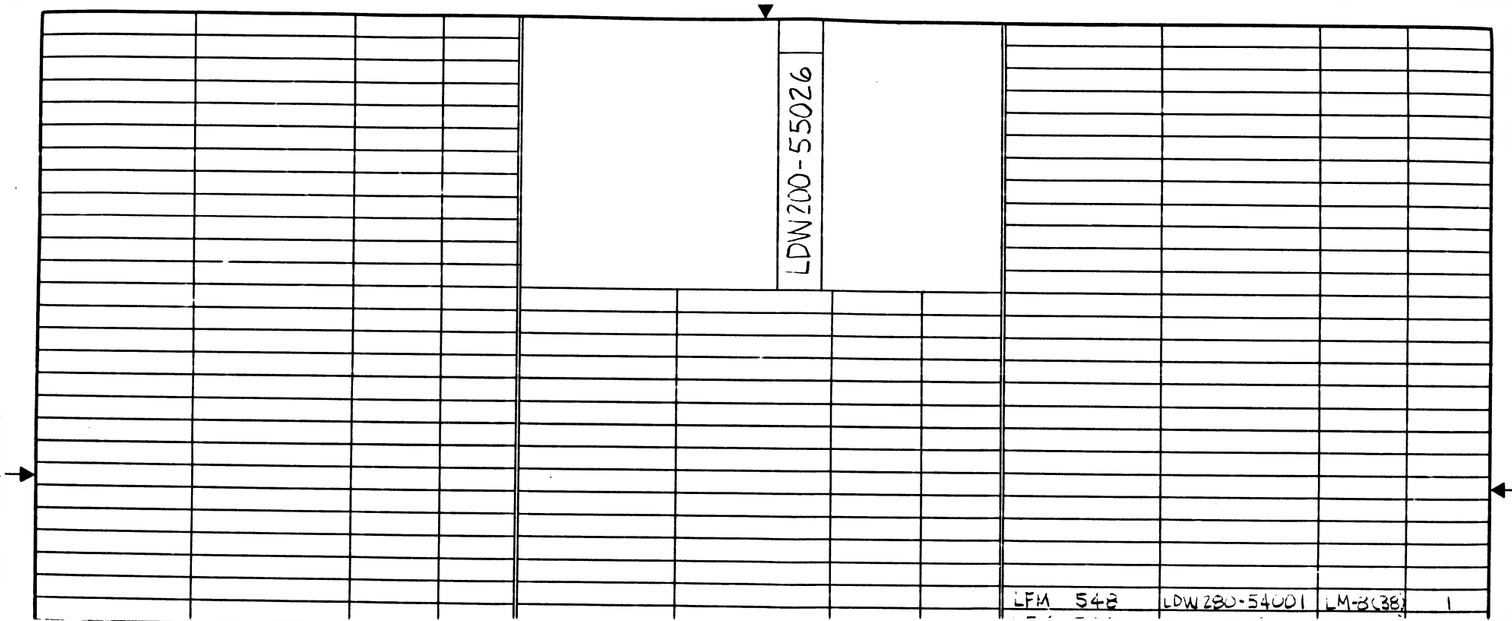
1-7-70 ISSUED BY T. SALDARELLI x 7277

SECTION CREW PROV.

GROUP NO. 340 PL 25

01

NAS 9-1100



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	
LEM 548	LDW280-54001	LM-8(38)	1
LEM 548	LDW280-54001	LM-7(37)	1
PART NO. LDW200-55026-1		GAEC SCH NO.	

WORK PKG FUNCTION 40 110 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00		2.00		3.00					
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED	B
LAST DASH NO. USED	-13

GRUMMAN REL INFO

PRIM NO.	JK(GDV)
215	ME-16-V/19/70

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
[redacted] - DECIMALS – ANGLES
.XX ± .03 .XXX ± .016 ± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE ✓
ECP 5294 PAGE 10

CONTRACT NO. NAS-9-1100		LINE ITEM	DOCUMENTATION TYPE II
DRAWN BY	H. TREFFEISEN 1/19/70		
LAYOUT BY	H. TREFFEISEN		
CHECKED BY			
GRP LDR	1/15/70		
VD I	1-15-70		
THERMO	1-16-70	PROJ ENGR	
STRUCT	CW 1-16-70	REL GROUP	1/19/70

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

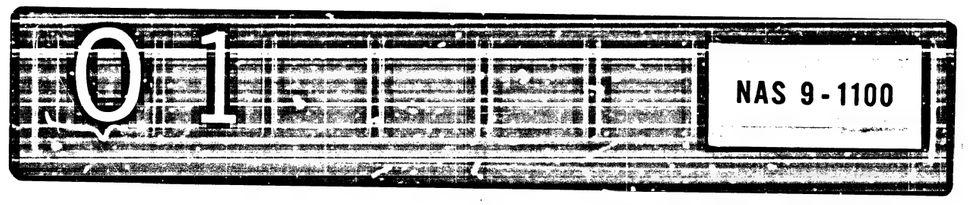
SHIELD INSTL-A/S-FWD CABIN HATCH
REWORK OF LDW280-54001
LEM 548

SIZE	CODE IDENT NO.	
B	26512	LDW200-55026

SCALE NONE SHEET 1 OF 3

CDR 1-16-70.

ENG 77.1 12-65



QTY PER ASSEMBLY	PART NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
AR	GT835M-8			TAPE	GRUMMAN STD				NONE	NONE	
AR	GT835P-8			TAPE	GRUMMAN STD				NONE	NONE	
1	LDW280-28175-13			SHIELD INSTL	SEE DWG						
1	LDW200-55026-13	E		PATCH	SEE NOTE 2						
AR	LDW200-55026-11	E		INSULATION	SEE NOTE 2				NONE	NONE	
-13 -1	LDW200-55026-1	E		SHIELD INSTL	SEE NOTE 1				NONE	NONE	

SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC

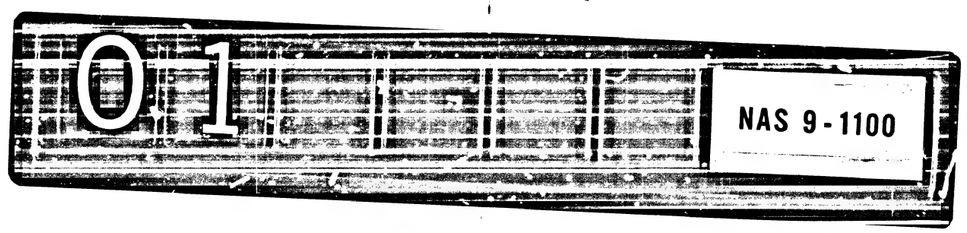
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH NONE

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55026

SCALE NONE SHEET 2.00

ENG 77.2 5-64

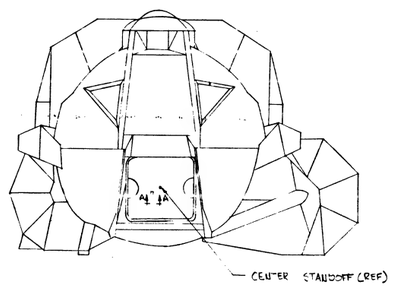


LDW200-55026

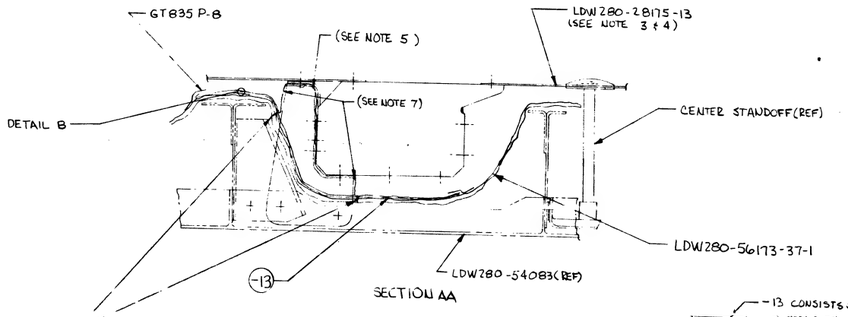
REVISIONS						
ZONE	LTR	DESCRIPTION	EFF CODE	MODEL	DATE	APPROVED

NOTES:

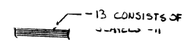
1. -1 INSTL SAME AS LDW280-56173-1-1 INSTL EXCEPT FOR CHANGES SHOWN
2. MAKE FROM ALUMINIZED POLYIMIDE FILM (.0005) PER LSM14-5301 TYPE IA CLASS 1.
3. UPON INST. OF LDW280-28175-13 (SHIELD INSTL) IT IS PERMISSIBLE TO RELOCATE THE CENTER STANDOFF HOLE (3" MAX) TO INSURE PROPER FIT AND SUFFICIENT LOOSENESS OF THERMAL BLANKETS IN AREA OF HAND GRIP. RELOCATED STANDOFF HOLE REPAIR PER LPC280-8
4. TAPE EXPOSED SURFACES OF LDW280-12187-11 (SUPPORT) WITH GT835 M-8
5. TAPE -13 TO HANDGRIP SO THAT THE TAPED SURFACES OF THE SUPPORT ARE COMPLETELY COVERED, USE GT835 P-8
6. APPLICABLE PROCEDURES:
   - LPC 280-1 FABRICATION
   - LPC 280-6 CUTTING & PATCHING
   - LPC 280-8 REPAIR
   - LPC 280-27 ABRASION PROTECTION
7. FOLD OVER SMALL BLANKET FLAP & TAPE CLOSED WITH GT835 P-8
8. UPON INITIAL RELEASE OF THIS DRAWING TOOLING FOR -13 SIMILAR TO LDW280-59173-85



LDW200-55026-1 INSTL



SECTION AA



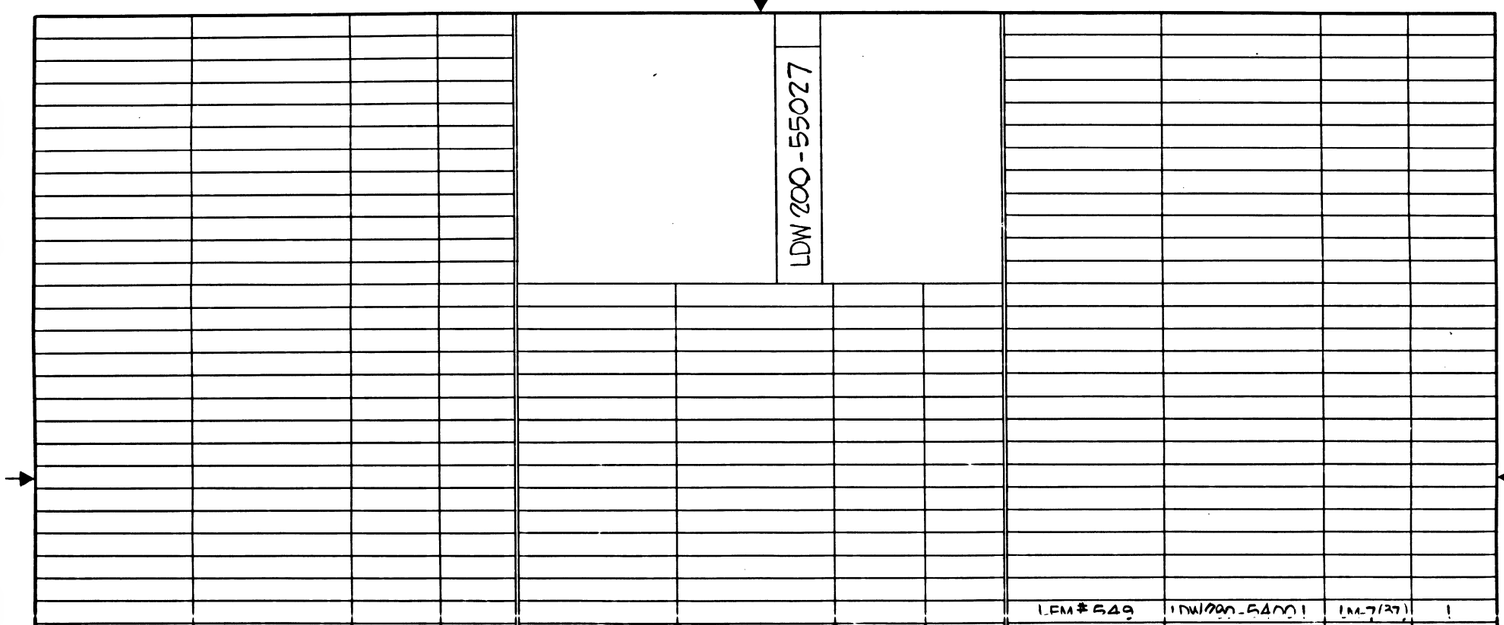
DETAIL B

FOR PARTS LIST, USAGE DATA, AND DWG SH STATUS, SEE DOCUMENT SAME NUMBER PREFIXED PL

UNLESS OTHERWISE SPECIFIED			CONTRACT NO.	GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714		
DIMENSIONS IN INCHES						
LINEAR TOL	XX	± .03	DRAWN BY			
	XXX	± .010	LAYOUT BY			
ANGULAR TOL		± 1°30'	CHECKED BY			
TOL ON LOFTED DELINEATIONS IS			GR LEADER			
			REL GROUP			
			PROJ ENGR	SIZE D	CODE IDENT NO. 26512	LDW200-55026
			GOVT APPD	SCALE NONE		SHEET 3 OF

DISTR LIST #_____

Q1 NAS 9-1100



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LEM#549	LDW200-54001	LM-7(27)	1
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW 200-55027-1		GAEC SCH NO.	

WORK PACKAGE FUNCTION #110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	2.00	3.00	4.00					
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	E	GRUMMAN RELINFO	
LAST DASH NO. USED	-1	PRIM NO.	215

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
~~FRACTIONS~~ - DECIMALS – ANGLES
XX ±.03, XXX ±.016, ±0°30

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD# 5389 PKG 10	

CONTRACT NO. NAS 9-1100 | LINE ITEM | DOCUMENTATION TYPE II

DRAWN BY	ROCKLEIN		
LAYOUT BY	ROCKLEIN 2/26/70		
CHECKED BY	[illegible] 3-2-70		
GRP LDR	[illegible] 2/26/70		
VOI	[illegible] 2-27-70		
STRUCTURES		PROJ ENGR	[illegible] 2-27-70
STRUCTURES	CW 2-27-70	REL GROUP	[illegible] 3/2/70
MATERIALS	[illegible] 2/27/70		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

FILTER INSTL
ASCENT STAGE, MID-SECT, DUST
(REWORK OF LDW280-54001) LFM#549

SIZE	CODE IDENT NO.	
B	26512	LDW 200-55027

SCALE NONE | SHEET 1.00 OF 4

ENG 77.1 12-65

CDR 2-27-70

01
NAS 9-1100

QTY PER ASSEMBLY	-1	PART NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
5		AN960D8L	E		WASHER	GOVT STD						
5		NAS1132C3	E		BOLT	IND STD.						
5		GE530A-8	E		EXPANDER	GRUMMAN STD.						
5		GE530D-8-1	E		SLEEVE	GRUMMAN STD.						
1		LDW280-12214-1	E		CLAMP ASSEMBLY	SEE DWG.						2A
1		LDW280-12211-3	E		SUPPORT ASSEMBLY	SEE DWG.						3D
1		LDW280-12211-1	E		SUPPORT ASSEMBLY	SEE DWG.						3C
		LDW200-55027-1	E		FILTER INST'L					NONE	NONE	4B

SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH NONE

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW 200-55027

SCALE NONE SHEET 2.00

ENG 77.2 5-64

01

NAS 9-1100

INSTALLATION PROCEDURE

1. a) LOCATE LDW 280-12211-3 (SUPPORT ASSY) AS SHOWN AND DRILL .165-.171 HOLES (2) THRU LDW 280-12211-3 AND INTO LDW 280-53149 (ENGINE COVER) (NOTE: MAX DRILL DEPTH .625 FROM TOP OF LDW 280-12211-3) FROM PILOT HOLES IN LDW 280-12211-3.
   b) REMOVE LDW 280-12211-3 AND DRILL .258 - .264 HOLES (2) INTO LDW 280-53149 (ENGINE COVER) (NOTE: MAX DRILL DEPTH .562 FROM TOP OF ENGINE COVER) USING THE PREVIOUSLY DRILLED .165-.171 HOLES AS PILOT HOLES.
   c) COUNTERSINK 100° x .317 DIA (2) HOLES DRILLED PER 1b. OF INSTALLATION PROCEDURE.
   d) INSTALL GE530D-8-1 (2) SLEEVES AND GE530A-8 (2) EXPANDERS IN HOLES PROVIDED IN ENGINE COVER.
   e) TEMPORARILY REINSTALL LDW 280-12211-3 (SUPPORT ASSY) USING NAS 1132C3 (2) FASTENERS.

2. a) USING LSC 330-154-1 FILTER, LOCATE LDW 280-12211-1 (SUPPORT ASSY), AS SHOWN, ON THE ENGINE COVER. (LSC 330-154-1 BOLTED AT TOP TO LDW 280-12211-1 & -3 AND PINS OF FILTER ENGAGING SLOTTED HOLES OF LDW 280-12211-1 & -3). WITH FILTER MOUNTED AND LDW 280-12211-1 SATISFACTORILY POSITIONED, DRILL .165-.171 HOLES (3) THRU LDW 280-12211-1 AND INTO LDW 280-53149 (ENGINE COVER) (NOTE: MAX DRILL DEPTH .625 FROM TOP OF LDW 280-12211-1) FROM PILOT HOLES IN LDW 280-12211-1.
   b) REMOVE LSC 330-154-1
   c) REMOVE LDW 280-12211-1 AND DRILL .258-.264 HOLES (3) INTO LDW 280-53149 (ENGINE COVER) (NOTE: MAX DRILL DEPTH .562 FROM TOP OF ENGINE COVER) USING THE PREVIOUSLY DRILLED .165-.171 HOLES AS PILOT HOLES.
   d) COUNTERSINK 100° x .317 DIA (3) HOLES DRILLED PER 2c OF INSTALLATION PROCEDURE
   e) INSTALL GS530D-8-1 (3) SLEEVES AND GE530A-8(3) EXPANDERS IN HOLES PROVIDED IN ENGINE COVER.

3. a) REMOVE LDW 280-12211-1 AND -3 FROM THE LM-7 VEHICLE AND ADD PARTING AGENT LOCALLY PER LSP-14-11700 IN "FILL VOID" AREA.
   b) CLEAN LOCAL AREAS OF ENGINE COVER PER DWG. NOTE 1c.

4. a) LOOSELY POSITION LDW 280-12214-1 (CLAMP ASSEMBLY) ABOUT THE ENGINE COVER, BUT DO NOT INSTALL.
   b) APPLY EPON 934 TO LOCAL SURFACE OF LDW 280-12211-3 (SUPPORT ASSY) (SEE VIEW E-E) AND INSTALL LDW 280-12211-3 USING NAS 1132 C3 (2) AND AN960D8L (2). TORQUE TO 20-24 IN LB.
   c) APPLY EPON 934 TO LOCAL SURFACES OF LDW 280-12211-1 (SUPPORT ASSY) (SEE VIEW B-B) AND WITH LSC 330-154-1, LDW 330-10098 (BETA CLOTH SLEEVE) AND LDW 330-10099 (RING) IN POSITION INSTALL LDW 280-12211-1 USING NAS 1132C3 (3), AND AN960D8L (3). TORQUE TO 20-24 IN LB.
   d) INSTALL LDW 280-12214-1 (CLAMP ASSEMBLY) (BEFORE CURE OF EPON) PER DRAWING NOTE 2. REMOVE EXCESS EPON, HOWEVER, FILLETS TO REMAIN.

5. COMPLETE INSTALLATION AS PER LDW 330-57025

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

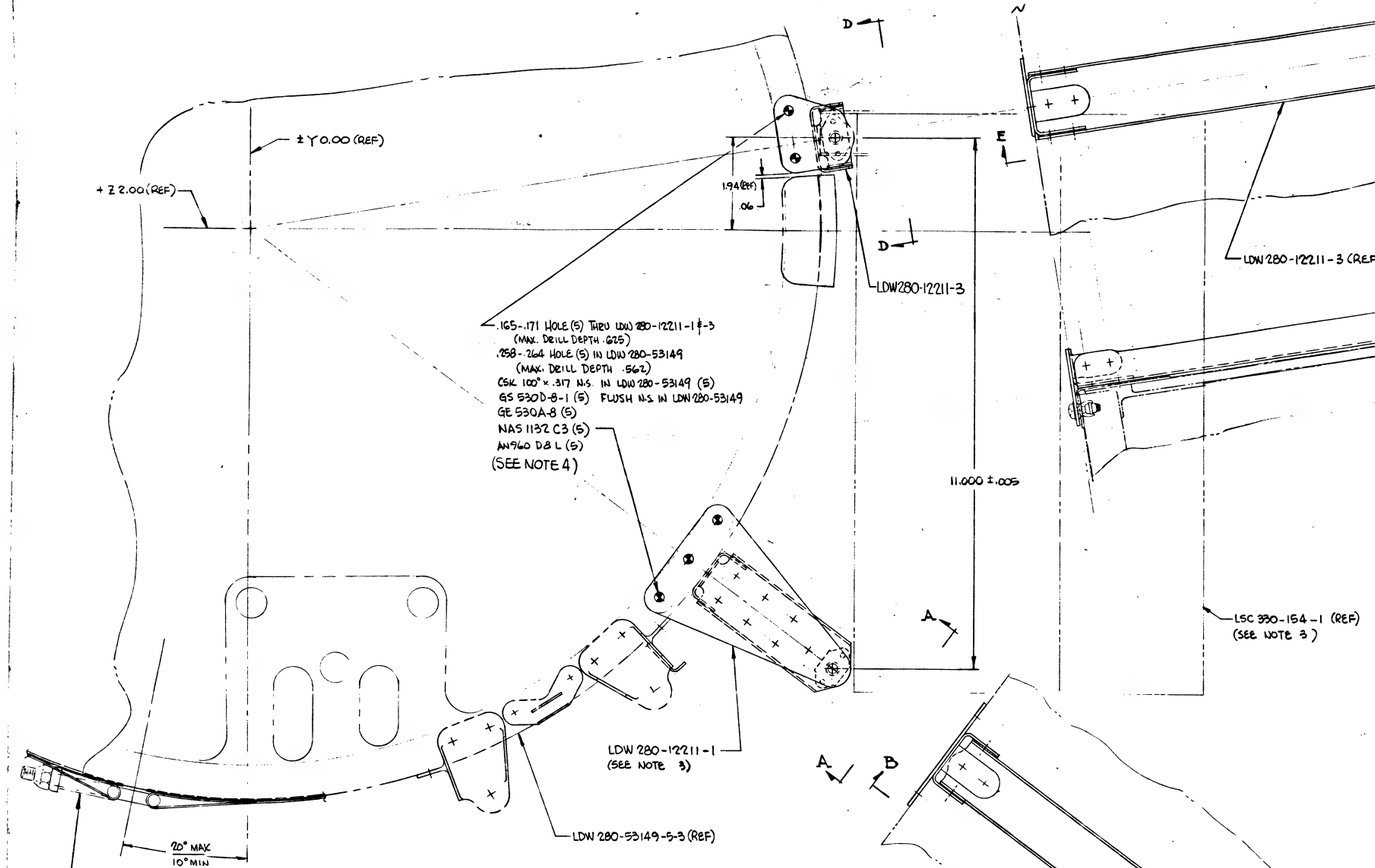
SIZE	CODE IDENT NO.	
B	26512	LDW 200-55027

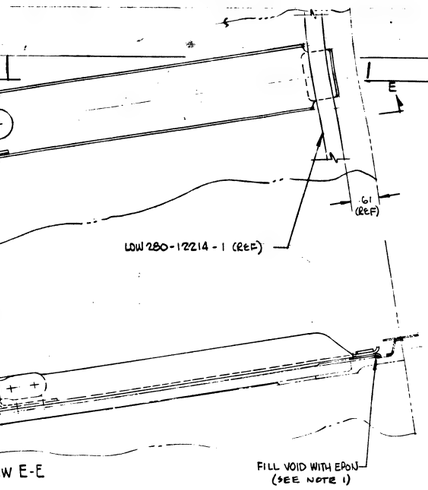
SCALE — SHEET 3.00

ENG 73.1 6-64

01

NAS 9-1100





NOTES:

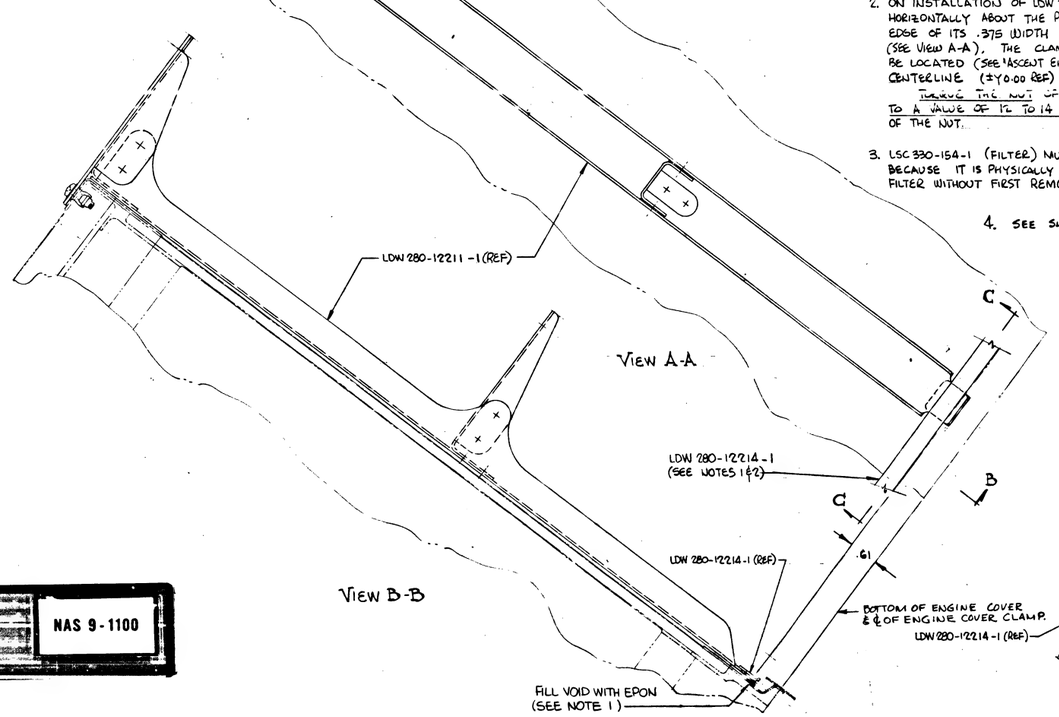
1. EPON 934 FILLS THE VOID BETWEEN THE LDW280-12211-1 & -3 SUPPORT ASSY'S AND THE ENGINE COVER AT THE CLAMP END. USE EPON 934 AS PER LSP14-22500 (EXCEPT CLEANING IS SUBJECT TO RESTRICTIONS PER NOTES 1a., 1b., AND 1c.) CURE RANGE I. USE OF ROOM TEMPERATURE CURE IS PERMISSIBLE.
   RESTRICTIONS ON BONDING PER LSP14-22500:
   1a.) NO ACIDS PERMITTED IN LM-7 VEHICLE.
   1b) CLEANING OF LOCAL SURFACES OF LDW280-12211-1 AND -3 IN PREPARATION FOR BONDING IS TO BE ACCOMPLISHED WHILE THESE PARTS ARE OUTSIDE OF THE LM-7 VEHICLE.
   1c) CLEANING OF LOCAL AREAS OF LDW280-53149-5-3 (ENGINE COVER) IN PREPARATION FOR BONDING IS TO BE LIMITED TO A FREON WIPE. THE PAINTED SURFACE OF THE ENGINE COVER (TO RECEIVE THE EPON 934) IS NOT TO BE REMOVED OR DISTURBED.

NOTE: INSTALLATION OF LDW280-12214-1 (CLAMP ASSEMBLY) IS TO BE COMPLETED PRIOR TO CURE OF EPON. (SEE NOTE 2)

2. ON INSTALLATION OF LDW 280-12214-1 (CLAMP ASSEMBLY) LOCATE THE PART HORIZONTALLY ABOUT THE PERIPHERY OF THE ENGINE COVER WITH THE LOWER EDGE OF ITS .375 WIDTH .61 FROM THE BOTTOM OF THE ENGINE COVER (SEE VIEW A-A). THE CLAMP TIGHTENING MECHANISM OF LDW 280-12214-1 IS TO BE LOCATED (SEE "ASCENT ENGINE COVER - VIEW LOOKING DOWN") NEAR THE AFT CENTERLINE (±Y0.00 REF) OF THE ENGINE COVER.
   TORQUE THE NUT OF THE CLAMP TIGHTENING MECHANISM OF LDW280-12214-1 TO A VALUE OF 12 TO 14 INCH-POUNDS ABOVE THE LOCKING FEATURE TORQUE VALUE OF THE NUT.

3. LSC 330-154-1 (FILTER) MUST BE "IN PLACE" DURING INSTALLATION OF LDW 280-12211-1 BECAUSE IT IS PHYSICALLY NOT POSSIBLE TO INSTALL THE FILTER WITHOUT FIRST REMOVING LDW 280-12211-1

4. SEE SHEET 3 FOR INSTALLATION PROCEDURE



01	NAS 9-1100	

GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	LDW200-55027
	26512	
SCALE F...		SHEET 4.00

LDW200-55027 — B — LDW200-55027 A

PRINTING INFO ONLY
PRINT TRIM LINE
FULL SIZE SHEET AREA 1.26 x 16.5 = 13.5 SQ FT
½ SIZE SHEET AREA (½ OF FULL) = 9.4 SQ FT

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65 **ENGINEERING ORDER**

DWG. NO. LDW200-55027 | EO NO. A1
CONTROL INFO NO. LDW280B-9999

DESCRIPTION OF EO.

ON SHEET 3 REVISE INSTALLATION PROCEDURE AS SHOWN: & REVISE CLAMP LOCATION DIM.
(DESCRIPTION OF EO)

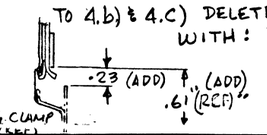
ADD TO: 1. a) LDW280-12211-3 TO MAKE CONTACT WITH ENGINE COVER VERTICAL WALL AT TOP AND BOTTOM.

ADD TO: 2. a) LDW280-12211-1 TO MAKE CONTACT WITH ENGINE COVER VERTICAL WALL AT TOP AND BOTTOM.

TO 3. a) AFTER ---IN "FILL VOID" AREA ADD: ON LDW280-12211-1 & -3

ADD TO 3. b) (IN "FILL VOID" AREA")

TO 4.b) & 4.C) DELETE: "APPLY EPON 934 TO LOCAL SURFACE" AND REPLACE WITH: "INJECT EPON 934 USING SEALANT INJECTION GUN OR SYRINGE TO FILL VOID AREA"



DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCD 5389 PKG 10

REASON FOR EO: TO CLARIFY INSTALLATION PROCEDURES

DESCRIPTION OF EO: ON-1 (SEE ABOVE) ADDED .23 DIM & ADDED REF TO .61 DIM.

GAEC EO RELEASE

MODEL	EFFECTIVITY: ACCTG ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	DATE	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	CONF
LM	LFM 549 E1	LM-7 (37)		✓		✓		VDI.	3/5/70		3/5/70	3/5/70		3/5/70	3/9/70

PRIORITY: C

DRAWING TITLE: FILTER INSTL. A/S-M/S DUST REWORK OF LDW280-54001 LFM 549

DRAWING NO.: LDW200-55027

EO NO.: A1

3-5-70 ISSUED BY VALENTINE 86048 SECTION VDI (280) GROUP NO. 335 PL 25

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

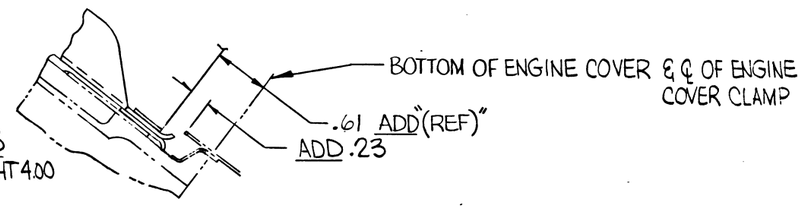
ENGINEERING ORDER

DWG. NO LDW200-55027 | EO NO. 42.

CONTROL INFO NO. LDW280C0133

ON SHT 4.00 ~ DELETE NOTE 4

ON SHT 3.00 ~ DELETE NOTES 1 THRU 5



REVISE VIEW B-B ZONE 2A ~ SHT 4.00

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCD 5389 PKG 10

REASON FOR EO: INSTL INSTRUCTIONS NOT REQ'D METHOD ENG. REQUEST

DESCRIPTION OF EO: IN VIEW B-B ADDED .23 DIM & (REF) TO .61 DIM. ON SHT 4.00 DELETED NOTE 4. ON SHT 3.00 DELETED NOTES 1 THRU 5

GAEC EO RELEASE

MODEL	EFFECTIVITY: PROCURING AGENCY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM	LFM 549	LM-7(37)	

DRAWING CHANGE REQD: ✓ REVISE DWG; RECORD EO

DISPOSITION OF PARTS: NOT REQ'D; REWORK; SCRAP

PRIORITY: C

DRAWING TITLE: FILTER INSTL ~ A/S ~ M/S DUST
REWORK OF LDW280-54001 LFM #549

DRAWING NO. LDW200-55027 A2

APPROVED BY									
DATE	3-11-70			3/11/70	3/11/70		3/11/70	3/11/70	
	VDI	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	EO NO.	

031170 ISSUED BY L. BERLINQUETTE x86048 SECTION VDI GROUP NO. 335 PL. 25

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENGINEERING ORDER

DWG NO. LDW200-55027 | EO NO. A3
CONTROL INFO NO. LDW280C0134

CANCEL EO A1

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	√	LCD 5389 PKG 10

REASON FOR EO: INSTL INSTRUCTIONS NOT REQ'D

DESCRIPTION OF EO: CANCELLED EO A1

GAEC EO RELEASE: (P) 3/11/70 (S) 3/11/70

MODEL	EFFECTIVITY: ~~PROCURING AGENCY NO.~~ EI	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 549	LM-7(37)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO | DISPOSITION OF PARTS: REWORK ✓ | SCRAP

APPROVED BY				CW		
DATE	3-4-70			3/11/70	3/11/70	3/11/70
	VDI	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GAEC EO NO.

PRIORITY: C

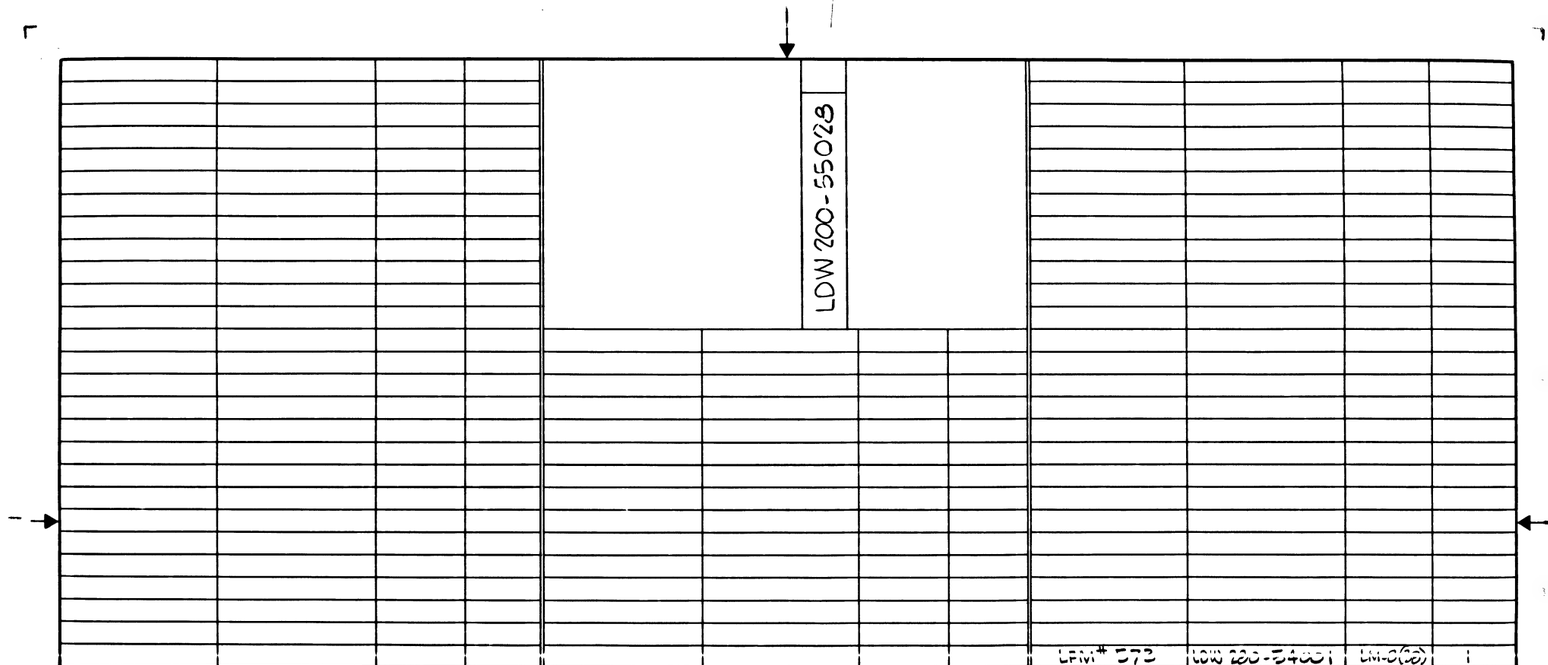
DRAWING TITLE: FILTER INSTL-A/S M/S DUST REWK OF LDW280-5400 | LFM 549

DRAWING NO.: LDW200-55027 | EO NO. A3

031170 ISSUED BY L. BERLINQUETTE X86048 SECTION VDI GROUP NO. 335 PL 25

01

NAS 9-1100



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LFM# 573	LDW 200-54001	LM-D(23)	1
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW 200-55028-1		GAEC SCH NO.	

WORK PACKAGE FUNCTION NO. 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00		2.00		3.00					
REV										
SHEET										
REV										
SHEET										
REV										
LAST SECT LTR USED	G	GRUMMAN REQ NO.								
LAST DASH NO. USED	-11	PRIM NO.	215							

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
~~FRACTIONS~~ DECIMALS – ANGLES
.XX ±.03 .XXX ±.016 ±0°30'

ORIG DWG AUTH			
DETAIL SPEC REQUIREMENT			
CLASS II ENGRG CHANGE			
CLASS I ENGRG CHANGE	✓		
LCD # 5450 PKG 10			

CONTRACT NO. NAS 9-1100 N/M LB LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	ROCKLEIN 6mR		
LAYOUT BY	"		
CHECKED BY	Sgalewski 3-10-70		
CGD LDR	RV 3/9/70		
VDI	Thorgusen 3-9-70		
STRUCTURES		PROJ ENGR	3/6/70
STRUCTURES	CW 3-9-70	REL GROUP	3/11/70
MATERIALS	3-9-70		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

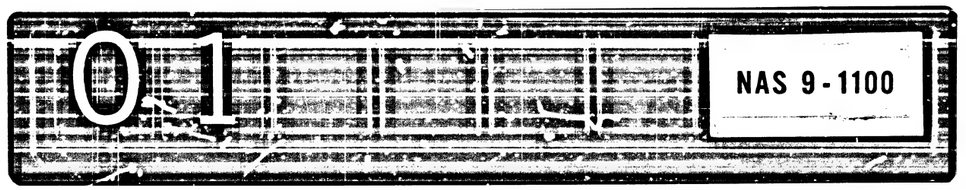
SUPPORT INST'L - A/S, CABIN, L.H. STOWAGE CONSOLE
REWORK OF LDW 200-54001
LFM# 573

SIZE	CODE IDENT NO.	
B	26512	LDW 200-55028

SCALE NONE SHEET 1.00 OF 3

ENG 77.1 12-65

CDR 3-9-70



QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
85		MS20470 AD4	E	RIVET							
10		GR10HAD4	E	RIVET	GRUMMAN STD						
10		GS570J5D146	E	SEAL							
4		GB511K-08-4	E	BOLT							
4		GB511K-08-6	E	BOLT							
8		GB511K-08-8	E	BOLT							
12		GS570P-08	E	SEAL							
12		GW10G-2	E	WASHER							
16		GN512H-08	E	NUT-COLLAR							
1		GS12E-015A04N10	E	SHIM, TAPERED							
2		G90-1A-2B	E	LUG	GRUMMAN STD						
A/R		SHIM	E	SEE NOTE 5							
1		LDW280M11551-11	E	FITTING							C2
1		LDW280M11550-11	E	FITTING							C7
1		LDW280M11515-11	E	FITTING							C3
1		LDW280M11514-11	E	FITTING							C6
3		LDW280-12167-33	E	RADIUS BLOCK							B2 B7
1		-31	E	RADIUS BLOCK							A2
1		-29	E	STRAP							C1
1		-27	E	STRAP							C8
1		LDW280-12167-11	E	CLIP							C1
1		LDW280-12166-21	E	CLIP							A3
1		LDW280-12166-19	E	CLIP							A7
2		LDW200-55028-11	E	DOUBLER	AL ALLOY	QQ-A-250/12	7075-T6	.036X2'X2 -	NONE	76	C2
		LDW200-55028-1	E	SUPPORT INST'L					NONE	NONE	A9

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
76	ALODINE	LSP 14-9010

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

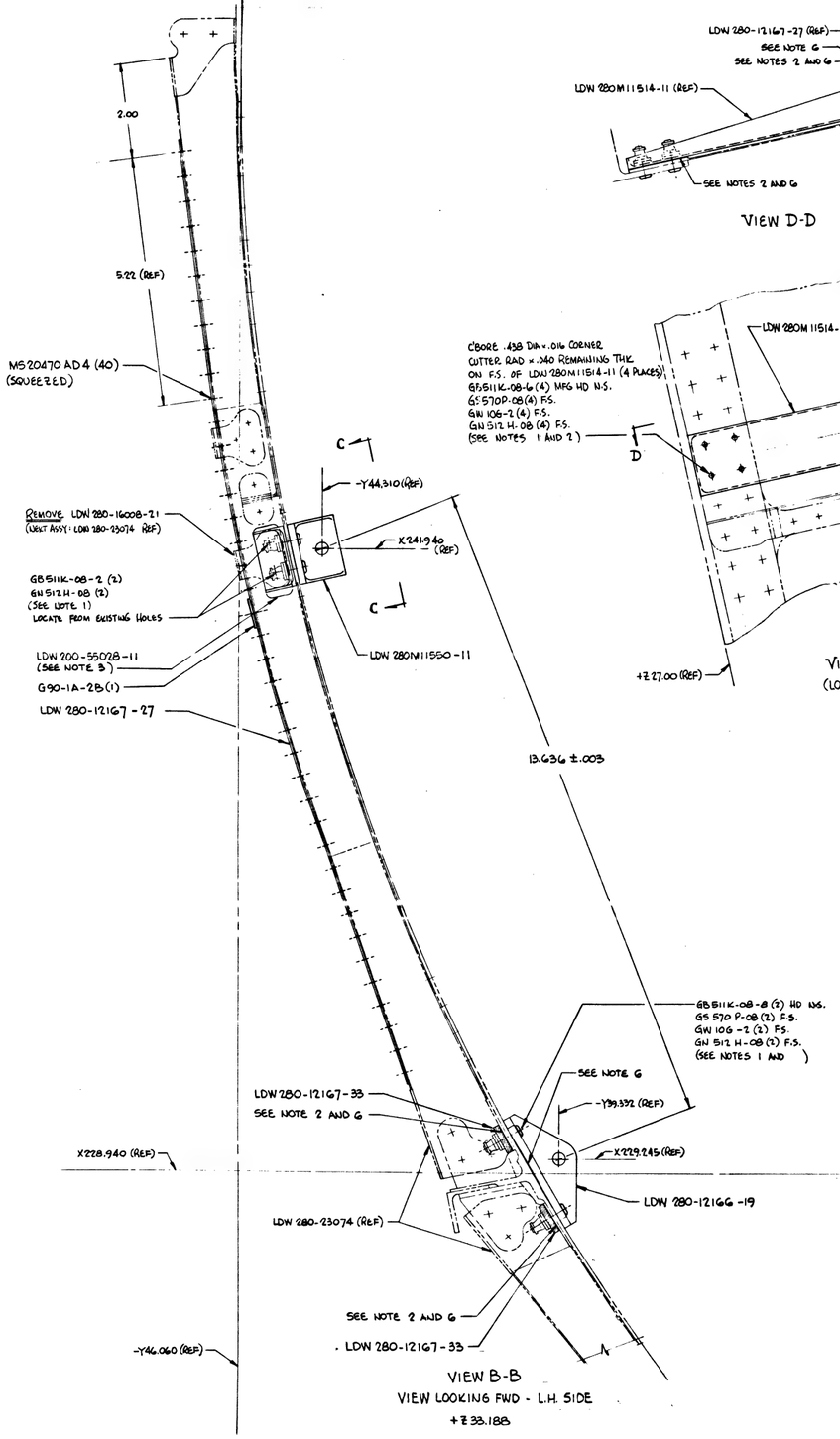
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

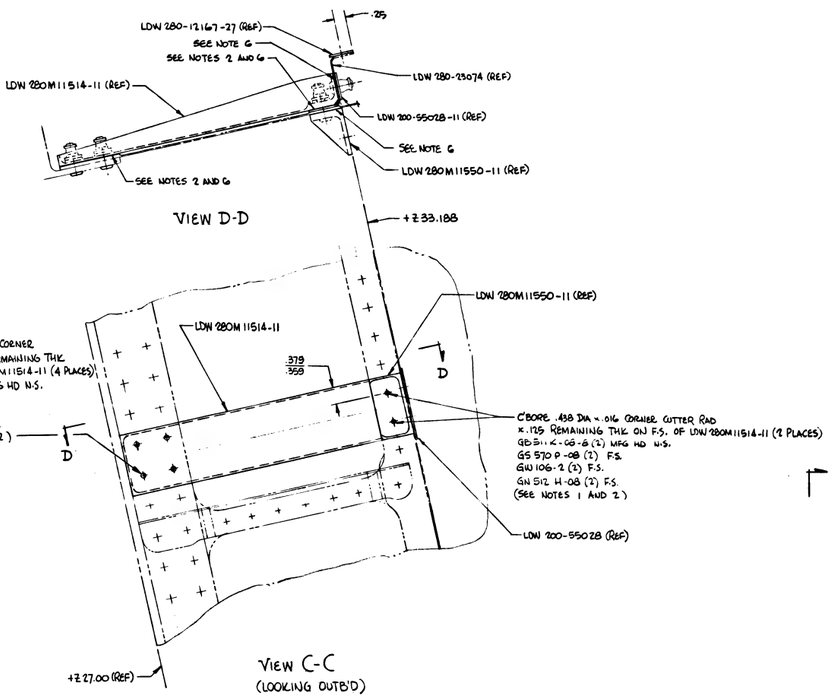
SIZE	CODE IDENT NO.	
B	26512	LDW 200-55028

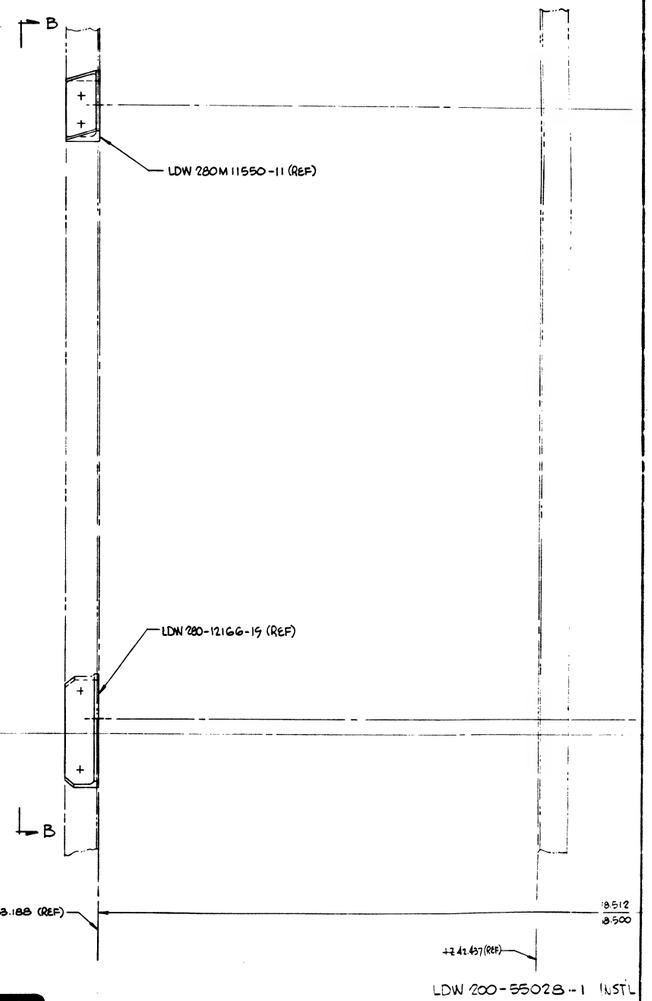
SCALE NONE SHEET 2.00

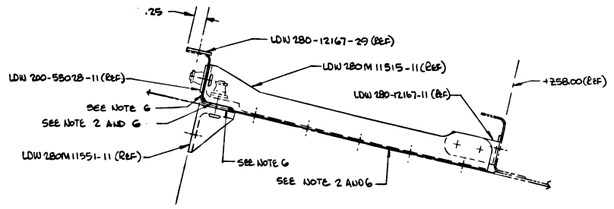
ENG 77.2 7-65

NAS 9-1100

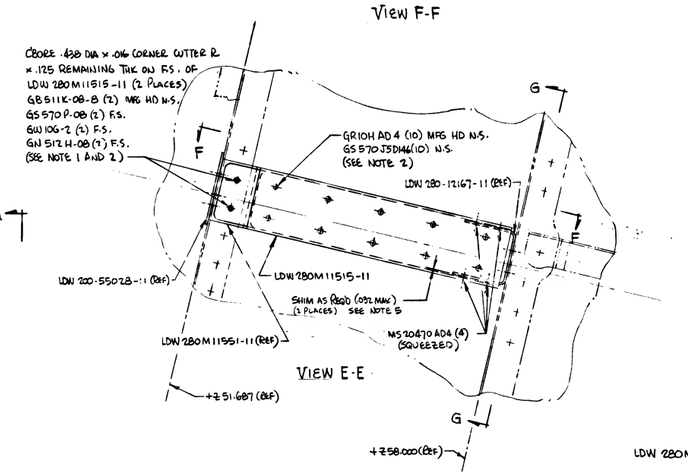

2.00
5.22 (REF)
MS20470 AD4 (40)
(SQUEEZED)
REMOVE LDW 280-16008-21
(BELT ASSY: LDW 280-23074 REF)
GBS11K-08-2 (2)
GN 512 H-08 (2)
(SEE NOTE 1)
LOCATE FROM EXISTING HOLES
LDW 200-55028-11
(SEE NOTE 3)
G90-1A-2B (1)
LDW 280-12167-27
C
-Y44.310 (REF)
X241.940 (REF)
C
LDW 280M11550-11
13.636 ±.003
GBS11K-08-8 (2) HD NS.
GS 570 P-08 (2) F.S.
GW 106-2 (2) F.S.
GN 512 H-08 (2) F.S.
(SEE NOTES 1 AND 2)
SEE NOTE G
-Y39.332 (REF)
X229.245 (REF)
LDW 280-12166-19
LDW 280-23074 (REF)
SEE NOTE 2 AND G
LDW 280-12167-33
X228.940 (REF)
-Y46.060 (REF)
VIEW B-B
VIEW LOOKING FWD - L.H. SIDE
+Z 33.188


LDW 280-12167-27 (REF)
SEE NOTE G
SEE NOTES 2 AND G
LDW 280M11514-11 (REF)
LDW 280-23074 (REF)
LDW 200-55028-11 (REF)
SEE NOTE G
LDW 280M11550-11 (REF)
SEE NOTES 2 AND G
VIEW D-D
+Z 33.188
LDW 280M11550-11 (REF)
LDW 280M11514-11
.379
.359
D
C'BORE .438 DIA x .016 CORNER
CUTTER RAD x .040 REMAINING THK
ON F.S. OF LDW 280M11514-11 (4 PLACES)
GBS11K-08-6 (4) MFG HD N.S.
GS 570P-08 (4) F.S.
GW 106-2 (4) F.S.
GN 512 H-08 (4) F.S.
(SEE NOTES 1 AND 2)
D
C'BORE .438 DIA x .016 CORNER CUTTER RAD
x .175 REMAINING THK ON F.S. OF LDW 280M11514-11 (2 PLACES)
GBS11K-08-8 (2) MFG HD N.S.
GS 570 P-08 (2) F.S.
GW 106-2 (2) F.S.
GN 512 H-08 (2) F.S.
(SEE NOTES 1 AND 2)
LDW 200-55028 (REF)
+Z 27.00 (REF)
VIEW C-C
(LOOKING OUTB'D)

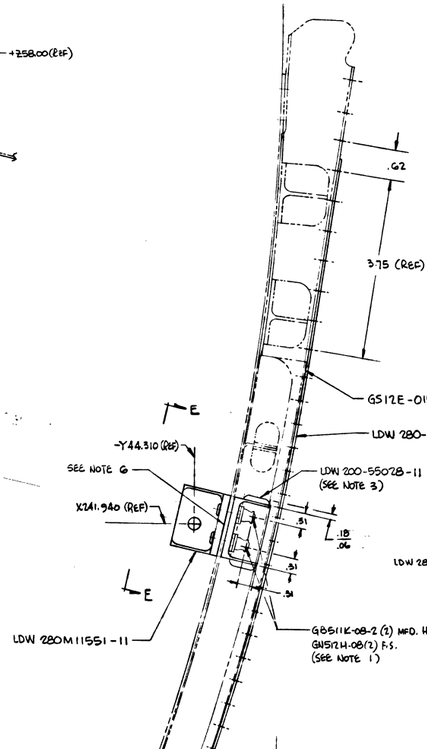

B
LDW 280M11550-11 (REF)
LDW 280-12166-19 (REF)
B
+Z 33.188 (REF)
18.512
18.500
+Z 41.637 (REF)
LDW 200-55028-1 INSTL
VIEW LOOKING OUTBOARD - L.H. S

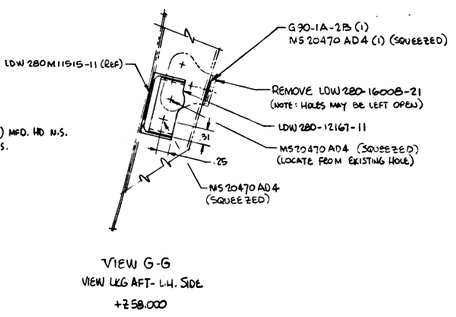


View F-F



View E-E





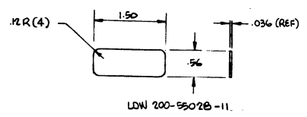
VIEW G-G
VIEW LKG AFT- L.H. SIDE
+Z58.000

NOTES:
1. INSTALL FASTENERS PER LSP14-15302 & LSP14-15306
2. SEAL PER LSP14-14102
3. BOND LDW 200-55028-11 DOUBLER (2 PLACES) TO CABIN FORMERS USING EPON 934 PER LSP14-27500 CURE RANGE I. USE OF ROOM TEMPERATURE CURE IS PERMISSIBLE.
4. FOR HOLES MARKED ▲ SEE LDW 340-58132 FOR CORRESPONDING HOLE PATTERN.
5. SHIM AS REQ'D USING AL ALLOY SH, 2024-T3, QQ-A-250/4, FINISH #76.
6. SHIM PER LPC 280-53.

LDW 200-55028-1 INSTL
VIEW LOOKING OUTBOARD - L.H. SIDE

VIEW A-A
VIEW LOOKING AFT- L.H. SIDE
+Z51.687

02/02 NAS 9-1100



SYMBOL LEGEND:
✦ ⊕ + } FOR QUANTITY & LOCATION ONLY

REVISIONS						
ZONE	LTR	DESCRIPTION	CP CODE	MODEL	DATE	APPROVED

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES
LINEAR TOL .XX ± .05 / .XXX ± .010
ANGULAR TOL ± 0°30'
TOL ON LOFTED DEFINITIONS IS

CONTRACT NO.

DRAWN BY
LAYOUT BY
CHECKED BY
GR LEADER
REL GROUP
PROJ ENGR
GOVT APPD

GRUMMAN AIRCRAFT ENGINEERING CORPORATION
BETHPAGE, NEW YORK 11714

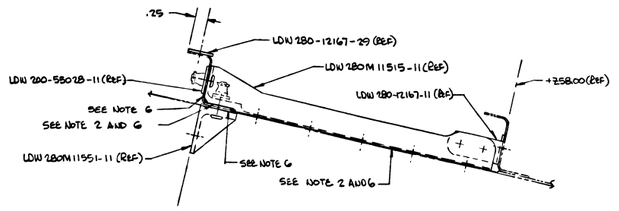
SIZE J | CODE IDENT NO. 26512 | LDW 200-55028
SCALE: FULL | SHEET 3.00 OF 3

LDW 200-55028 REV SHEET 3

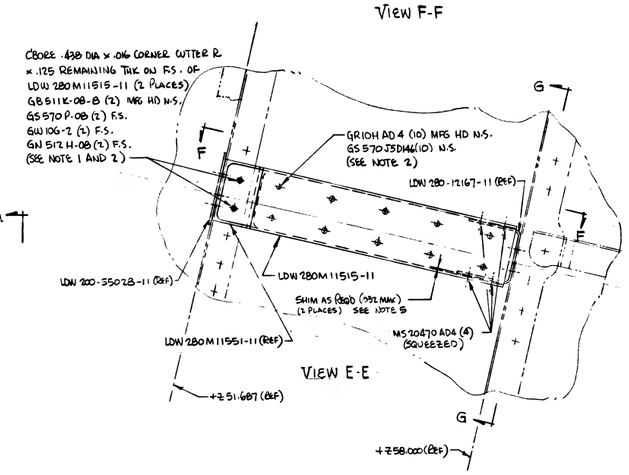
DISTR LIST =

PRINTING INFO ONLY
DWG SIZE 24 X 36
FULL SIZE SHEET AREA (36 SQ IN) = 24.5 SQ FT
½ SIZE SHEET AREA (½ OF FULL) = 6.5 SQ FT

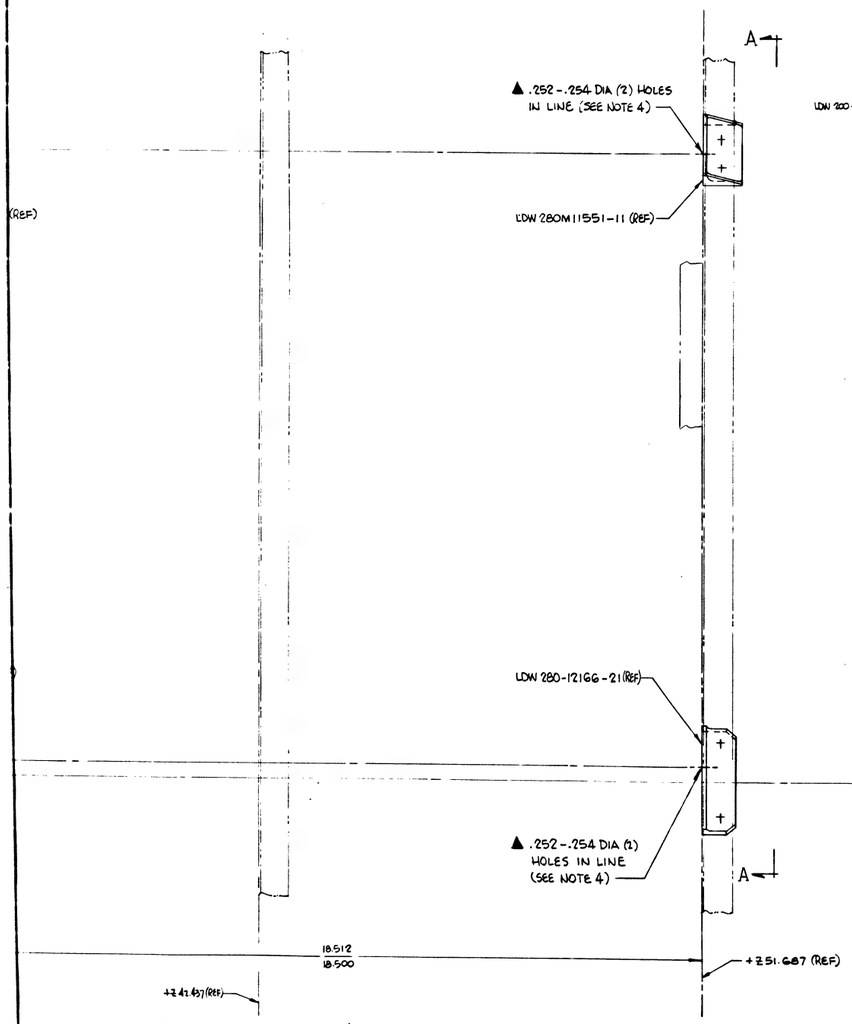
REVISIONS						
ZONE	LTR	DESCRIPTION	EFF CODE	MODEL	DATE	APPROVED



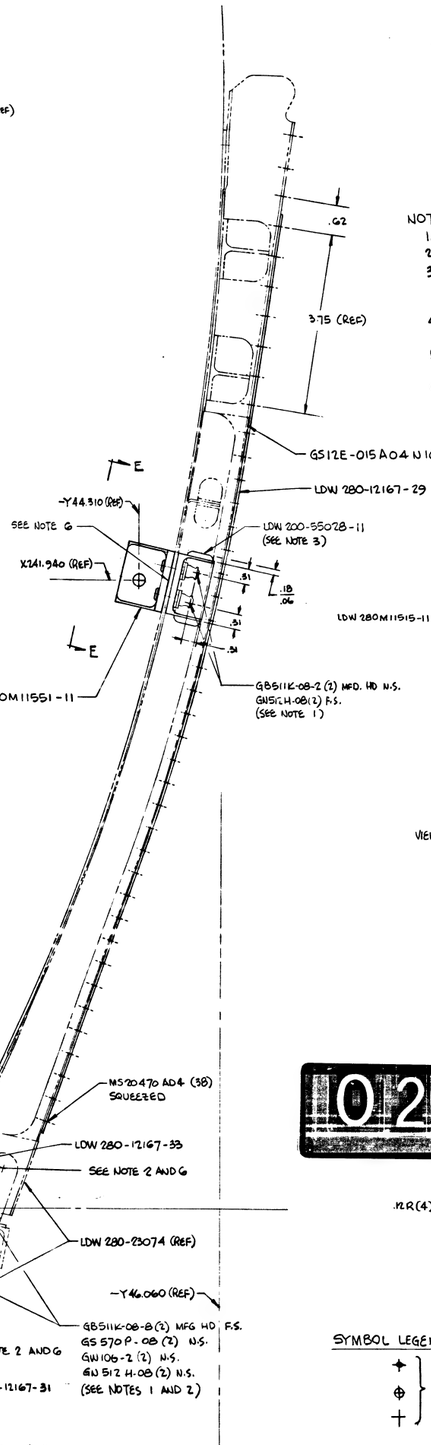
VIEW F-F



VIEW E-E

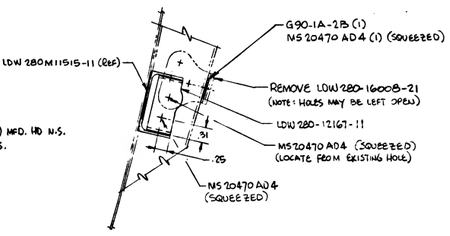


LDW 200-55028-1 INSTL
VIEW LOOKING OUTBOARD - L.H. SIDE



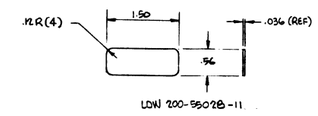
VIEW A-A
VIEW LOOKING AFT-L.H. SIDE
+Z51.687

NOTES:
1. INSTALL FASTENERS PER LSP14-15302 & LSP14-15306
2. SEAL PER LSP14-14102
3. BOND LDW 200-55028-11 DOUBLER (2 PLACES) TO CABIN FORMERS USING EPON 934 PER LSP14-27500 CURE RANGE I. USE OF ROOM TEMPERATURE CURE IS PERMISSIBLE.
4. FOR HOLES MARKED ▲ SEE LDW 340-58132 FOR CORRESPONDING HOLE PATTERN.
5. SHIM AS REQ'D USING AL ALLOY SH, 2024-T3, QQ-A-250/4, FINISH #76.
6. SHIM PER LPC 280-53.



VIEW G-G
VIEW LKG AFT- LH. SIDE
+Z58.000

02/02 NAS 9-1100



SYMBOL LEGEND:
+ ⊕ + FOR QUANTITY & LOCATION ONLY

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES		CONTRACT NO.	GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714
LINEAR TOL	XX ± .05 / XXX ± .010	DRAWN BY	
ANGULAR TOL	± 0°30'	LAYOUT BY	
TOL ON LOFTED DEFINITIONS IS		CHECKED BY	
		GP LEADER	
		REL GROUP	
		PROJ ENGR	
		GOVT APPD	
		SIZE J	CODE IDENT NO. 26512
		SCALE FULL	LDW 200-55028
			SHEET 3.00 OF 3

FOR PARTS LIST, USAGE DATA, AND SPEC IN EFFECT, SEE DOCUMENT LINE NUMBER POSTED IN

LDW 200-55028 | REV | SHEET 3

FRAME 1 ← FRAME → 2

DISTR LIST =

LDW 200-55028 D C B A

PRINTING SOFTWARE

DWG SIZE 24 x 36 IN. = FULL SIZE SHEET AREA (16 SF FULL)= 8.5 SQ FT
M SIZE SHEET AREA (4 SF FULL)= 6.5 SQ FT

GRUMMAN AEROSPACE CORPORATION

CODE IDENT NO. 26512

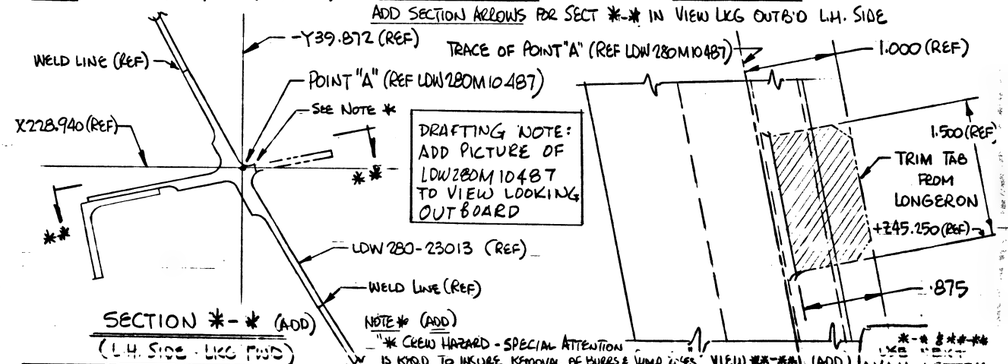
ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO	LDW 200-55028		EO NO. A1
CONTROL INFO NO.	LDW 280C-0483		

IN MODEL BLOCK, FOR -1 ADD LM-9 (39) EFFECTIVITY (LFM# 573) NEXT ASSY: LDW 280-54001 QTY: (1)

ON -1 (LM-8 (38) & LM-9 (39) REF) ADD SECTION *-* AS SHOWN AND VIEW **-** AS SHOWN
ADD SECTION ARROWS FOR SECT *-* IN VIEW LKG OUTBD L.H. SIDE



DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓	LCD# 5450	PICG # 10

REASON FOR EO
UNUSED LONGERON TAB INTERFERES WITH CREW PROVISION BAG IN CONSOLE.

DESCRIPTION OF EO
FOR -1: ADDED LM-9 (39) EFFECTIVITY
IN VIEW LKG OUTBD L.H. SIDE ADDED SECTION ARROWS FOR SECT *-*
ADDED SECTION *-* & VIEW **-** ADDED NOTE *

MODEL	EFFECTIVITY		
~~PRODUCING ACTIVITY NO.~~		GAEC UNIT NO.	~~SUB CONTR UNIT NO.~~
LM	LFM# 573	LM-8 (38) & LM-9 (39)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS		PRIORITY
REVISE DWG	RECORD EO	REWORK	SCRAP	C
		✓		

DRAWING TITLE: SUPPORT INST'L - 2/S, CABIN L.H. STOWAGE CONSOLE, REWORK OF LDW 280-54001 LFM# 573

APPROVED BY									
DATE	5/21/70				5/21/70	CW 5/21/70		5/21/70	5/21/70
	VDE	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

GAEC EO RELEASE: 5/21/70

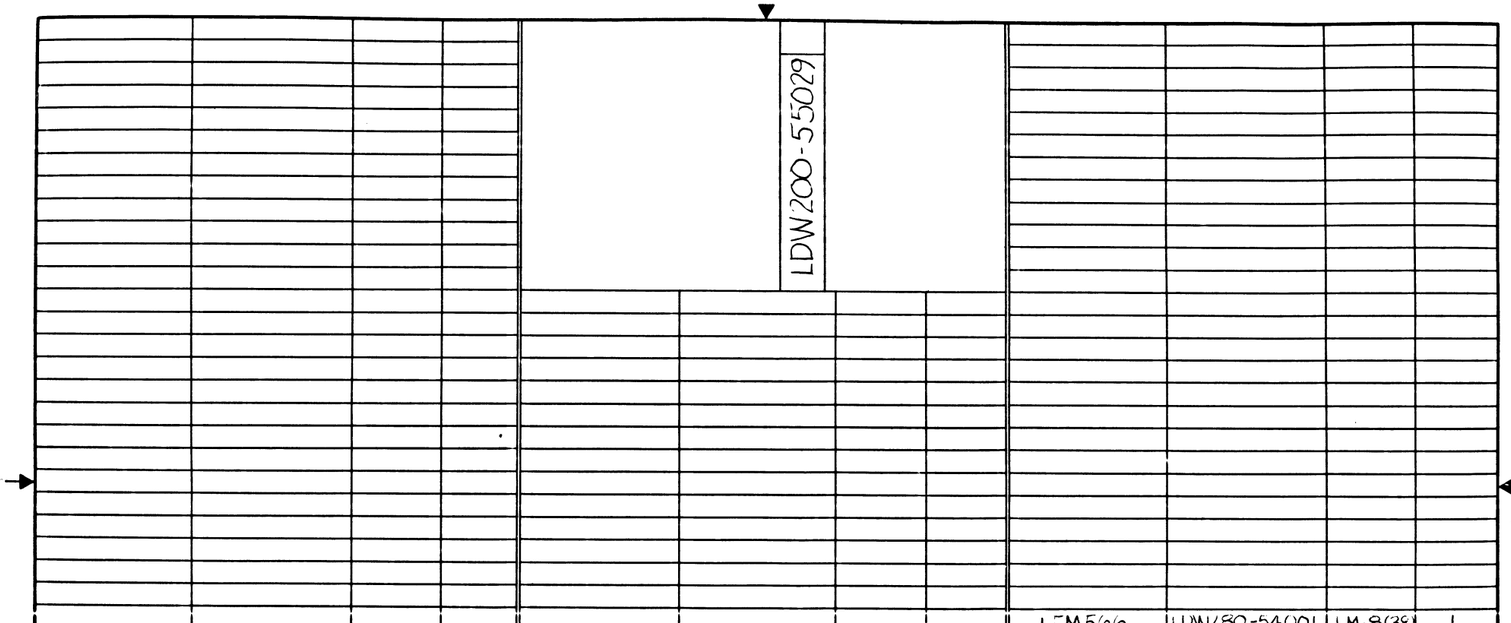
DRAWING NO. LDW 200-55028 EO NO. A1

5/21/70
ISSUED BY Geo W. ROCKLEIN x86048 5/21/70

SECTION VEH. DES. INT. GROUP NO. 335 PL 25

01

NAS 9-1100



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		LFM566	LDW280-54001	IM-8(3R)	1
								PART NO. LDW200-55029-1			

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00		2.00	3.00						
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED	C	GRUMMAN REL INFO	
LAST DASH NO. USED	-1	PRIM NO.	215

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
XX ±.03 .XXX ±.010 ±30'

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 5443 PKG 10	

WORK PKG FUNCTION NO 110

CONTRACT NO.	NAS-9-1100	LINE ITEM	DOCUMENTATION TYPE II
DRAWN BY	H. TREFFEISEN 3-30-70		GRUMMAN AIRCRAFT ENGRG CORP
LAYOUT BY	H. TREFFEISEN		BETHPAGE, L. I., NEW YORK
CHECKED BY	4-2-70		FITTING INSTL
SRF LDR	3/30/70		ASCENT STAGE-CABIN - BUDDY SYST. SUPT.
VDI	3-30-70		REWORK OF LDW280-54001 LFM566
STRUCT	CW 4-2-70	PROJ ENGR	SIZE B | CODE IDENT NO. 26512 | LDW200-55029
MAT.	4/2/70	REL GROUP	4/2/70
			SCALE NONE | SHEET 1 OF 3

ENG 77.1 12-65

CDR 4-2-70

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
									NONE	NONE	
AR		SEE NOTE 1	E	SHIM							
8		GBSIIJ-08-2	E	BOLT	GRUMMAN STD						
8		NAS583-33		BOLT	IND STD						
8		MS21042L3		NUT	GOV STD						
8		MS21042L08		NUT	↑						
8		AN960D10L		WASHER	↓						
8		AN960D8L	E	WASHER	GOV STD						
2		LDW34DM-11947-1	E	FITTING ASSY	SEE DWG						
2		LDW280-12216-11	E	DOUBLER	SEE DWG						
1		LDW280H540605	E	FLOOR INSTL	SEE DWG						
-1		LDW200-55029-1	E	FITTING INSTL							

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

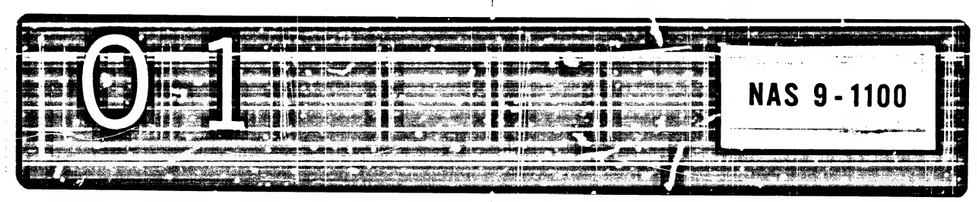
I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55029

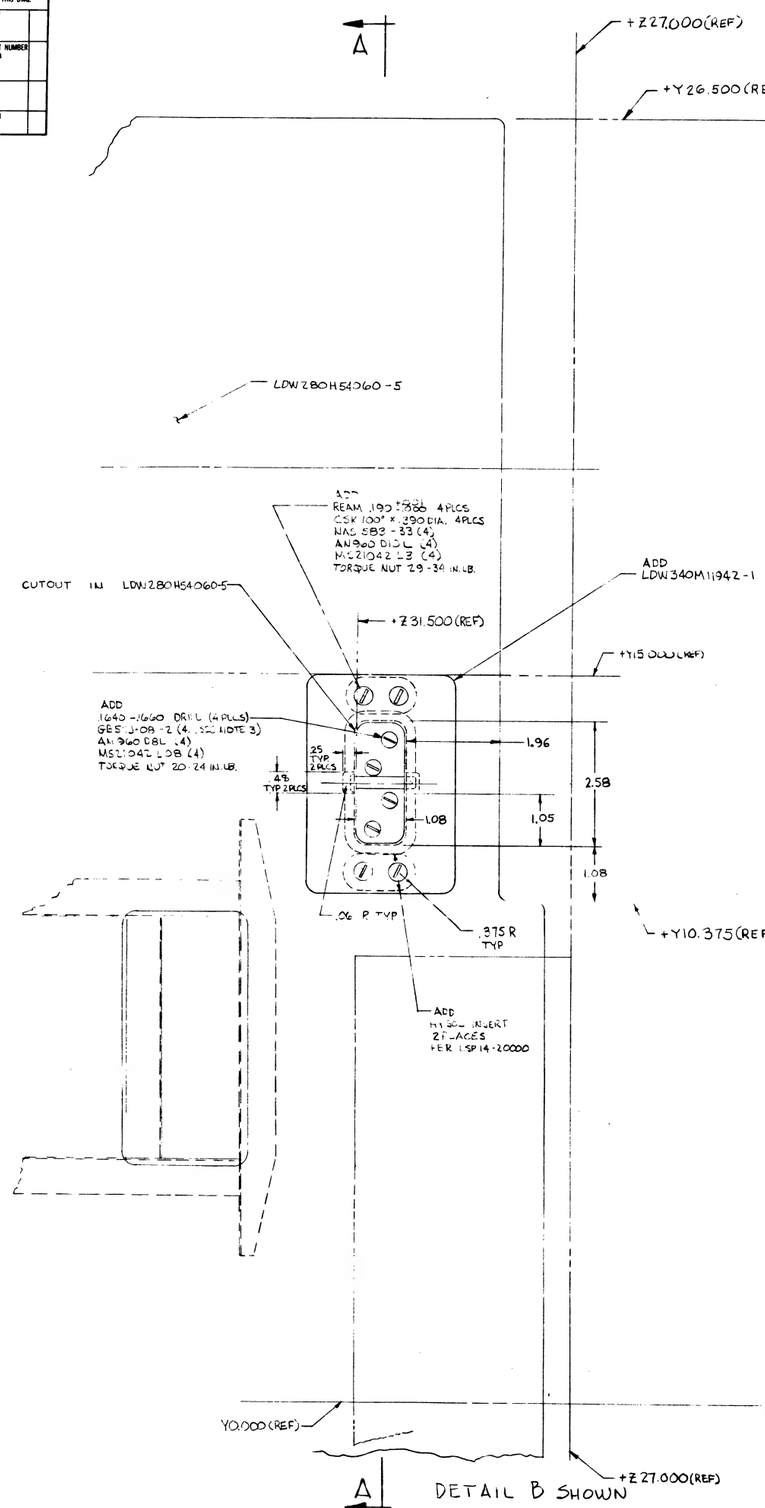
SCALE NONE SHEET 200

ENG 77.2 7-65



SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130.	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED [ ] USE BOTH SIDES IF NECESSARY	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL RIVETS IN ACCORDANCE WITH	

NOTES:
1. SHIM USING AL ALLOY SH. 2024-T4 CLAD PER QQ-A-250/4, FINISH #8 PER LSP14-3010.
2. BOND MATING SURFACES OF LDW280H54060-5 (FLOOR), LDW280-12216-11 (COUPLER), LDW340M11942-1 (FITTING) & SHIM, WITH EPON 934 PER LSP14-22500, CURE CHART 2.
3. GRIP LENGTH MAY VARY BY ± 1/16 IN.



NAS 9-1100

GRUMMAN AEROSPACE CORPORATION BETHPAGE, NEW YORK 11714		
SIZE E	CODE IDENT NO. 26512	LDW200-55029
SCALE 1		SHEET

GRUMMAN AEROSPACE CORPORATION

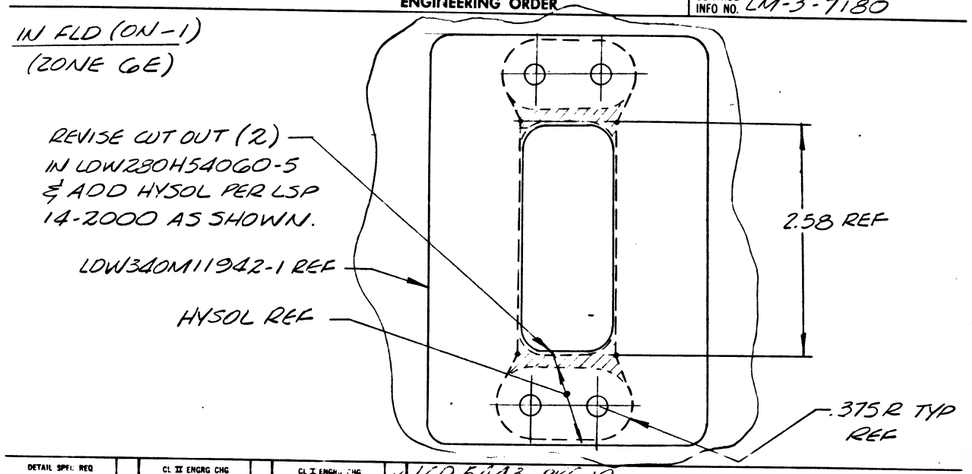
ENG 32.1 REV 3-65

CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LDW1200-55029		EO NO. A1
CONTROL INFO NO. LM-3-7180		

IN FLD (ON-1)
(ZONE GE)



DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG		LCD 5443 PRG 10

REASON FOR EO: EASE FABRICATION.

DESCRIPTION OF EO: IN FLD (ON-1) REVISED CUT OUT IN LDW280H540G0-5; & ADDED HYSOL.

GAEC EO RELEASE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP	APPROVED BY	DATE	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
LM	LFM5066	LM8(38)		✓		✓		6.7.70	6.8.70	VD1		BM	BM			

PRIORITY: C

DRAWING TITLE: FITTING INSTL, SYS; CABIN BUDDY SYS. SUPT RWL OF LDW280-54001

DRAWING NO.: LDW1200-55029

EO NO.: A1

ISSUED BY VPE/M.O.REYES/X2151 SECTION VD1/J. VALENTINE GROUP NO. 335 PL 25

01

NAS 9-1100

LDW200-55030

CLEAN

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LFM 637	LDW280-54001	LM9(39)	1 EA
								LFM 637	LDW280-54001	LM8(38)	1 EA
PART NO.		GAEC SCH NO		PART NO.		GAEC SCH NO.		PART NO. LDW200-55030-1&3		GAEC SCH NO.	

WORK PACKAGE FUNCTION III

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	2.00		3.00		4.00			
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	—	GRUMMAN REL INFO	
LAST DASH NO. USED	-25	PRIM NO.	227

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ± .016 —

ORIG DWG AUTH		
DETAIL SPEC REQUIREMENT		
CLASS II ENGRG CHANGE		
CLASS I ENGRG CHANGE	✓	LCD5741 N/K PKG 5

CONTRACT NO. NAS9-1100 LINE ITEM DOCUMENTATION TYPE III

DRAWN BY	BALDASSIN/BOHUN			
LAYOUT BY	BALDASSIN/BOHUN			
CHECKED BY	A.PIRESTINARI			
GR. LDR	A Pirestinari 12-9-70			
VDI	S Thorgusen 12-11-70			
STRUCT		PROJ ENGR	R Shelby 12/11/70	
STRUCT	J Colbrese 12-11-70	REL GROUP	Grumman 12/11/70	
PROP	J Mahan 12-11-70			

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

APS MODIFICATION FOR REGULATOR OSCILLATION TESTING (REWORK OF LDW280-54351-1)

SIZE	CODE IDENT NO.	
B	26512	LDW200-55030

SCALE NONE SHEET 1.00 OF 4

ENG 77.1 12-65

LCD5741 CDR 12/11/70

0332 025

01

NAS 9-1100

N					2	2		LDW200-55030-8	E	UNION	SEE NOTE 10												
N					1			LDW200-55030-13		TUBE	MAKE FROM	LDW200-55030-19											
					1			LDW200-55030-21			MAKE FROM	LDW200-55030-17											
						1		LDW200-55030-19			MAKE FROM	LDW280-16000-1987 ASH8											
						1		LDW200-55030-17			MAKE FROM	LDW280-16000-4056 ASH8											
					1			LDW200-55030-15		TUBE	304LSS 1/8H	LSM14-1001		1/2 O.D. X .016 X 5.00									
				1				LDW200-55030-13		FITTING	MAKE FROM	AN815-4C											
N				1				LDW200-55030-11		TUBE	304LSS 1/8H	LSM14-1001		1/2 O.D. X .016 X 3.00									
N							1	LDW200-55030-5		WELDED ASSY									NOTE 2 & 9	NONE			
N								LDW200-55030-3		LINES INSTL	—								NONE	NONE			
N								LDW200-55030-1	E	LINES INSTL	—								NONE	NONE			
QTY PER ASSEMBLY				-5	-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL		GOVT SPEC		COML SPEC		STOCK SIZE		PROCESS SYM	FINISH NO.	ZONE		

CL = CLEANLINESS LEVEL PER LSP14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55030

SCALE NONE SHEET 2.00

ENG 77.2 7-64

01

NAS 9-1100

NOTES:
1. LDW200-55030-1 TO BE INSTALLED FIRST AND AFTER TEST IS TO BE REPLACED BY THE LDW200-55030-3 INSTL.
2. WELD (FUSION WELDING-STEEL-ARC OR TORCH) PER MIL-W-8611.
3. ANNEALED AREA ADJACENT TO WELD PERMISSABLE.
4. GLASS BEED PEEN ENDS OF LINES PER LSP-14-7062.
5. IDENTIFY LINES PER LSP-14-4708 - ELECTRO ETCH.
6. PROOF PRESSURE TEST LDW200-55030-5 ASSY TO 500 PSIG (HYDRO STATIC) AT ROOM TEMPERATURE FOR ONE MINUTE. NO LEAKAGE OR PERMANENT DEFORMATION PERMITTED.
7. ALL LINES SHALL BE CLEANED TO LEVEL "N" PER LSP-14-7063.
8. BRAZE PER LSP-14-6305.
9. ALL WELDS ARE CRITICAL AND REQUIRE RADIOGRAPHIC INSPECTION PER MIL-I-6865.
10. COMMERCIAL PART - SEE DRAWING LSC 269-200 BEFORE ORDERING.

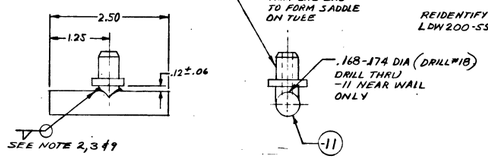
GRUMMAN AEROSPACE CORPORATION BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW200-55030	
SCALE			SHEET 3.00

ENG 72.1 6-64

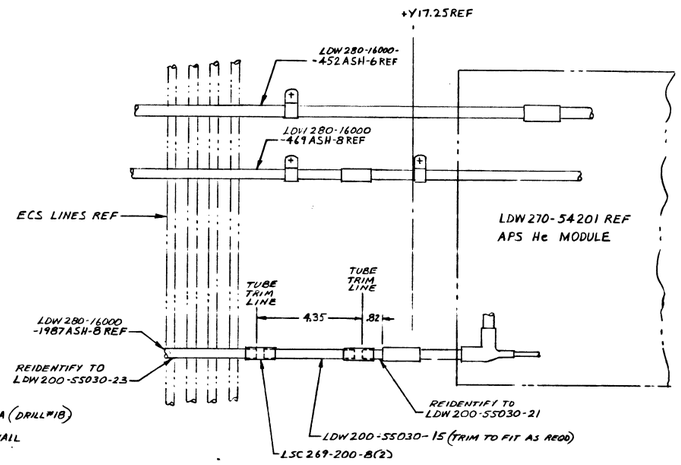
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NAS 9-1100

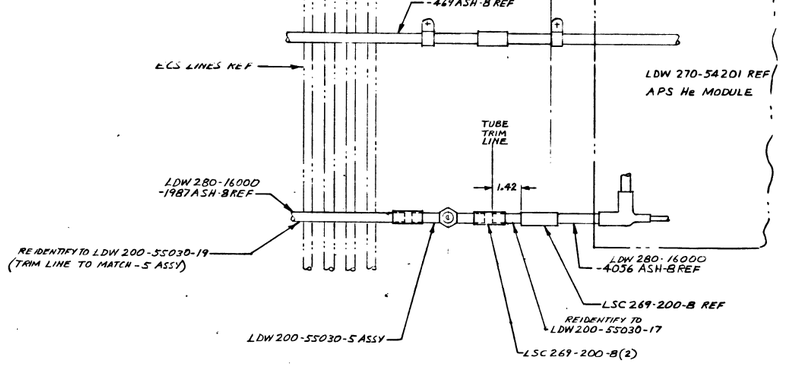
SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH MIL STD 130 & NOTE 5	✓
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☐ USE BOTH SIDES IF NECESSARY	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL RIVETS IN ACCORDANCE WITH	



LDW 200-55030-5 ASSY
(WELDED)
SCALE : FULL SIZE



LDW 200-55030-3 INSTL
(FLIGHT CONFIGURATION)



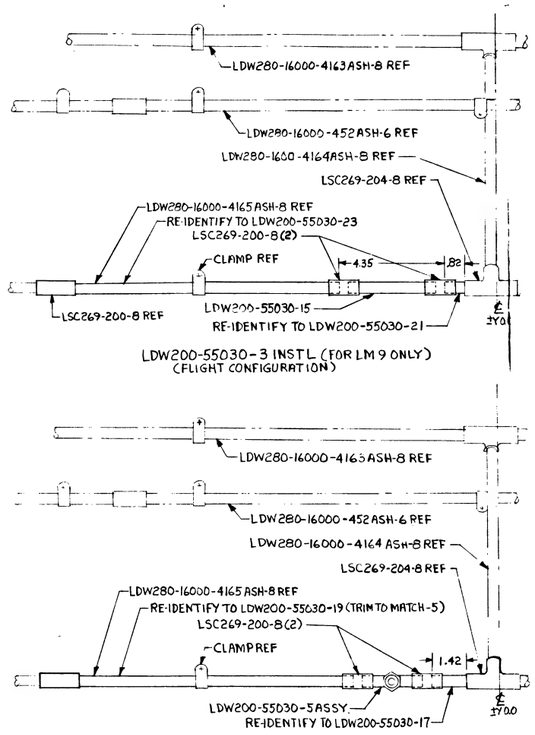
LDW 200-55030-1 INSTL
(TEST CONFIGURATION)

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714			
SIZE F	CODE IDENT NO. 26512	LDW 200-55030	
SCALE 1/2 & NOTED		SHEET 4.00	

DRG 73.5 REV 5-67

LDW 200-55030



GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LDW200-55030 | ED NO. A1
CONTROL INFO NO. LDW280C 1707

DESCRIPTION OF E.O.

IN FIELD ADD NEW -1 & -3 INSTL (FOR LM 9 ONLY)
IN S/M FOR -1 INSTL LDW200-55030-19 MAKE FROM LDW280-16000-4165 WAS -1987
& LDW200-55030-17 MAKE FROM LDW280-16000-4165 WAS -4056. (RE MAINDER OF
B/M FOR -18 & -19 INSTL IS THE SAME)
IN FIELD ON SH 4.00 -7 INSTL WAS -1 INSTL & ADD (FOR LM 8 ONLY) &
-9 INSTL WAS -3 INSTL & ADD (FOR LM 8 ONLY)

IN FIELD & B/M FOR-7, LDW200-55030-25 WAS -17 &
LDW200-55030-27 WAS -19
IN FIELD & B/M FOR-9, LDW200-55030-29 WAS-21 &
LDW200-55030-31 WAS-23

IN FIELD ON SH 4.00, ON-7 CALLOUTS LDW280-16000-469 ASH-8 REF WAS
-456 ASH-6 REF
LDW280-16000-452 ASH-6 REF WAS
-467 ASH-8 REF
IN FIELD ON SH 4.00, ON-9 CALLOUTS LDW280-16000-469 ASH-8 REF WAS
-452 ASH-6 REF
LDW280-16000-452 ASH-6 REF WAS
-469 ASH-8 REF

IN M/B REMOVE LDW200-55030-1 & -3 N/A LDW280-54001 1 EA FOR LM 8 & LM 9
ADD LDW200-55030-1 & -3 N/A LDW280-54001 1 EA FOR LM 9 (LFM 637) &
LDW200-55030-7 & -9 N/A LDW280-54001 1 EA FOR LM 8 (LFM 637)

OU NOTE SH NOTE 1 LDW200-55030-1 & -7 WAS -1 & LDW200-55030-3 & -9 WAS -3

RETAIN SPEC REV		CL IV ENGR CHG		CL II ENGR CHG		✓ LCD 5741 PNG 5											
REASON FOR ET: AREA REWORKED ON LM 9 RELOCATED						DESCRIPTION OF ED: NOTED ABOVE											
SERIAL	EFFECTIVITY: ENGINEERING ARRANGING EI	EFFECTIVITY: GAEC UNIT NO	SUB CONTR UNIT NO.	ADJUSTED CHARGE NUMB	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP	APPROVED BY	DATE									
LM	LFM 637	LM8 (38)		✓	✓		VDI	12/72									
	LFM 637	LM9 (39)		PRIORITY: C			DESCRIPTIVE TITLE: APS MODIFICATION FOR REGULATOR OSCILLATION								DRAWING NO. LDW200-55030		ED NO. A1
DEC 11-72 ISSUED BY: J. BOHN				XA7223			SECTION Equip Lines (VDI)						GROUP NO. 0232		PL 025		

NAS 9-1100

LDW200-55031

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								1 FM #640	LDW280-54001	LM-8/38	1
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW200-55031-1		GAEC SCH NO.	

WORK PACKAGE FUNCTION NO 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	2.00		3.00	3.10					
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED	H	GRUMMAN REL INFO						
LAST DASH NO. USED	-11	PRIM NO.						
		215						

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
[redacted] - DECIMALS – ANGLES
XX-±.03 XXX±.010 0°±30'

ORIG DWG AUTH				
DETAIL SPEC REQUIREMENT				
CLASS II ENGRG CHANGE				
CLASS I ENGRG CHANGE	✓			
LCD 5751 PKG #10				

CONTRACT NO. NAS 9-1100		LINE ITEM	DOCUMENTATION TYPE T.I.	
DRAWN BY	V. CHRISTIANSEN	THERMO	R/B 12/23/70	(R)
LAYOUT BY	D. RAGAS & J. ROGERS			
CHECKED BY	R 12-23-70			
GR LEADER	Valentine 12/23			
VEH DES INT	Thorjussen 12-23-70			
STRUCTURES		PROJ ENGR		
STRUCTURES	CW 12-23-70	REL GROUP	R 12-23-70	
THERMO				

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

REWORK INSTL ~ ASCENT STAGE STEERABLE S-BAND ANTENNA SUPPORT

SIZE	CODE IDENT NO.		
B	26512	LDW200-55031	(C)
SCALE NONE		SHEET 1.00 OF 4	

ENG 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY						CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
					2		GB10G-4-8	E	BUSHING	GRUMMAN STD						
	AR	AR	AR	AR			GS577A-1		STAPLE							
	AR	AR	AR	AR	AR		GT835P8		TAPE							
	AR	AR	AR	AR			GW10H-3		WASHER							
	AR	AR	AR	AR			GR11B-1		RETAINER	GRUMMAN STD						
	AR		AR				LDW200-55031-11		INSULATION	SEE NOTE 3						
					1		-9		BLANKET ASSY							
					1		-7		BLANKET ASSY	(REWORK OF	LDW280-	56856-21)				
					1		-5		BLANKET ASSY							
					1		-3		BLANKET ASSY	(REWORK	OF LDW280	-56856-	25)			
					1		LDW200-55031-1	E	SHIELD INSTL							

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

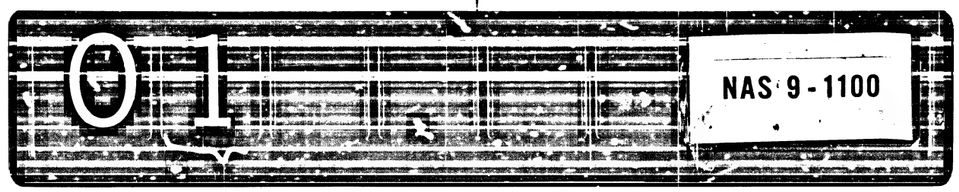
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

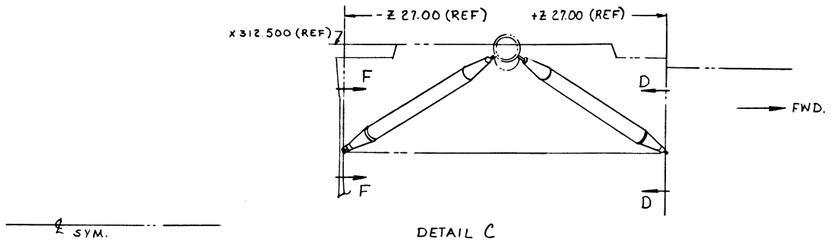
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55031

SCALE NONE SHEET 2.00

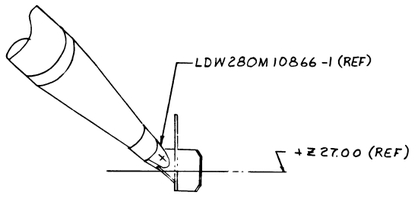
ENG 77.2 7-65



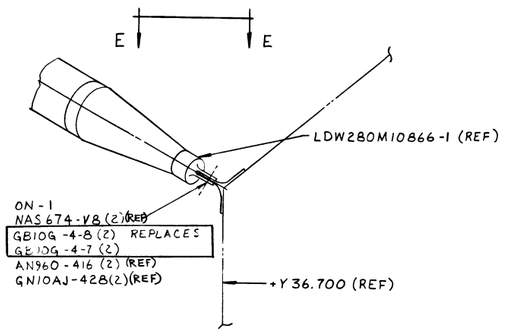


DETAIL C

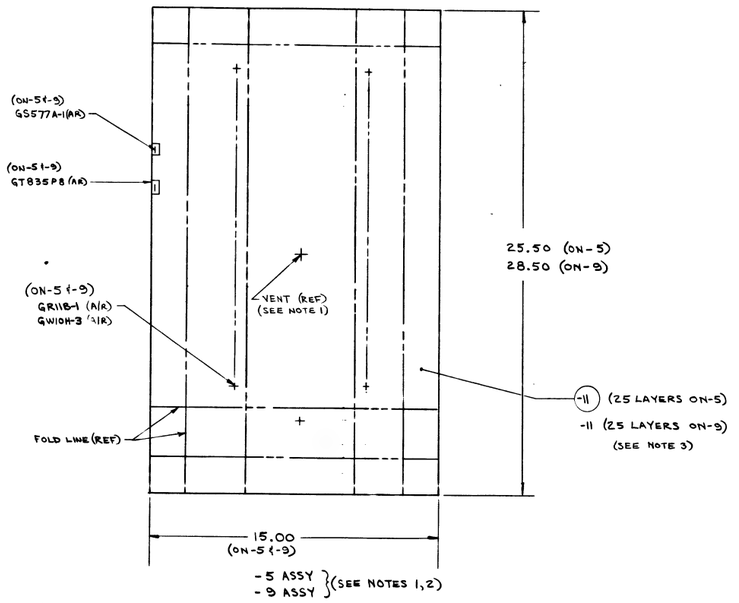
℄ SYM.

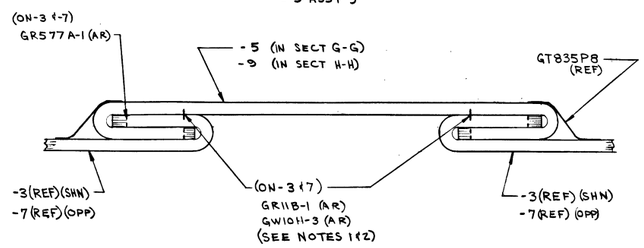


VIEW E-E

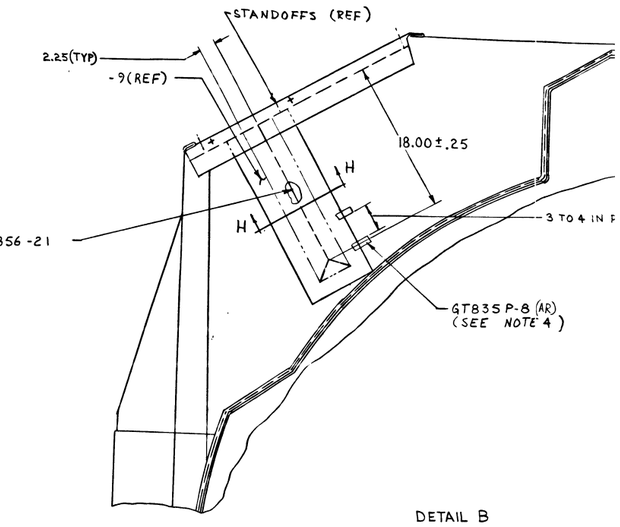


SECTION D-D SHOWN
SECTION F-F OPP

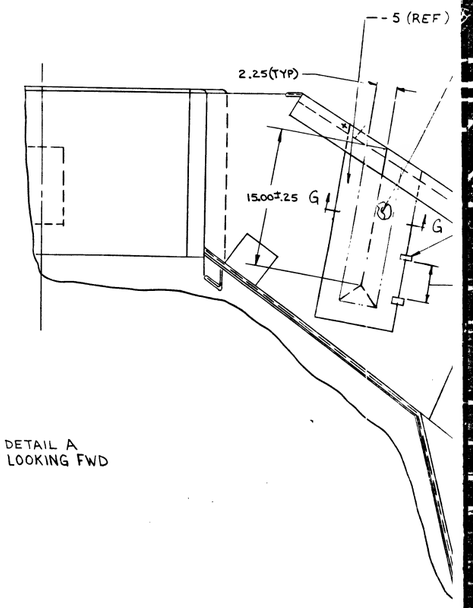




SECT G-G (SHN)
SECT H-H (OPP)



DETAIL B
VIEW LOOKING AFT

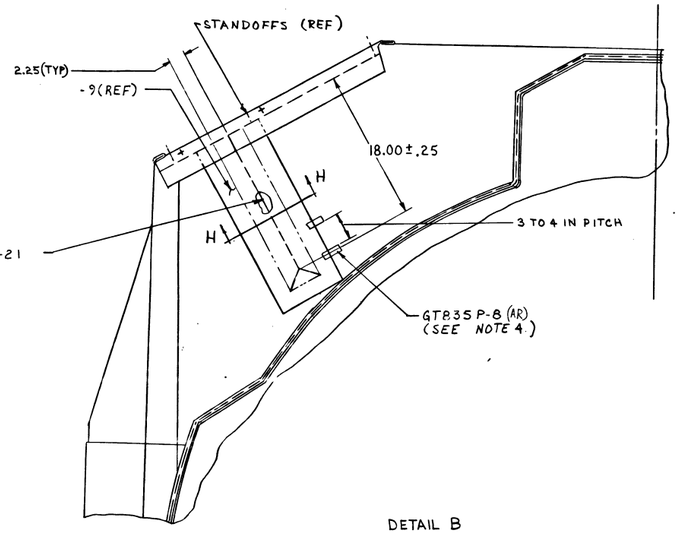


DETAIL A
VIEW LOOKING FWD

01 / 02

NAS 9-1100

CODE IDENT NO.	DWG NO.	SHEET
26512	LDW200-55031	



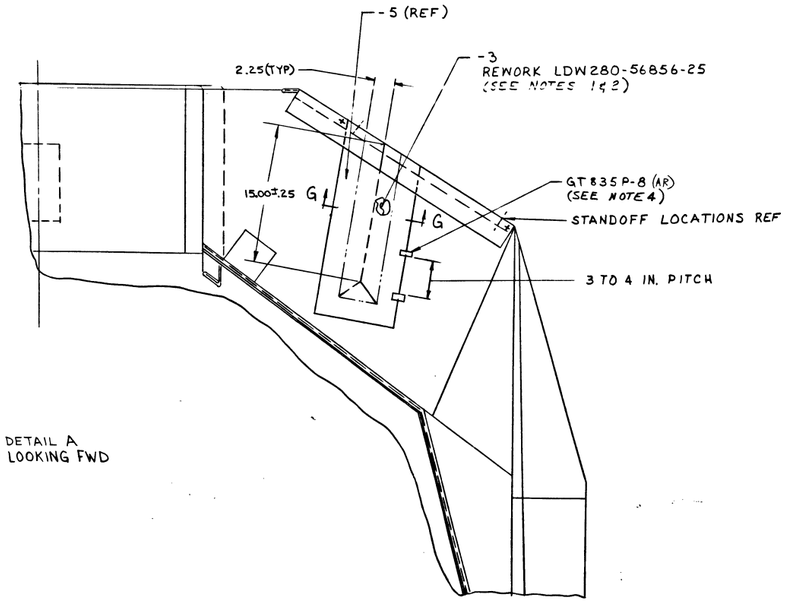
DETAIL B
VIEW LOOKING AFT

25.50 (ON-5)
28.50 (ON-9)

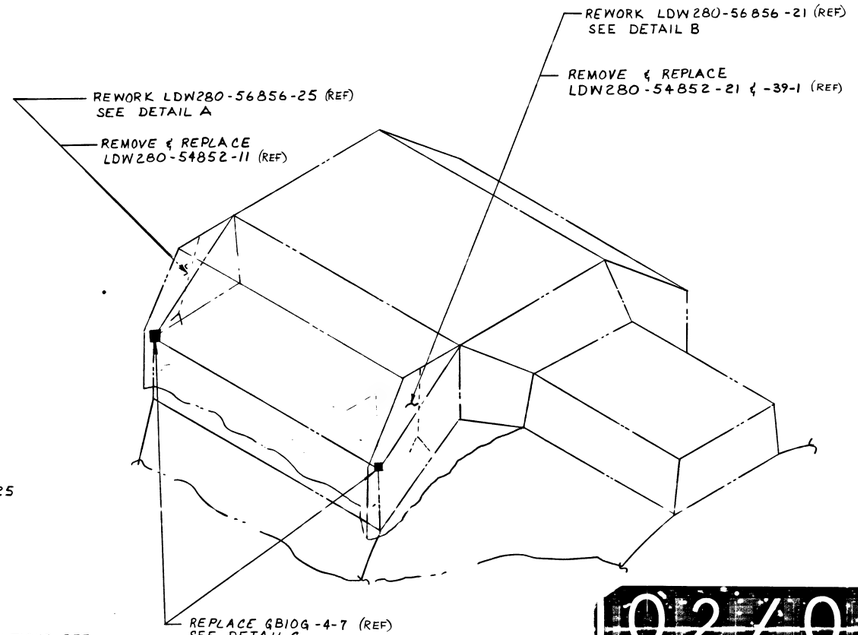
-11 (25 LAYERS ON-5)
-11 (25 LAYERS ON-9)
(SEE NOTE 3)

GT835P8 (REF)

-3(REF) (5-4N)
-7(REF) (OPP)



DETAIL A
VIEW LOOKING FWD



VIEW LOOKING AFT (R.H. SIDE)

LDW200-55031 -1 INSTL
-3 ASSY (REWORK OF LDW280-56856-25)
-7 ASSY (REWORK OF LDW280-56856-21)

NOTE- SEE NOTE 6 (SHEET 3.10) FOR INSPECTION & REWORK PROCEDURES

02/02 NAS 9-1100

C LDW200-55031
B LDW200-55031
A

PRINT TRIM LINE
DWG SHEET 3.0
PRINTING INFO ONLY
FULL SIZE SHEET AREA: 36 X 24 = 2.4 SQ FT
½ SIZE SHEET AREA: ½ OF FULL = .6 SQ FT

CODE IDENT NO	DWG NO.	SHEET
26512	LDW200-55031	

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
J	26512	LDW200-55031

SCALE NONE SHEET 3.00

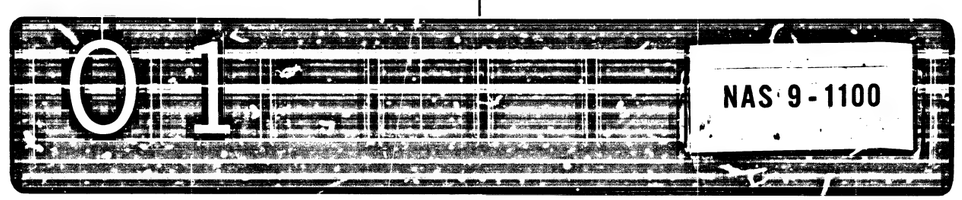
FRAME 2 FRAME 1

NOTES:

1. APPLICABLE PROCEDURES: LPC-280-1 FABRICATION
   LPC-280-2 VENTING
   LPC-280-3 SEAMS
   LPC-280-6 CUTTING
2. FINAL SIZE OF BLANKET ASS"Ys (WITH FOLD, SEAM, VENT & FASTENER LOCATIONS, CUTOUTS IN SHIELDS) SHALL BE DETERMINED FROM ENGINEERING APPROVED MASTER TEMPLATES.
3. -11 ALUMINIZED POLYIMIDE (.0005 THICK) PER LSM 14-5301 A, TYPE IA, CLASS 2.
4. GT835P-8 TAPE TO CUT IN 2 TO 4 INCH LENGTHS.
5. -5 AND -9 ASSY MAY BE TRIMMED AS REQUIRED ON -1 INSTALLATION.
6. INSPECTION AND REWORK PROCEDURE:
   a.) REMOVE SKINS AT FORWARD BULKHEAD (LDW 280-54852-21, and -39-1.)
   REMOVE SKIN AT AFT BULKHEAD (LDW 280-54852-11).
   b.) CUT ACCESS OPENING IN FWD (LDW 280-56856-21) and AFT (LDW 280-56856-25) BLANKETS AS SHOWN IN FIELD OF DRAWING.
   c.) THRU THE OPENING PROVIDED (NOTE 6b.) INSPECT CONNECTION OF STRUT ASSY (LDW 280-23312-1-1) TO FITTING ATTACHED AT BOTH FWD AND AFT BULKHEAD, AS FOLLOWS:
      1. IF CONNECTING BOLT (NAS674V8) CAN BE ROTATED BY UNAIDED FINGERS, NO FURTHER INSPECTION OF THE CONNECTION IS REQUIRED.
      2. IF CONNECTING BOLT CANNOT BE EASILY ROTATED:
         a.) MEASURE LDW 280M10866-1 FITTING FROM OUT-TO-OUT OF FEMALE LUG, AS CLOSE TO THE BOLT AS POSSIBLE, USING A MICROMETER (MEASURE TO THE NEAREST .001) and RECORD.
         b.) LOOSEN (NAS 674V8) BOLT AND REMEASURE DIMENSION (AGAIN TO NEAREST .001) and RECORD.
         c.) IF THE DIFFERENCE BETWEEN THE TWO DIMENSIONS OBTAINED (DIMENSION 6.c.2.b LESS DIMENSION 6.c.2.a) is .003" OR LESS THE CONNECTION IS ACCEPTABLE. RETORQUE NUT.
         d.) IF THE DIFFERENCE BETWEEN THE TWO DIMENSIONS OBTAINED IS GREATER THAN .003" DYE PENETRANT INSPECTION OF THE LDW 280M10866-1 FITTINGS IS REQUIRED.
   d.) PROCEDURE FOR DYE PENETRANT INSPECTION OF LDW 280M10866-1 FITTINGS:
      1.) REMOVE BOLT (NAS674V8) AND BUSHING (GB10G-4-7) FROM FWD AND AFT CONNECTIONS (ONE AT A TIME) USING JURY-RIG TO SUPPORT ANTENNA.
      2.) REMOVE SCREWS (MS 51957-28(4)) AT SHIELD COLLAR TO ENABLE STRUT TO SWING FREE ABOUT SPHERICAL BEARING AT UPPER END.
      3.) SWING STRUTS FREE OF MALE FITTING (LDW 280M10843 AT FWD BKHD, AND LDW 280M10845 AT AFT BKHD).
      4.) INSPECT LDW 280M10866-1 ROD END FITTINGS (2) USING DYE PENETRANT PER MIL-I-6866, PAYING SPECIAL ATTENTION TO THE INSIDE OF THEFEMALE TANGS ADJACENT TO BOLT HOLE.
   e.) IF DYE PENETRANT INSPECTION REVEALS NO CRACKS, REASSEMBLE CONNECTION USING GB10G-4-8 BUSHING IN PLACE OF GB10G-4-7 AND USING SAME BOLT, NUT, AND WASHER COMBINATION.
   f.) IF DYE PENETRANT INSPECTION REVEALS THAT ROD END FITTING IS CRACKED, ENTIRE STRUT (LDW 280-23312-1-1) MUST BE REPLACED, AS FOLLOWS:
      1.) REMOVE THE FOLLOWING SKINS, AS REQUIRED, AND STORE FOR REASSEMBLY:
         LDW 280-54944-9, and -31 AT FWD END.
         LDW 280-12018-23 AND LDW 280-54944-41, AND -43 at AFT END.
      2.) REMOVE THE FOLLOWING CLOSURE PIECES AND STORE FOR REASSEMBLY:
         LDW 280P11600-12, AND -20 AT FWD END.
         LDW 280P11600-13, AND -14 AT AFT END.
      3.) PEEL BACK THE FOLLOWING BLANKETS:
         LDW 280-56856-21, AND -25 (NOTE: PRIOR TO PEELING BLANKETS BACK, INSTALL LDW 200-55031-5, AND -9 COVERS OVER PREVIOUSLY CUT BLANKETS TO PREVENT TEARING.)
      4.) REMOVE THE FOLLOWING BLANKET ASSY'S:
         LDW 280-54885-5
         LDW 280-54885-13 } (1) EACH PER STRUT TO BE REPLACED
         LDW 280-54885-17
         LDW 280-54885-7 (1)
      5.) REMOVE BOLT(NAS675V12), BUSHINGS (GB10G-5-4 AND GB10E-5-4),WASHER (AN 960-516), AND NUT (MS21042L5) AT UPPER END OF STRUT (REF: LDW 280-23256 INST'L DWG) AND REMOVE STRUT (LDW 280-23312-1-1).
      6.) INSTALL REPLACEMENT STRUT (REF: SHIPPING LAV 280-730, DATED 12/23/70) AS PER LDW 280-23256 EXCEPT THAT AT LOWER CONNECTION GB10G-4-8 REPLACES GB10G-4-7 BUSHING.
   g.) REINSTALL BLANKETS, CLOSURE DETAILS, AND SHIELDING PER DRAWING CONFIGURATION, IN THE OPPOSITE ORDER OF THEIR REMOVAL.

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW 200-55031	D
SCALE		SHEET 3.10	

ENG 73.1 6-64



GRUMMAN AEROSPACE CORPORATION
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG. NO. LDW200-55031 | EO NO. A1
CONTROL INFO NO. LDW280C1744

ON SHEET 3.10 -

REVISE NOTE 6b:

NOW: IF REQUIRED, CUT ACCESS OPENING IN FWD (LDW280-56856-21) AND AFT (LDW280-56856-25) BLANKETS AS SHOWN IN FIELD OF DRAWING AND IDENTIFY AS LDW200-55031-7 AND -3 RESPECTIVELY

WAS: CUT ACCESS OPENING IN FWD (LDW280-56856-21) AND AFT (LDW280-56856-25) BLANKETS AS SHOWN IN FIELD OF DRAWING.

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD 5751 PKG 10

REASON FOR EO: TO GIVE THE CAPE THE OPTION OF CUTTING ACCESS IN BLANKET

DESCRIPTION OF EO: NOTE 6B WAS: CUT ACCESS OPENING IN FWD - - - -

GAEC EO RELEASE

MODEL	EFFECTIVITY: PROCURING ACTIVITY-NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LEM 640	LM-8 (3B)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: NOT REWORK | REQD SCRAP

	APPROVED BY	DATE
		1-12-71
VD1		
SUPPORT		
RELIAB GROUP		
GROUP LEADER	GP	1/12/71
STRESS GROUP	CW	1/12/71
LIAISON ENGRG		
PROJ ENGRG		1/13/71
		1-13-71

PRIORITY: C

DRAWING TITLE: REWORK INST'L - ASCENT STAGE STEERABLE S-BAND ANTENNA SUPPORT

DRAWING NO.: LDW200-55031

EO NO.: A1

1/15/71
ISSUED BY J. VALENTINE 1/12/71 x86048 SECTION VD1 GROUP NO. 335 PL 25

01

NAS 9-1100

LDW200-55501 A

LEM

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
	LEM 357	LDW280-54508 LM-5(35)	1
PART NO. LDW200-55501-1		GAEC SCH NO.	

WORK PKG FUNCTION NO. 110 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	1.10		2.00	3.00				
REV	A	A		A	A				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	L	GRUMMAN REL INFO	A
LAST DASH NO. USED	-1	PRIM NO.	207

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ± .020 ± 1/2°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
	LCD 3775

CONTRACT NO. NAS9-1100 LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	C. BARNES 1-29-69	RELIABILITY			
LAYOUT BY	C. BARNES 1-29-69				
CHECKED BY					
GR. LEADER	P.T. 1-28-69				
VEH DES INT	J.S. 1-28-69				
STRUCTURES	W.N. 1-28-69	PROJ ENGR	J. PUSATERI 1-28-69		
STRUCTURES		REL GROUP	J.R.T. 1-29-69		
WEIGHTS					

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SUPPORT INSTALLATION
DESCENT STAGE-PROPELLANT & OXIDIZER LINES
(REWORK OF LDW280-54508 LFM NO. 357)

SIZE	CODE IDENT NO.		
B	26512	LDW200-55501	A
SCALE	NONE	SHEET 1.00 OF 4	

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00,1.10,2,3		LFM 357					EO A1 ~ INITIAL DWG RELEASE	LM-5 (35)			[illegible] 2-27-69		
	2	1.00		LFM 357		V		LCD3775	REF EO A1 ADDED NEXT ASSY LDW280-54508		NOT	REQD			

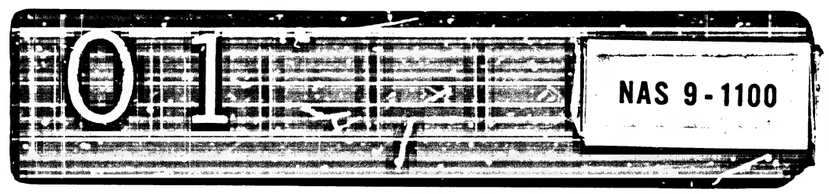
CHG APPROVED	LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY
	A	GPL 2-7-69	JJB 3/7/69		w/H 3/12/69		

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW200-55501	A

SCALE NONE SHEET 1.10

ENG 77.16 3-66



QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
A/R		SEE NOTE 4&6	E	SHIM							
		MS20470DD5		RIVET	GOVT STD						
24		GN512H-08		NUT-COLLAR	GRUMMAN STD						
2		GF510C-5-5		FASTNR-BLIND							
4		GF510C-5-3		FASTNR-BLIND							
21		GF510C-5-2		FASTNR-BLIND							
1		GB511K-03-7		BOLT							
2		GB511K-08-6									
9		GB511K-08-5									
4		GB511K-08-3									
8		GB511K-08-2		BOLT	GRUMMAN STD						
1		LDW280-18688-11		PLATE	SEE DWG						9D
1		LDW280MI8033-1-1		FITTING							9D
1		LDW280MI7610-1-1		FITTING							11D
1		LDW230MI7582-3		FITTING							7C
1		LDW280MI7577-3		FITTING							10B
1		LDW280MI7498-5		FITTING							6B
1		LDW280MI7187-3		FITTING							8B
1		LDW280MI7174-9		ANGLE	SEE DWG						11C
-1		LDW200-55501-1	E	SUPPORT INSTL					NONE	NONE	1A

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

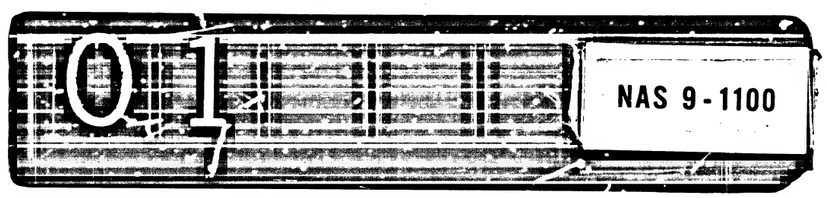
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW200-55501	A

SCALE NONE SHEET 2.00

ENG 77.2 7-65



REMOVE MS20470DD5
ADD GF510C-5-3
LDW280M17610-1-1 (REF)
REMOVE MS20470DD5(3)
ADD GF510C-5-3(3)
GF510C-5 (REF)
LDW280-17744-11 (REF)
SHIM AS REQD (.125 MAX)
SEE NOTE 6
LDW280M17612-1 (REF)
-Y15.075 (REF)

REMOVE LDW280M17610-1
ADD LDW280M17610-1-1
SEE NOTE 1
X148.395 (REF)
℄ HEAT EXCHANGER
2.463±.004 (REF)
LDW280-23572 (REF)
REMOVE MS20470DD5 (2NS, 2FS)
ADD GF510C-5-2 (2NS, 2FS)
GB511K-3-4 (REF)
GN512H-3 (REF)
4.537±1/32 (REF)
GB511K-08-4(2) (REF)
GN512H-08(2) (REF)
REMOVE MS20470DD4
ADD GF510C-5-2

DETAIL "G"
UP

GB511K-08-5(2)
GN512H-08(2)
LOCATE FROM EXISTING
LOCATION
REMOVE LDW280M17502-1
ADD LDW280M18083-1-1
& LDW280-18688-11
SEE NOTE 1
LDW280-23541 (REF)
+Y27.00 (REF)
LDW280-18688-11

DETAIL "D"
FWD

GB511K-08-5(2)
GN512H-08(2)
LOCATE FROM LDW280-18688-11
SHIM AS REQD
SEE NOTE 4
LDW280-
LDW280M17502-1 (REF)
SEE NOTE 6
MS20470DD5
SEE NOTE 4
GB511K-08-6
GN512H-08
SEE NOTE 1
LDW280-23535 (REF)
GB511K-08-6
GN512H-08
PICK UP EXISTING
LOCATION

-Z69.188 (REF)
REMOVE LDW280M17174-7
ADD LDW280M17174-9
SEE NOTE 9
LDW280-23536-13 (REF)
GF510C-5-5(2)
C'BORE(NS) 3/8 D x 1/32 COR R
(REMAINING THICKNESS .062)
2 PLACES PRIOR TO INSTL
REMOVE MS20470DD4(16)
ADD GF510C-5-2(16)
-Z81.00 (REF)
.303 (REF)
GB511K-08-5
GN512H-08
GB511K-08-7
GN512H-08
+Y27.00 (REF)
LDW280-17454-13 (REF)
LDW280-54527 (REF)
LDW280-17352-11 (REF)

REAM .2497-.2507
LDW280M17635-1 (REF)
MS21043-4 (REF)
-Z27.00 (REF)
GB511K-08-5(2)
GN512H-08(2)
LOCATE FROM
EXISTING LOCATION
REMOVE LDW280M17577-1
ADD LDW280M17577-3
SEE NOTE 1
LDW280-23541 (REF)

DETAIL "J"
FWD

REAM .2497-.25
LOCATE FROM L
REMOVE
ADD L
SEE N
GB51
GN5
PICK

DETAIL "B"
FWD

REAM .2497-.2507
FOR CLOSE TOL FIT
LDW280M17635-25 (REF)
MS21043-3 (REF)
-Z81.00 (REF)
LDW280-23563 (REF)
LDW280-54527 (REF)

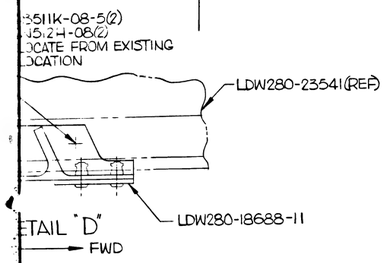
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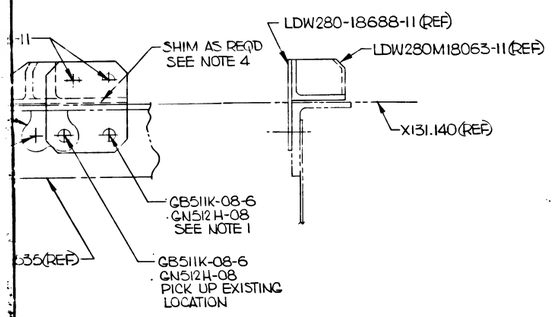
X131.140 (REF)
GB511K-08-3(4)
GN512H-08(4)
PICK UP EXISTING
LOCATIONS
LDW280-54531 (REF)

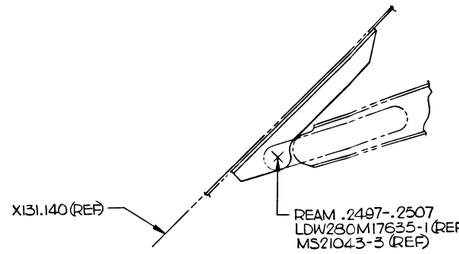
011703 NAS 9-1100

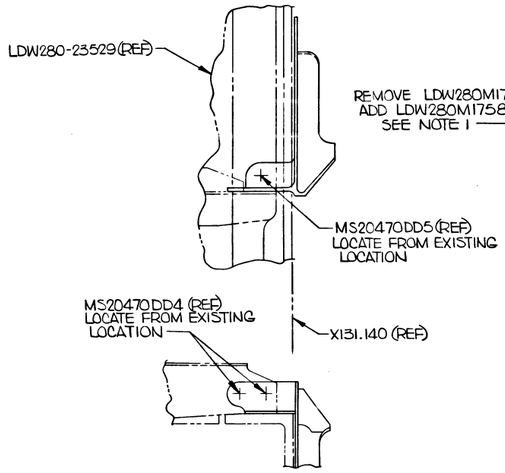
CODE IDENT NO	DWG NO	SHEET
26512	LDW200-55501	3

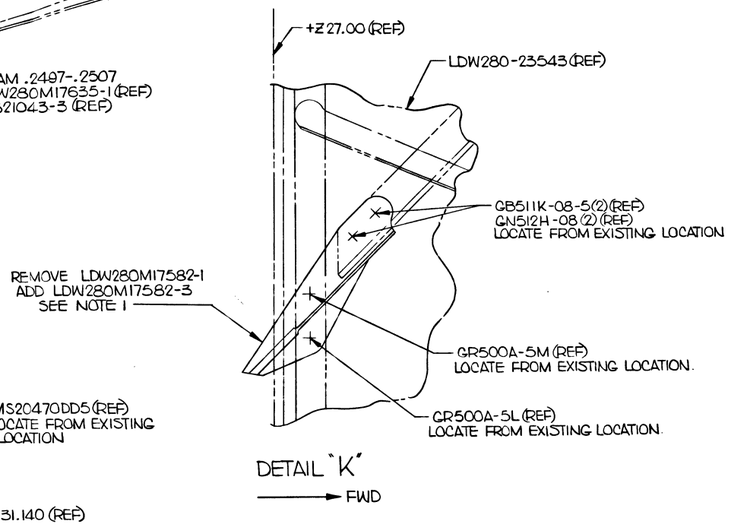
FRAME 1 FRAME 2

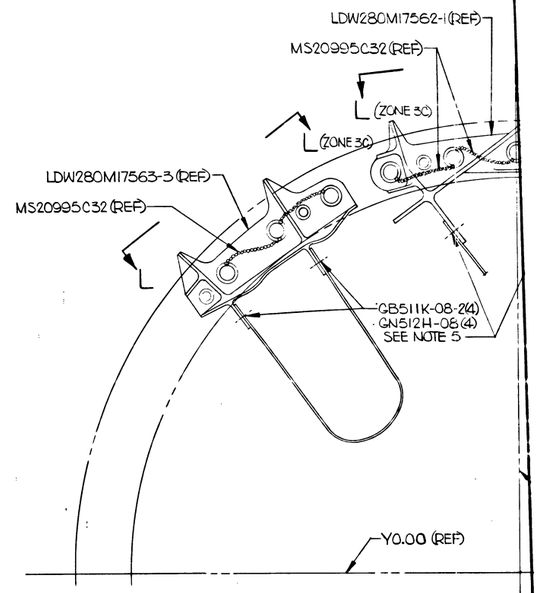


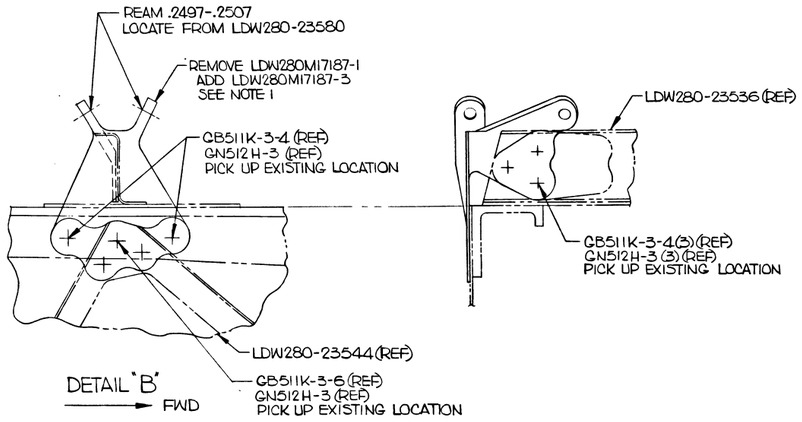


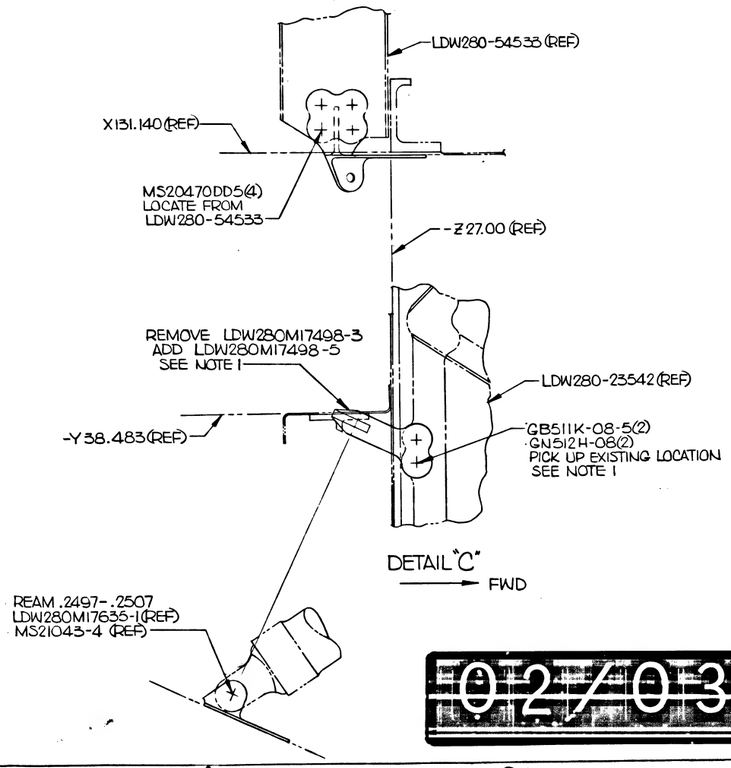


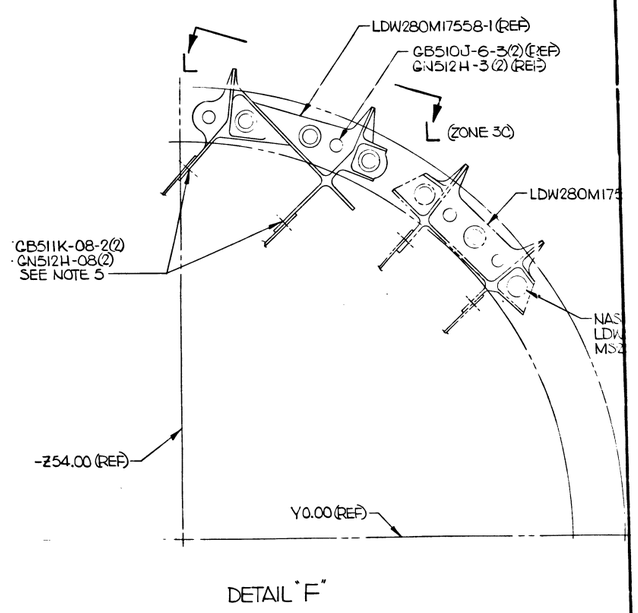




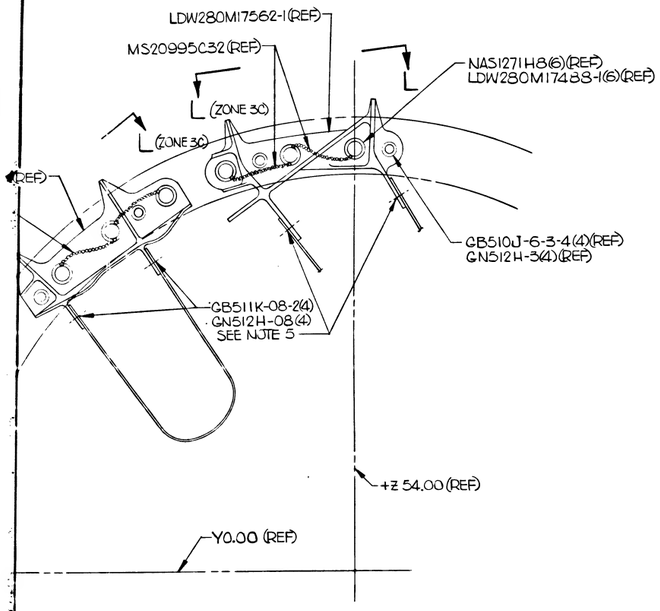




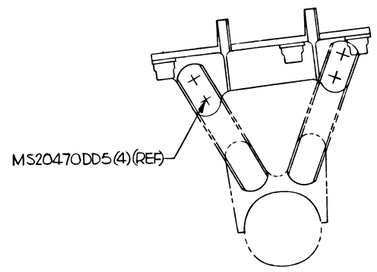




02-03 NAS 9-1100

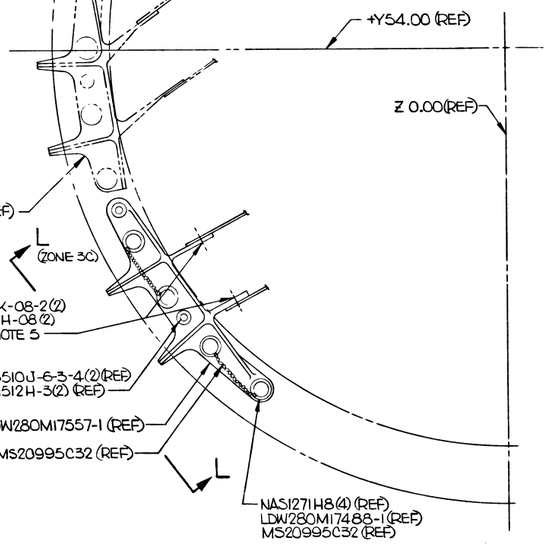


DETAIL "H"

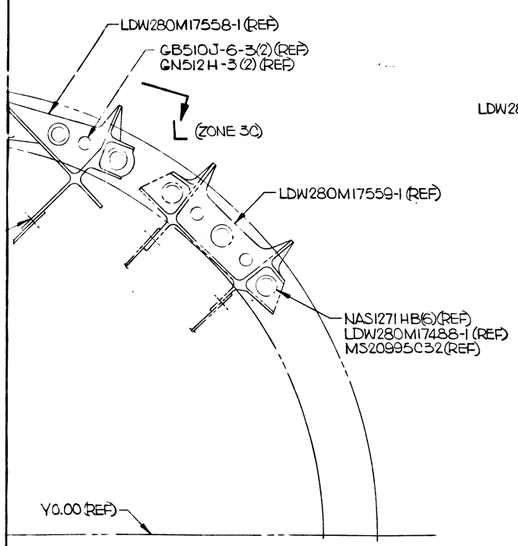


VIEW L-L
(TYP 4 PLACES)

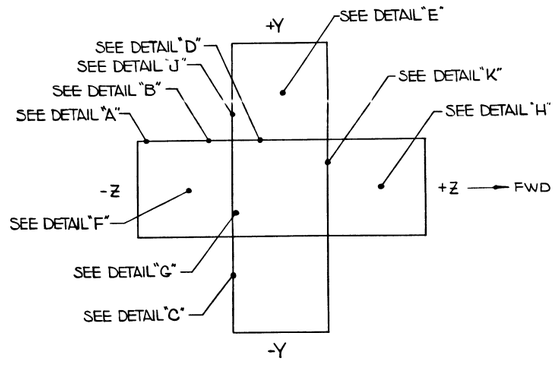
NOTES:
1. SHIM PER LPC280-53.
2. INSTALL FASTENERS PER LSP14-15302, LSP14-15303 & LSP14-15306.
3. NEXT LARGER SIZE FASTENER MAY BE USED AS AN ALTERNATE FOR FASTENERS SPECIFIED ON DRAWING. NEXT LARGER OR SMALLER GRIP LENGTH ON FASTENER IS ACCEPTABLE.
4. THIS PORTION OF LDW280M17502-1 MAY BE LEFT ON -1. SHIM AS REQUIRED, .043 MAX. USE 2024-T3 AL ALLOY SH, QQ-A-250/4, FINISH #76 PER LSP14-9010.
5. REMOVE MS20470DD5. INSPECT FOR CRACKS. PROTECTIVE COAT PER LPC280-53. INSTALL HARDWARE AS NOTED.
6. SHIM AS REQD USING 2024-T3, AL ALLOY SH, QQ-A-250/4, FINISH #76, PER LSP14-9010.



DETAIL "E"



TAIL "F"



VIEW LOOKING UP

LDW200-55501-1 INSTL

SUPPLEMENTARY DATA
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

VARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130.	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☐ TO USE BOTH SIDES IF NECESSARY	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL RIVETS IN ACCORDANCE WITH LDW14-15302	✓

DWG SIZE A
PRINTING INFO ONLY
FULL SIZE SHEET AREA = 345.142 in = 35.5 sq ft
½ SIZE SHEET AREA (½ OF FULL) = 9 sq ft
PRINT ZONE LINE

LDW200-55501A
LDW200-55501A
LDW200-55501A

03/03 NAS 9-1100

SIZE	CODE IDENT NO.	
J	26512	LDW200-55501 A
SCALE FULL		SHEET 3.00

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

DWG NO. LDW200-55501 SHEET 3

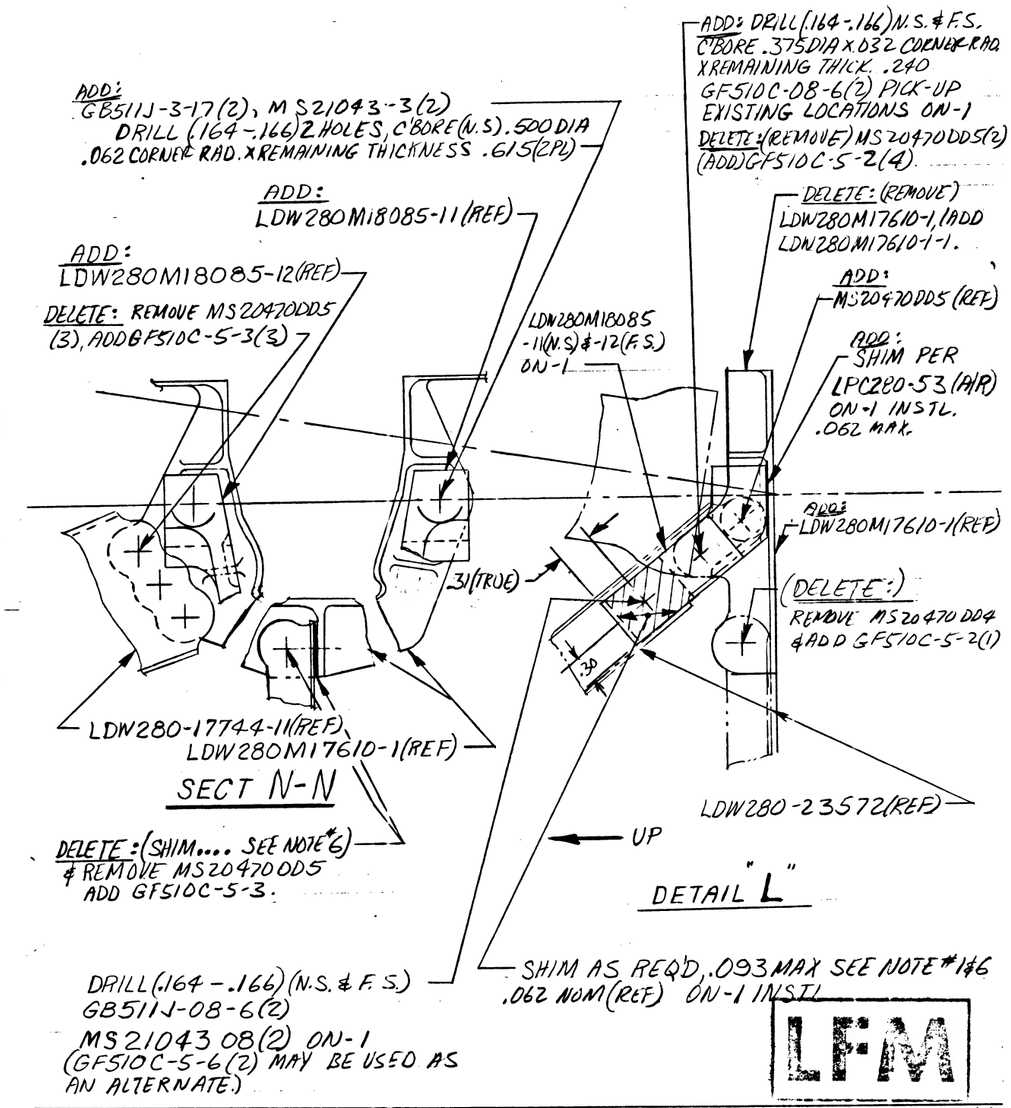
FRAME 2 FRAME 3

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.2 REV 3-65

DWG. NO. LDW200-55501		EO NO. B1
CONTROL INFO NO. LDW280B7057		

ON-1 INSTL: REMOVE LDW280M17610-1-1 & H'DWARE AS SHN., ADD LDW280 M18085-11 & -12 & HD WARE AS SHN, REVISE F/D & B/M AS SHN.



NAS 9-1100

LFM

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD 3775 PKG #50 PG #4

REASON FOR EO: STRESS CORROSION ~ ADDITIONAL REINFORCEMENT REQUIRED
LM-6 2/1/69

DESCRIPTION OF EO: ON-1: REMOVED LDW280M17610-1-1, SHIM AS REQ'D .125 MAX, GFS10C-5-2(6) ADDED LDW280M18085-11 & -12, GB511J-3-17(2), MS21043-3(2), GB511J-08-6(2), MS21043 08(2), SHIM AS REQUIRED .093 MAX. REMOVED GFS10C-5-3.

(5) GAEC 2-1-69 EO RELEASE VL 2/1/69

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQ'D: REVISE DWG ✓	RECORD EO	DISPOSITION OF PARTS: REWORK ✓	SCRAP
LM	LFM357	LM-5(35)					

APPROVED BY							
DATE	2/1/69			2/1/69	2/1/69	2/1/69	2/1/69
	VDI	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG

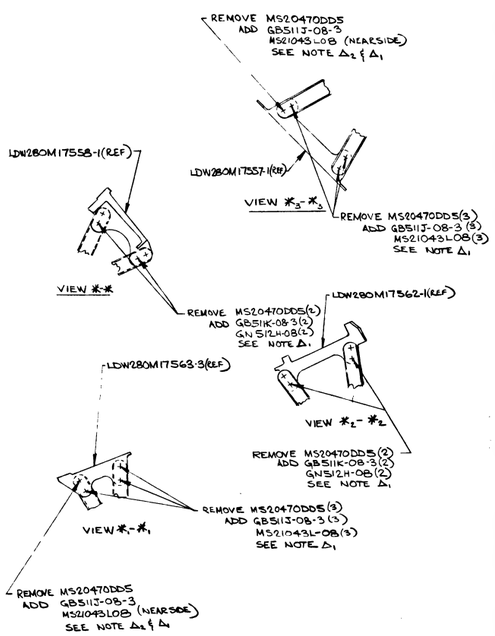
PRIORITY: C

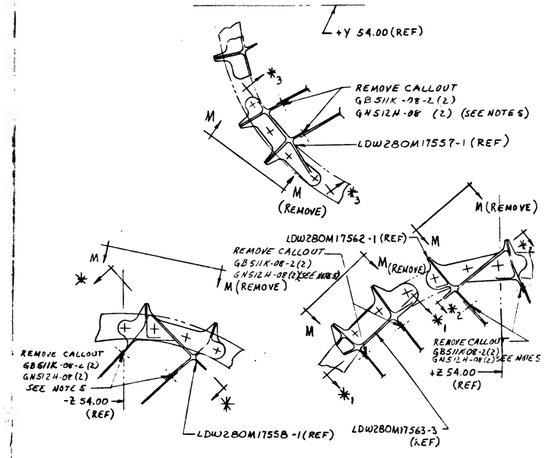
DRAWING TITLE: SPT INSTL ~ D/S ~ PROPELLANT & OXID LINES SPT (REF LDW280-59508)

DRAWING NO.: LDW200-55501

EO NO.: B1

2/1/69 ISSUED BY J.J. ROGERS / P. THORJUSEN X87222 SECTION VEH DES INT GROUP NO. 335 PL 25





(5) Δ1 SHOP REWORK INFO) REMOVE MS20470DD5 FROM TANK SUPPORT. INSPECT FOR CRACKS; IF NOT CRACKED, PROTECTIVE COAT PER LPC280-53 AND INSTALL HARDWARE AS NOTED. IF CRACKED, FOLLOW ROUTINE FIER/MRB PROCEDURES.

Δ2 IT IS PERMISSIBLE TO TRIM MS21043L08 NUT TO A MIN. OF 1/8" HEIGHT & GB511J-08-3 BOLT THREAD (1/16" MAX.) TO CLEAR PROPELLANT TANK COVER HARDWARE. OVERCOAT REWORKED NUT & BOLT WITH EPON 934 PER LSP 14-22500A CURE RANGE Z.

Δ1 - SHOP REWORK INFO
ΔL - USE NEXT AVAIL NO.
*1, *2, *3 - USE NEXT AVAIL LETTER

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LDW280-555501 | RO NO. 82
CONTROL (INT.) NO. LDW280B7045

LCD 3775 PE504

REASON FOR ED: TO PREVENT STRESS CORROSION
LH2 4/22 5/1/67

DESCRIPTION OF ED CHANGE (4 PLACES): REMOVED CALLOUT (GB511K-08-2(8), GN512H-08(8) SEE NOTE 5). REMOVED MS20470DD5(12) ADDED GB5113-08-3(8) MS21043 ADDED GB511K-08-3(6) GN512H-08(4) MADE CHANGE A SEE Δ NOTES

EFFECTIVITY	DISCONTINUED	EFFECTIVE UNIT NO.	DATE
LM	LEM 357	LM 5 (35)	

DISTRIBUTION OF PARTS: VDI

APPROVED BY: DATE 4/19/67 | QUAL 4/19/67 | CL 4/19/67

PRIORITY: C

SUPPORT TESTS: DTS - PROP. & GAS LINES, SUPPT. RESIDUE OF GDW280-555501 CHG NO.

DRAWING TITLE: LDW280-555501

DRAWING NO. LDW280-555501 | RO NO. 82

ISSUED BY DON RAGAS / G. BARNES 286066 SECTION VDI GROUP NO. 280 PL. 45

LFM

01 #1
NAS 9-1100

LDW200-55502 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
				1 FM 363	LDW200-55503	LM-3(33)	1 EA	LFM 363	LDW280-53508	LM-3(33)	1
PART NO.		GAEC SCH NO.		PART NO. LDW200-55502-23-25		GAEC SCH NO.		PART NO. LDW200-55502-1		GAEC SCH NO.	

WORK PKG FUNCTION NO 111 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	1.10	2.00		3.00				
REV	A	A	A		A				
SHEET									
REV									
SHEET									
REV									

		GRUMMAN REF INFO A	
LAST SECT LTR USED	B	PRIM NO.	VK(027)
LAST DASH NO. USED	-31	207	11E-16A 7/7/9

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/64 ±.010 0° 30'

ORIG DWG AUTH		CONTRACT NO. NAS-9-1100		LINE ITEM
DETAIL SPEC REQUIREMENT		DRAWN BY	J. LANG / R. CLARK	ECS
CLASS II ENGRG CHANGE		LAYOUT BY	J. ROGERS / G. BARNES	
CLASS I ENGRG CHANGE	V	CHECKED BY		
LCD3796 ECP B120		GP LEADER	Thorjussen 2-5-69	
		VDI	J. Pusateri 2/5/69	
		STRUCTURES	2/5/69	PROJ ENGR
		STRUCTURES	2/5/69	REL GROUP

DOCUMENTATION TYPE II

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SUPPORT INSTL-DESCENT STAGE
O_2 & GLYCOL INTERSTAGE - UMBILICAL (REWORK OF LDW280-53508)

SIZE	CODE IDENT NO.		
B	26512	LDW200-55502	A

SCALE NONE SHEET 1.00 OF 4

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	3.00 1.00	7A 6A						ON-1, ADDED GB511K-08-4 (6), GN512H-08(6), ON-3 LOCATING DIM .428 & .063 IN SECT BB	LM-3(3)			J. BOGNAR/J. LANG 2/6/69	J.K. 2/4/69	
	2	3.00	6C 7C						ADDED CALLOUT TO REMOVE LDW280-17749-23 AND LDW280M17645-25						
	3	3.00	6B						ADDED SHIM AS REQD CALLOUT (DWG CORRECTION)						
	4	3.00	1D						ADDED NOTE #6, #7, #8, #9						
	5	3.00	8C			✓		LCD3796 PKG #50 ECPB120	ADDED LDW280M17635-43 & MS21043-4 IN F/D & B/M ON -1		✓				
	6	3.00	5C 5B						ADDED REF CALLOUTS FOR -13, -15, -21, -27, -29, & -31 ADDED LDW280-23287 (REF) REVISED CALLOUT -31 REF (WAS) -23 REF ADDED .230 ±010 (REF) & .350±010 (REF)						
	7	3.00	5C					(4)	ON-1 IN F/D & B/M ADDED LSC330-505-5(2)						

FOR CONTINUATION OF REVISIONS SEE SHEET _____

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW200-55502	A

SCALE NONE | SHEET 1.10

01

NAS 9-1100

					2	G		GN512H-08	E	COLLAR, HI LOK	GRUMMAN STD															
					1	6		GB511K-08-4	E	PIN, HI LOK																
					1			GB511K-08-3	E	PIN, HI LOK																
						4		GB511J-04	E	BOLT	GRUMMAN STD															
						1		MS21043-4	E	NUT	STD PART															
						4		MS21043-04	E	NUT	STD PART															
						8		AN960D4L	E	WASHER	STD PART															
						2		LSC330-505-5	E	SEAL	SEE NOTE #8															5C
C								LDW330-53013-27	S	DISCONNECT ASSY	SEE DWG															5C
G						1		LDW280MI7635-43	E	BOLT	SEE DWG															8C
						1		LDW200-55502-31	E	SHIM, LAMINATED	AL ALY SH	MIL-S-22499	—	.062 x 1 x 2	NONE	NONE										
						2		-29		SHIM, LAMINATED		MIL-S-22499	—	.062 x 2 x 2		NONE										
						2		-27		SHIM, LAMINATED		MIL-S-22499	—	.062 x 2 x 3		NONE										
								-25		BRACKET		QQ-A-250/4	2024-T3	.040 x 3 x 5		#76										
								-23		BRACKET				.040 x 3 x 5												
						1		-21		PLATE				.080 x 2 x 4												
						1		-19						.080 x 2 x 4												
						1		-17						.125 x 3 x 4												
						1		-15						.160 x 3 x 4												
						1		-13						.125 x 3 x 4												
					1			-11	E	PLATE	AL ALY SH	QQ-A-250/4	2024-T3	.125 x 2 x 4	NONE	#76										GB
G						1		-3	S	SUPPORT ASSY																GA
								LDW200-55502-1	E	SUPPORT INSTL																GA
CL					-3	-1		PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.										ZONE
QTY PER ASSEMBLY							CODE IDENT																			

CL = CLEANLINESS LEVEL PER LSP 19-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
76	ALODINE	LSP 14-9010

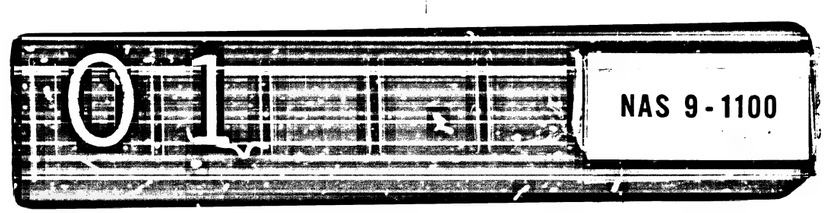
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : LPC19-3 (VENDOR) / LPC19-2 (GRUMMAN)

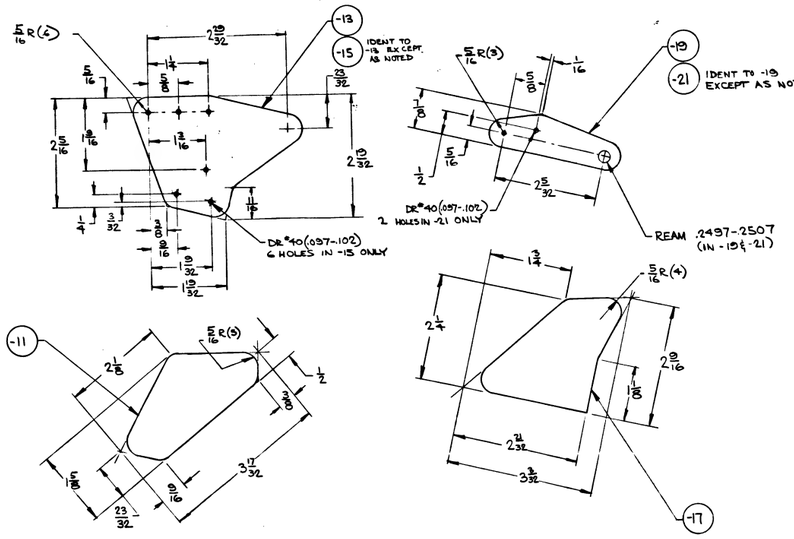
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW200-55502	A

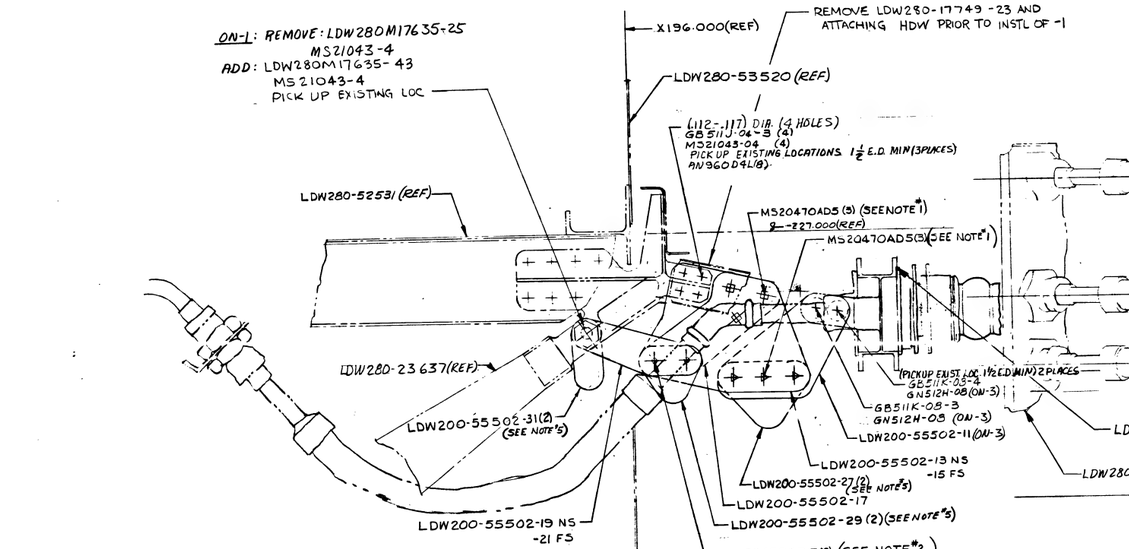
SCALE NONE SHEET 2.00

ENG 77.2 7-65

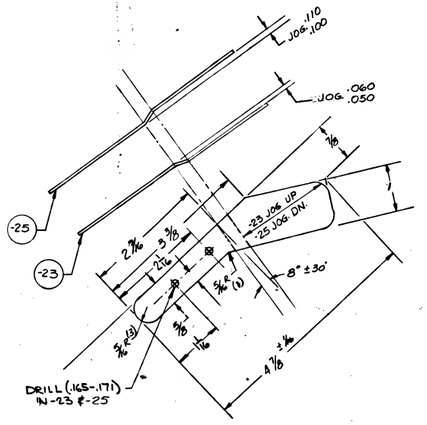


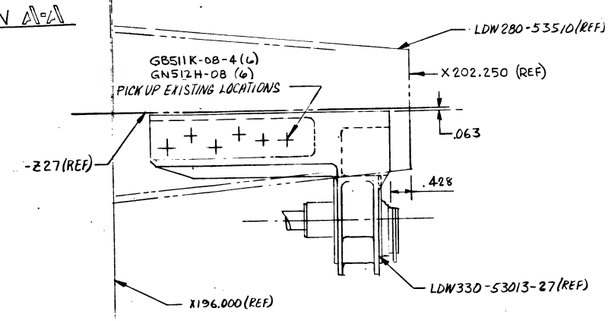


ON-1: REMOVE: LDW280M17635-25
MS21043-4
ADD: LDW280M17635-43
MS21043-4
PICK UP EXISTING LOC



SECTION A-A





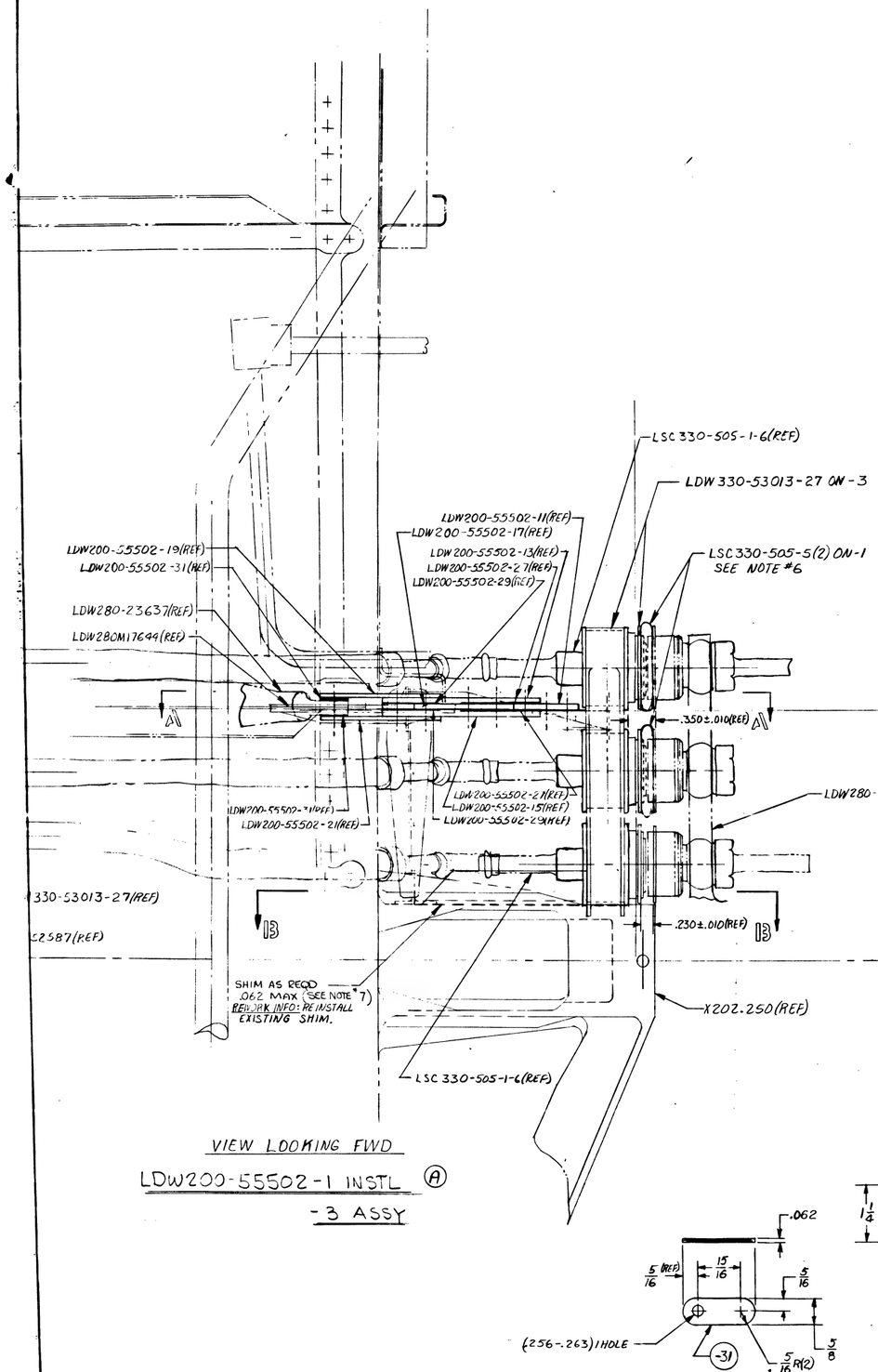
SECTION 13-13

VIEW LOOKING F

LDW200-55502-

-3 A

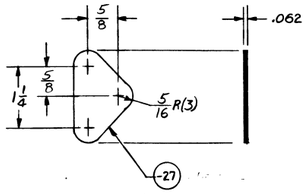
01%03 NAS 9-1100

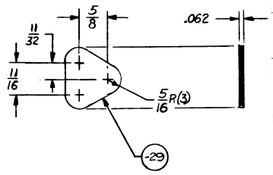


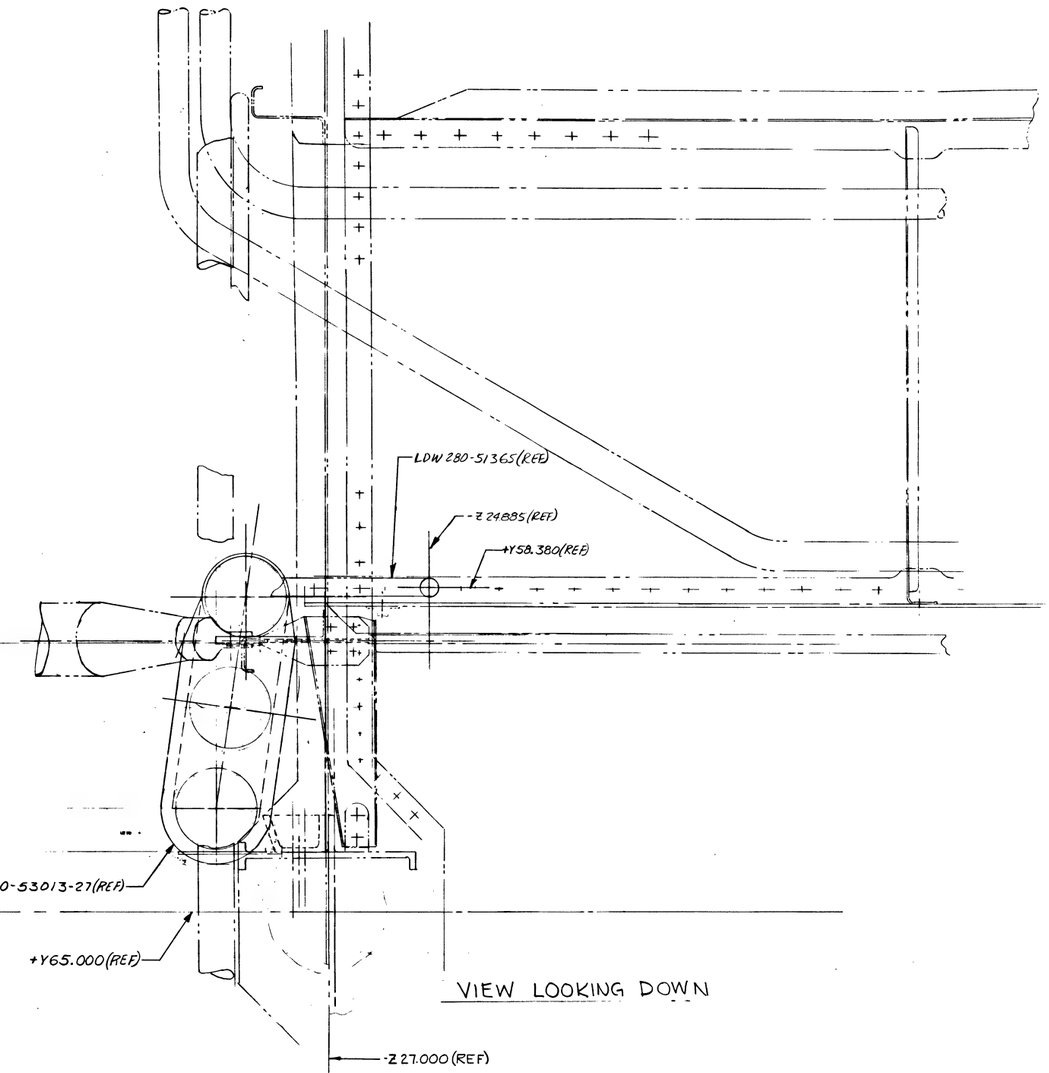
VIEW LOOKING FWD

LDW200-55502-1 INSTL (A)

-3 ASSY



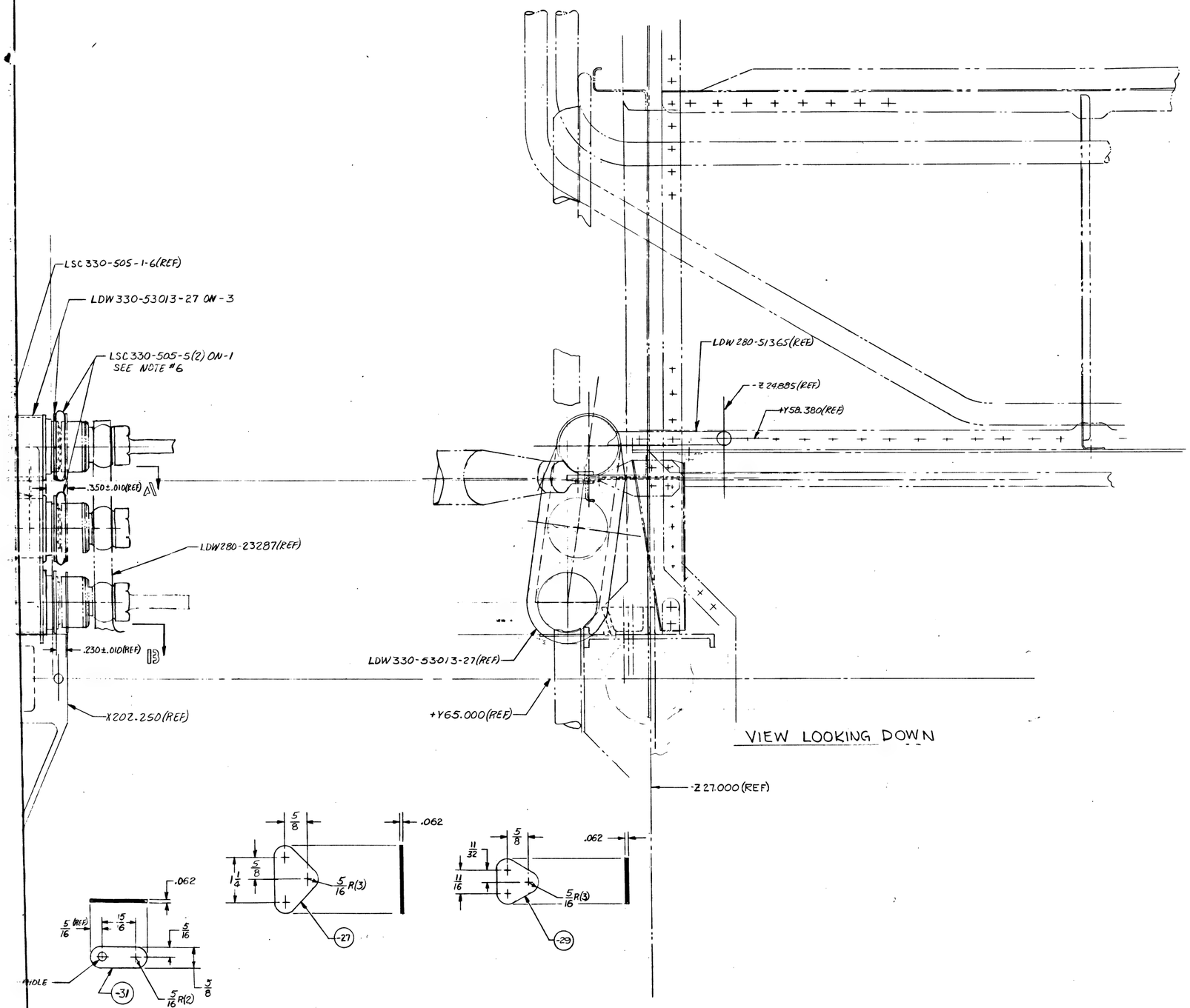




VIEW LOOKING DOWN

NOTES:

1. GB511K-08-8 & GN512H-08 MAY BE USED AS AN ALTERNATE FOR MS20470AD5 WHERE NOTED.
2. GB511K-08-10 & GN 512H-08 MAY BE USED AS AN ALTERNATE FOR MS20470AD5 WHERE NOTED.
3. SHIM USING LAMINATED SHIM PER MIL-S-22499 COMP I TYPE I CLASS I OR II
4. INSTALL FASTENERS PER:
   LSP14-15302
   LSP14-15306
5. -27, -29, & -31 SHIMS TO BE USED IF NECESSARY. PEEL LAMINATIONS AS REQD.
6. ADD LSC 330-505-5(2) BETWEEN ASCENT STAGE AND DESCENT STAGE DISCONNECTS, AND APPLY THIN COAT OF PR 240 AC FLUDRO CARBON GREASE PER LSM 14-6004 GREASE TO SEALING SURFACE OF DISCONNECT (LSC 330-505-1-6 (REF)(3)) PRIOR TO MATING.
7. SHIM MATERIAL 2024-T3 AL ALLOY SHEET QQ-A-250/4 FINISH #76.
8. COMMERCIAL PART SEE SPEC CONTROL DRAWING BEFORE ORDERING.
9. MINIMUM OF $1\frac{1}{2}$ E.D. REQUIRED ON ALL FASTENERS UNLESS OTHERWISE SPECIFIED



03/Q3 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK			
SIZE	CODE IDENT NO.	LDW200-55502	A
SCALE		SHEET 3 OF 3	

LDW 200-55502 A

DWG SIZE A1 OR D
PRINTING INFO ONLY
TRIM LINE
FULL SIZE SHEET AREA 34.5 X 10.5 = 27 SQ FT
½ SIZE SHEET AREA 24 OF FULL = 6 X 13.50 = 81

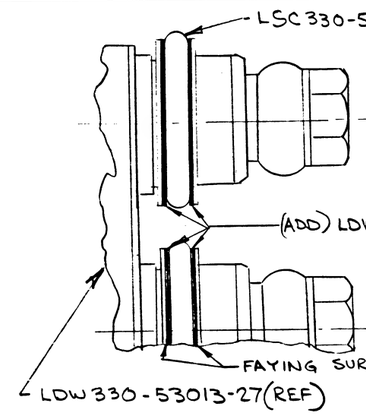
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200-55502 | EO NO. B1

CONTROL INFO NO. LDW280B7142



ON-1 ADD LDW330P10025-11(4) & ADHESIVE AS NOTED

ADD TO B/M (CL=C)

NOTE * APPLY APPROXIMATELY 4 MILS OF GE SR-516 ADHESIVE TO BOTH FAYING SURFACES OF LDW330P10025-11 & METAL FLANGE OF QD ALLOW TO AIR DRY FOR 60 MINUTES MINIMUM PRIOR TO BONDING. (SR-516 MAY BE PURCHASED FROM GENERAL ELECTRIC CO., SILICONE PROD. DEPT, WATERFORD, N.Y. CODE NO. 01139)

* USE NEXT AVAIL NOTE NO.

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | LCD 3796 PKG 50 PG #1 (5)

REASON FOR EO: ADDITIONAL CUSHION FOR SEAL REQD

DESCRIPTION OF EO: ON-1 TO FID & B/M
ADDED LDW330P10025-11(4) & NOTE *
ADDED SR-516 (SEE NOTE *) TO B/M A/R ON-1.

GAEC EO RELEASE: JK 2/6/69

MODEL	EFFECTIVITY	GAEC UNIT NO.	SUB CONTR UNIT NO
LM	LFM363	LM-3(33)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: REWORK ✓ | SCRAP

APPROVED BY	JRE		MFS (EO) w/ch	
DATE	1/31/69 2-7-69	2-7-69	2/5/69	2/8/69 2/8/69
	VDI SUPPORT	PAT	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG

PRIORITY: C

DRAWING TITLE: D/S O_2 & GLYCOL INSTL SUPPORT INTERSTAGE UMBILICAL

DRAWING NO.: LDW200-55502 EO NO. B1

2/7/69 ISSUED BY G. BARNES / P. THORJUSEN per 86097 SECTION VDI GROUP NO. 335 PL 25

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG. NO. LDW200-55502 | EO NO. B2
CONTROL INFO NO. LDW280B7146

THIS IS A REVISION TO EO B-1.

REMOVE NOTE * (REF EO B-1)

ADD NOTE ** APPLY APPROXIMATELY 4 MILS OF GE SR-516 ADHESIVE TO METAL FLANGE OF QD. ALLOW TO AIR DRY FOR 60 MINUTES MINIMUM AFTER BONDING. (SR-516 MAY BE PURCHASED FROM GENERAL ELECTRIC CO. SILICONE PROD. DEPT. WATERFORD, N.J. CODE NO 01139.)

LFM

** USE NEXT AVAIL NOTE NO.

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | LCD 3796

REASON FOR EO: REVISE BONDING NOTE

DESCRIPTION OF EO: REF EO B-1 REMOVED NOTE * (REF B-1) ADDED NOTE **

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP
LM	LFM 363	LM-3 (53)		✓		✓	

APPROVED BY / DATE / GAEC EO RELEASE

VDI	MFS SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	QUAL
2/6/69	2-6-69	—	—	—	—	2/6/69	2/6/69

HF 2/4/69

PRIORITY: C

DRAWING TITLE: SUPPORT INSTL O2 & GLYCOL INTERSTAGE

DRAWING NO.: LDW200-55502

EO NO.: B2

ISSUED BY H. SCHERDEL X335 SECTION VDI GROUP NO. 335 PL 25

01

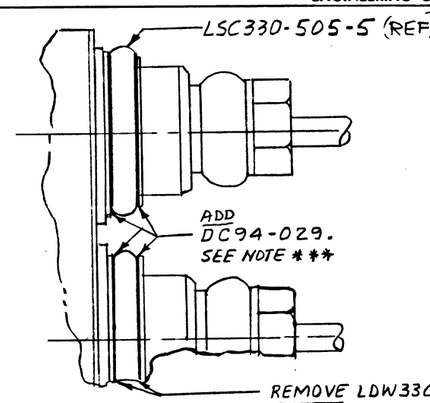
NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200-55502		EO NO. B3
CONTROL INFO NO. LDW280 - 9013		



ON-1 REMOVE LDW330P10025-11 & NOTE *** (REF EO-B-2)

TO BM ADD DC 94-029 SEALANT.
SEE NOTE ** A/R ON-1
NOTE *** CLEAN SURFACE WITH FREON & APPLY DC94-029 TO FLANGES TO A THICKNESS OF .010 TO .020. APPLICATION TO BE PERFORMED BY RUBBING SEALANT ONTO FLANGE. SURFACE IS TO BE SMOOTH. MATERIAL MAY BE PURCHASED FROM DOW CHEMICAL CO. MIDLAND MICH. CODE IDENT 71983.

LFM

*** USE NEXT AVAIL NOTE NO.

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	V	LCD 3796

REASON FOR EO: CHANGE SEALANT

DESCRIPTION OF EO: ON-1 REMOVED LDW330P10025-11(4) & NOTE ** (REF EO B-2). ADDED " C 94-029 & NOTE ***

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM3	LFM363	LM3(33)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	DATE	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
✓		✓		OK / MAT'LS / ~~SUPPORT~~ VDI	2-8-69 / 2-10-69		2-11-69		2-11-69	2-11-9

PRIORITY: C

DRAWING TITLE: SUPPORT INSTL INTERSTAGE DISCONNECT

DRAWING NO.: LDW200-55502

EO NO.: B3

ISSUED BY D Rominger x3352 SECTION VDI GROUP NO. 335 PL 25

01

NAS 9-1100

LDW200-55503

LFM

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM 363	LDW280-53508	LM3(33)	1
PART NO. LDW200-55503-1, -5		GAEC SCH NO.	

WORK FUNCTION NO 111 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00		3.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	A	GRUMMAN REL INFO	PRIM NO. WK(027)
LAST DASH NO. USED			207 ME-16-7/7/69

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES
— — —

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 3796 PAGE 50 PG 1	

CONTRACT NO. NAS 9-1100			LINE ITEM 1	DOCUMENTATION TYPE III
DRAWN BY	RAGAS/PALLMEYER	THERMO	III Tam 12-5	(R) GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE, L. I., NEW YORK
LAYOUT BY	RAGAS/PALLMEYER	MAT'LS	for 2/5/69	BLANKET INSTALLATION D/S QUAD III - THERMAL (REWORK OF LDW280-53508 LFM NO)
CHECKED BY				
GP LEADER	Thrynas 2-5-69			
VDI	J. Cusatis 2/5/69			
STRUCTURES		PROJ ENGR	J. Cusatis 2/5/69	SIZE B / CODE IDENT NO. 26512 / LDW200-55503
STRUCTURES	NM 2/5/69	REL GROUP	for J. Marsh 2-7-69	SCALE - NONE / SHEET 1 OF 3.00

ENG 77.1 12-65

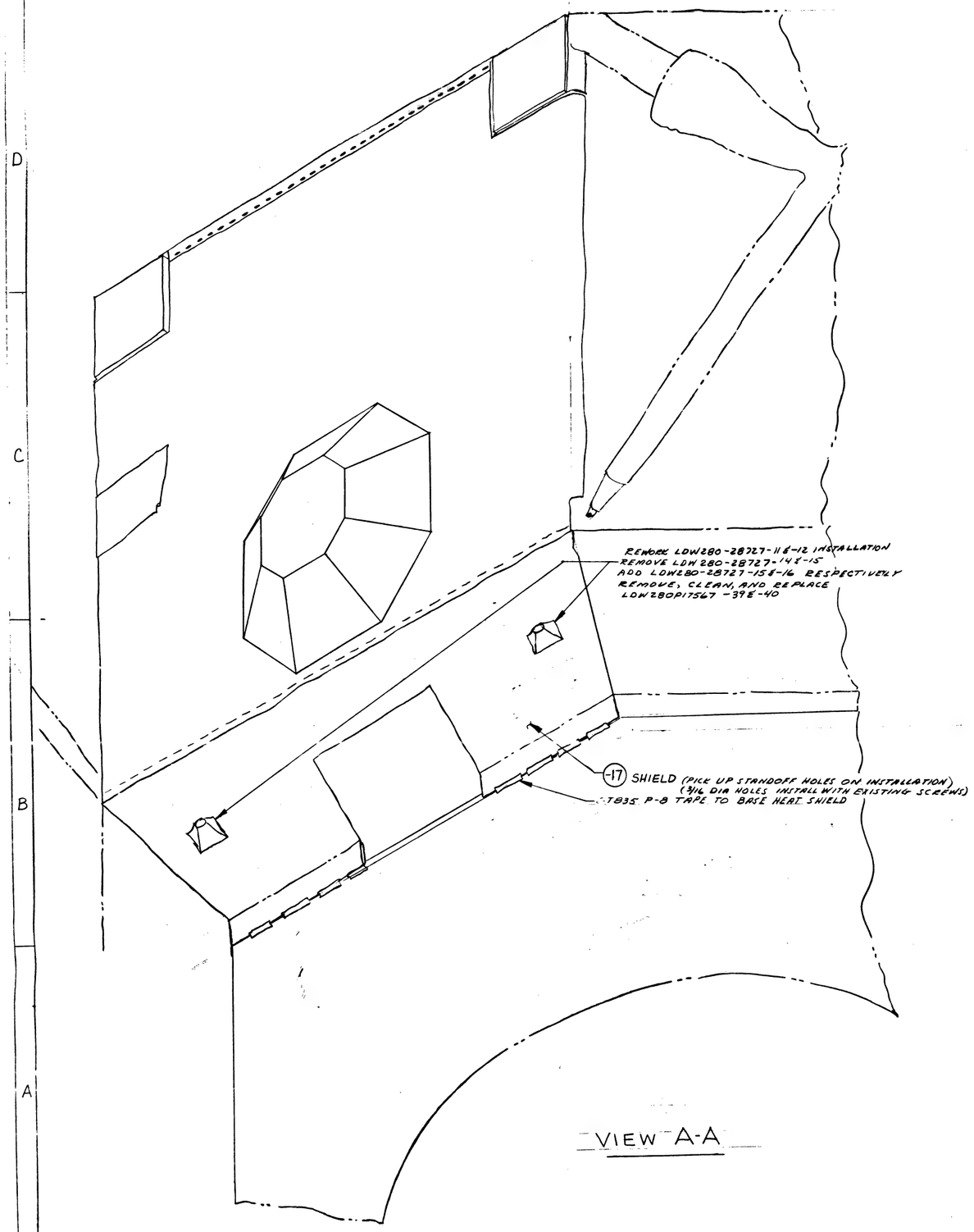
ECP B120

CDR 020669

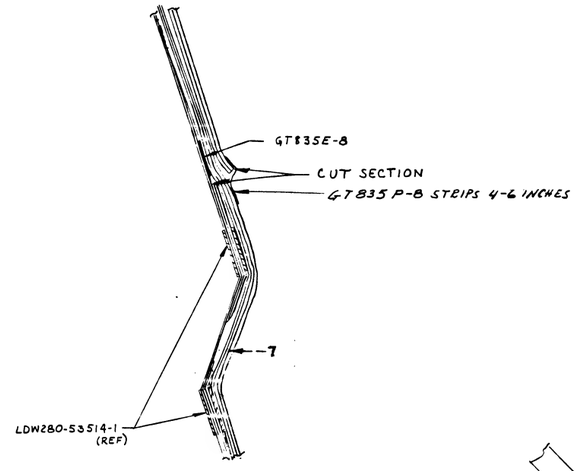
01

NAS 9-1100

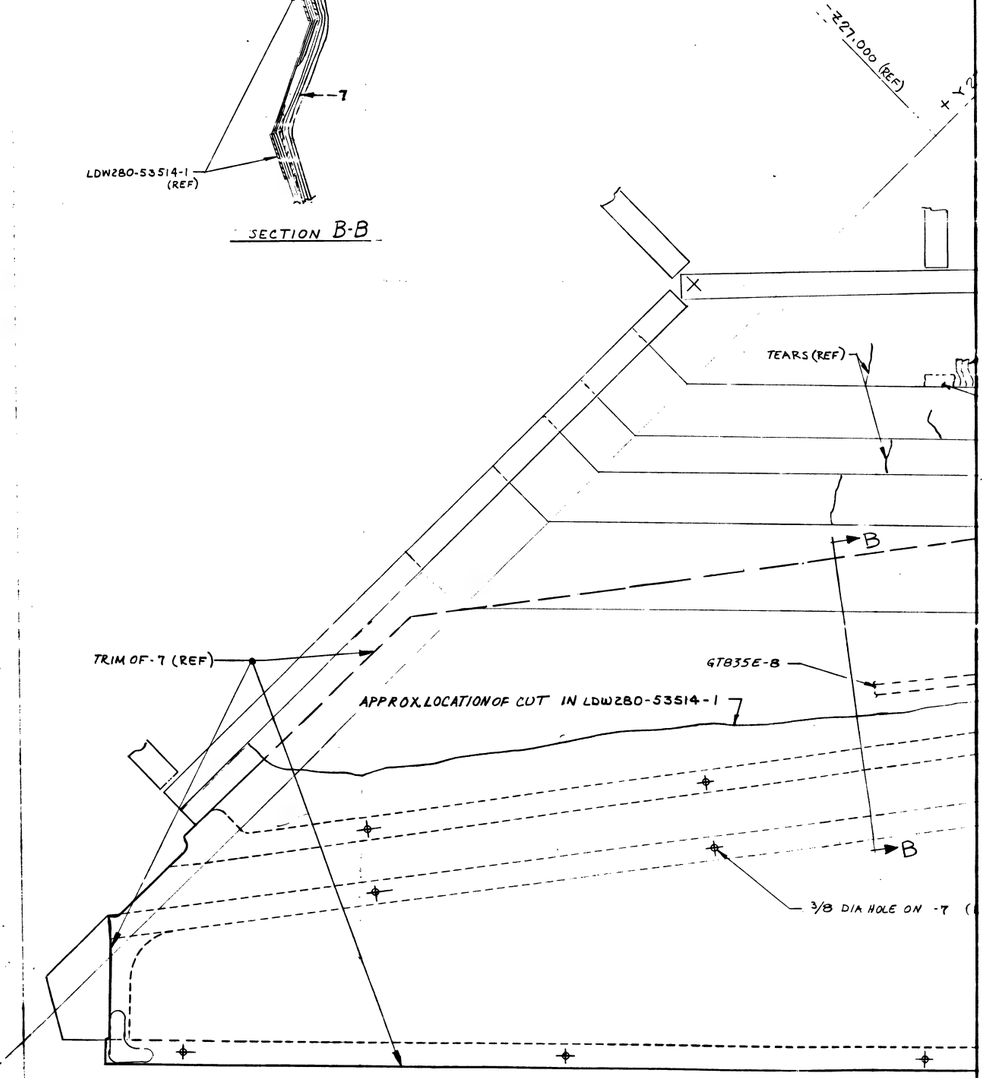
| | | |



VIEW A-A



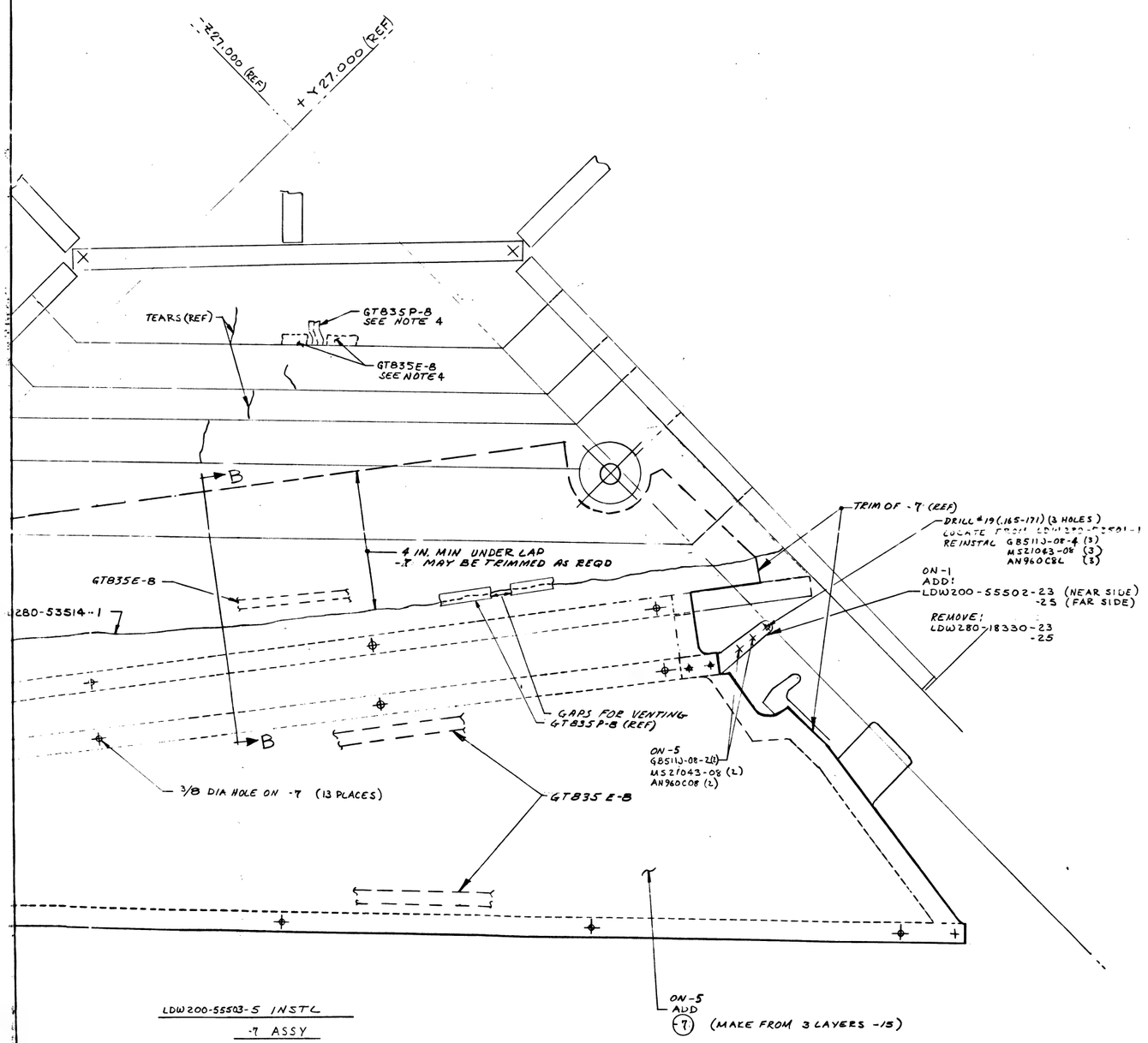
SECTION B-B



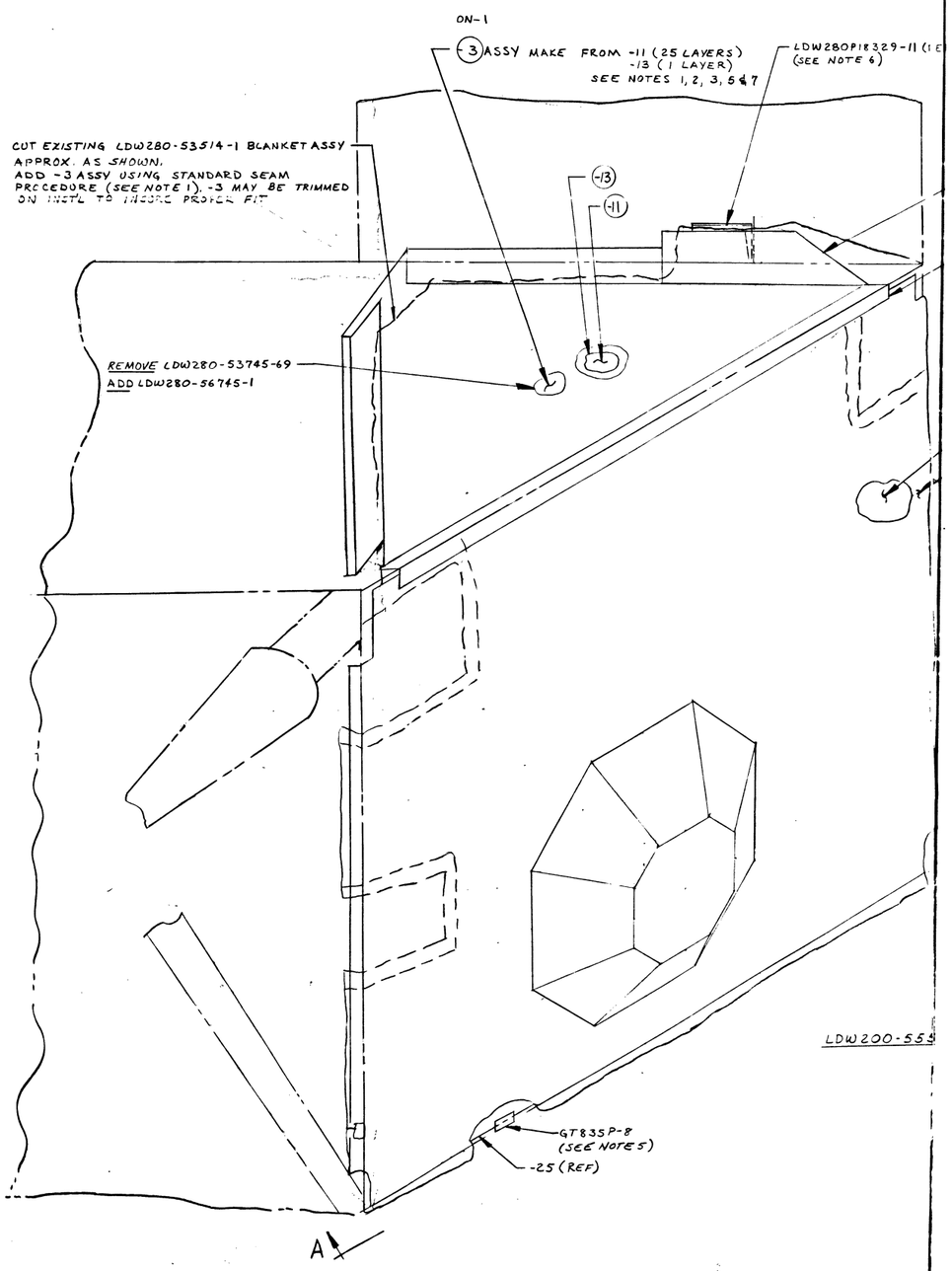
LDW200-55503-5 INSTL
-7 ASSY

01/03 NAS 9-1100

CHES



LDW200-55503-5 INSTL
-7 ASSY



NOTE:

1. APPLICABLE PROCEDURES:
   LPC 280-1 FABRICATION
   LPC 280-2 VENTING
   LPC 280-3 SEAMS

2. FINAL SIZE OF BLANKET ASSYS (WITH FOLD, SEAM, VENT & FASTENER SHALL BE DETERMINED FROM ENGINEERING APPROVED MASTER TEMPLATES AND/OR FULL SIZE MOCK-UP.

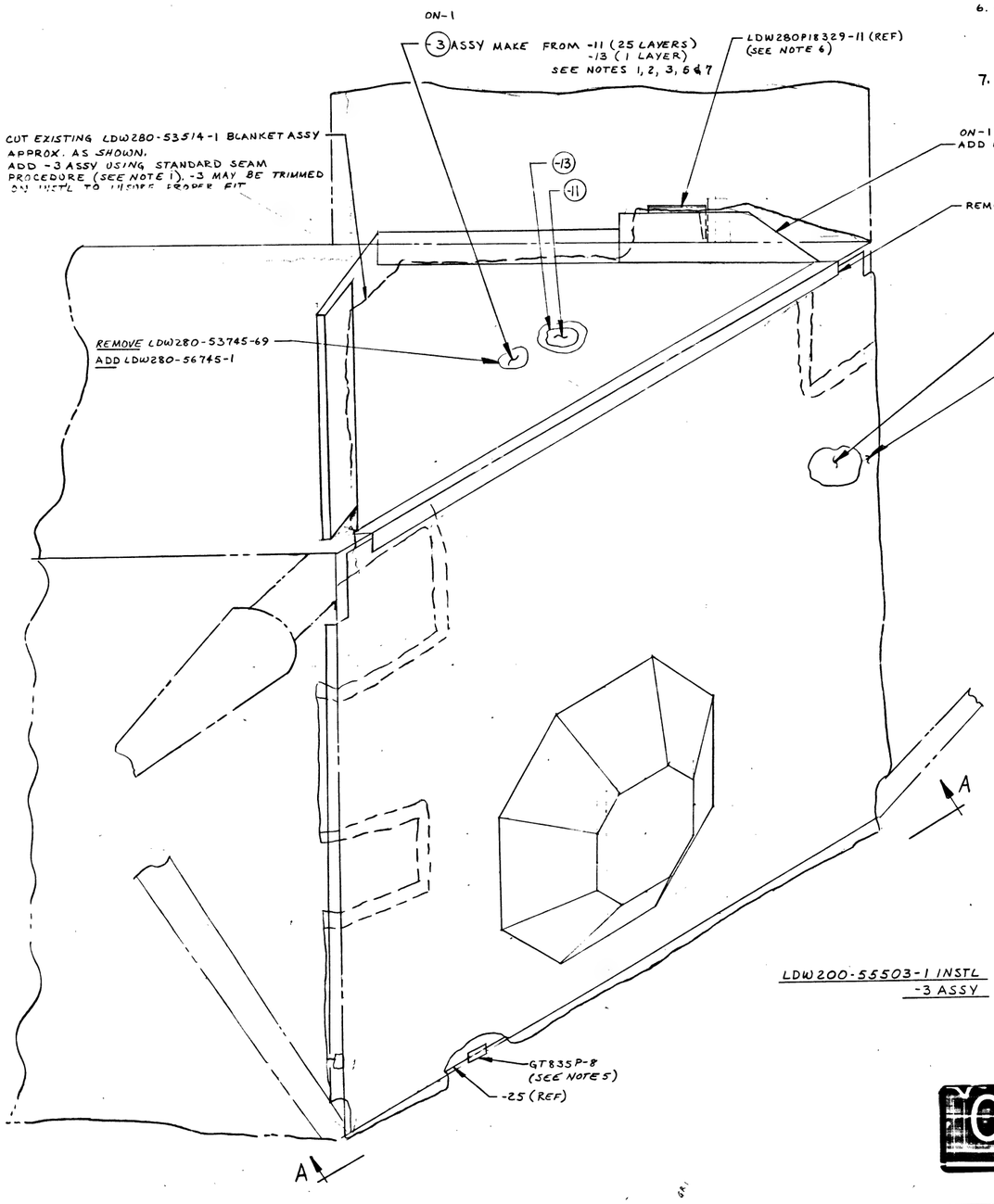
3. -11 - ALUMINIZED POLYIMIDE (.0002S) PER LSM14-5301A TYPE IA CL I.
   -13 - ALUMINIZED POLYIMIDE (.002) PER LSM14-5304 TYPE IV A CL III.
   -15 - BARE POLYIMIDE (.005). MAY BE PURCHASED FROM DUPONT E.I. DENEMOURS, TRENTON, N.J.

4. REPAIR TORN LAYERS BY APPLYING ONE LAYER OF GT835E-8 BELOW EACH LAP AND 5 LAYERS OF GT835P-8 ABOVE, TAPING FLAPS TOGETHER AND/OR DOWN TO LOWER LAYER.

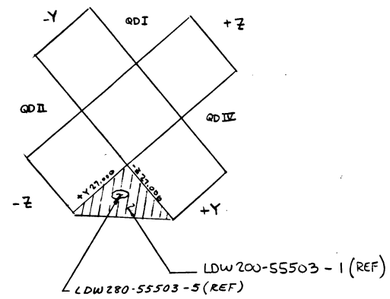
5. TAPE, USING 4 TO 6 INCH STRIPS WITH 3/4 TO 1 INCH GAPS PER LPC 280-3.

6. ON-1 LDW280P18329-11 MAY BE TRIMMED AS REQD TO INSURE PROPER CLEARANCE FOR REWORK OF LDW200-55502-1 INSTL. AFTER REWORK HAS BEEN ACCOMPLISHED LDW280P18329-11 MAY BE SPLICED TOGETHER USING GT835P-8 AND GT835E-8 TAPE.

7. GR11B-1 & GW10H-3 USE IS OPTIONAL IN SEAM, A MINIMUM OF 50% OF FASTENERS MUST BE UTILIZED.



LDW200-55503-1 INSTL
-3 ASSY



(ENGG REF ONLY)

-65-171) (3 HOLES)
-GB5111-08-4 (3)
-MS2104-08 (3)
-AN960C8L (3)

-02-23 (NEAR SIDE)
-25 (FAR SIDE)

-30-23
-25

03/03

NAS 9-1100

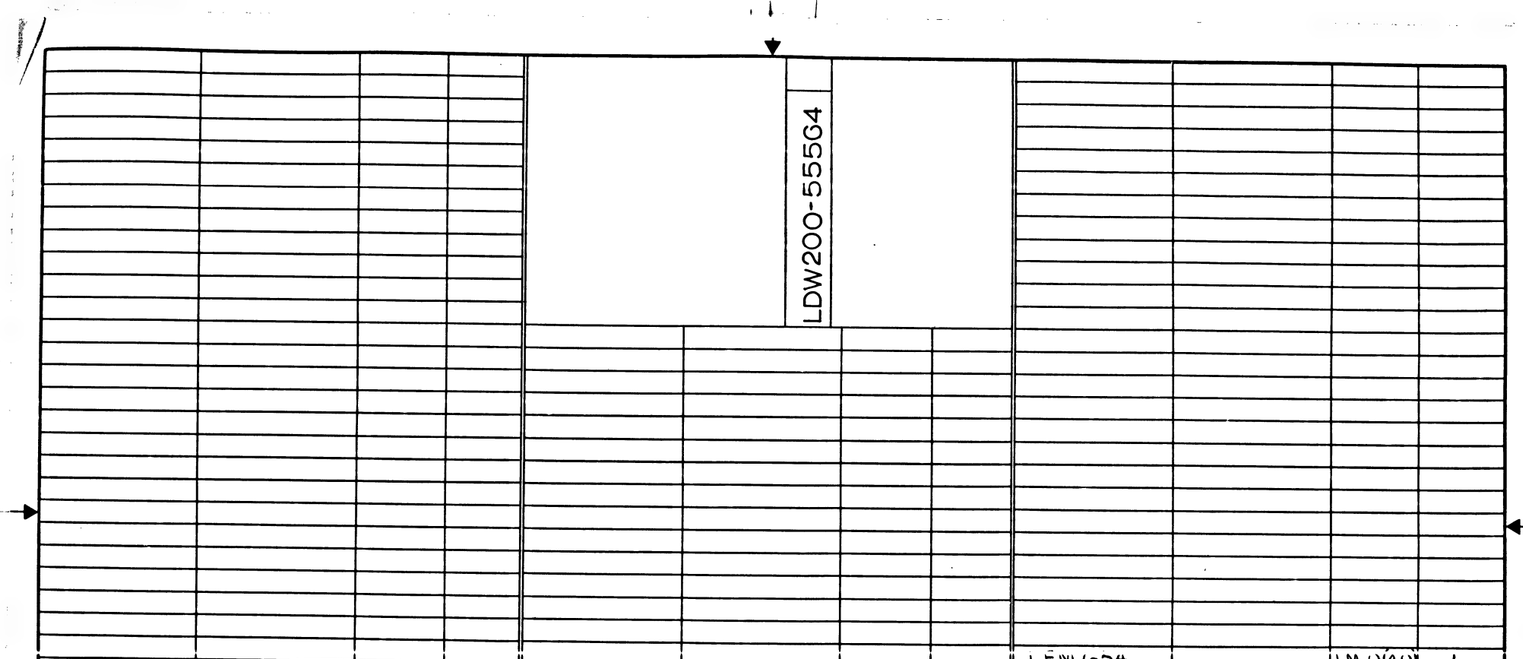
GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	LDW200-55503
	26512	

SCALE NONE SHEET 3.00

LDW200-55503

PRINT TRIM LINE
FULL SIZE SHEET AREA (36 X 109) = 27 SQ FT
½ SIZE SHEET AREA (½ OF FULL) = 7 SQ FT



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.					
								LFM654		LM10(40)	1
								PART NO. LDW200-55564-1		GAEC SCH NO.	

WORK PKG FUNCTION NO. 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00									
REV										
SHEET	2.00	2.01								
REV										
SHEET	3.00									
REV										

LAST SECT LTR USED	C
LAST DASH NO. USED	-1

GRUMMAN REL INFO

PRIM NO.				
299				

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
XXX±.010 .XX±.030 ±0°30'

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD5756 PK 1	

CONTRACT NO. NAS9-1100 LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	SCHWARTZ 3/16/71			
LAYOUT BY	AQUILA/SAUCE	MATLS	3/22/71	
CHECKED BY	EIR 3-19-71			
GR LEADER	A Varna 3-19-71			
SUBSYSENG				
STRUCT	N.M. 3/22/71	PROJ ENGR		
STRUCT	W.H. 3/22/71	REL GROUP		
WEIGHTS			3-22-71	

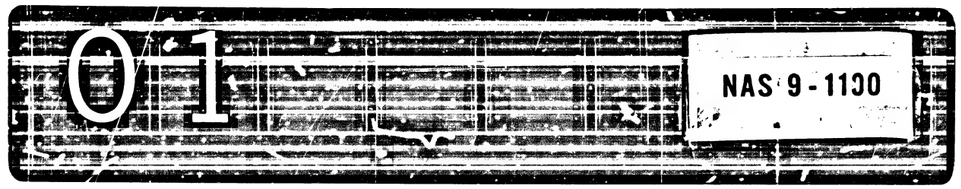
GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

LUNAR RAKE INSTL
C.P.-DESCENT STAGE-LM10
REWORK OF DWG #LDW340-60769 LFM654

SIZE	CODE IDENT NO.	
B	26512	LDW200555G4

SCALE NONE SHEET 1.00 OF 4

ENG 77.1 12-65



QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
									NONE	NONE	
1		LDW340P15935-11	E	FITTING							4C
1		LDW340M15974-11		FITTING							6D
1		LDW340M15973-11		FITTING							6B
2		LDW340M15972-13		PIN							8A
2		LDW340M15972-11		FITTING							5C
1		LDW340-60787-29		STRAP ASSY							2C
1		LDW340-60787-5		STRAP ASSY							3C
1		LDW340-15934-15		BRACKET							3B
1		LDW340-15934-13		FITTING							8A
1		LDW340-15934-11		PLATE							7D
2		LDW340-11999-67		PIN							8B
1		LDW340-11999-65		PIN							8C
		LDW200-55564-1	E	LUNAR RAKE INSTL							
-1											

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55564

SCALE NONE SHEET 200

ENG 77.2 7-65

01 NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
2		GN512CF3L		NUT	GRUMMAN STD						
1		GN11BE-231	E	NAMEPLATE	GRUMMAN STD						
4		GW10L-3	E	WASHER	GRUMMAN STD						
1		MS27983-1N	E	FASTENER	GOVT STD						
1		MS27983-6N		FASTENER							
1		MS90354-0504		FASTENER							
AR		MS21266-1T		GROMMET							
2		MS21043-3		NUT							
AR		MS20470AD4		RIVET							
2		AN960-D10L		WASHER							
2		AN960-D10		WASHER							
2		AN960-D08		WASHER	GOVT STD						
2		GB510F-08-3		BOLT	GRUMMAN STD						
AR		G5531-B2		SLEEVE	GRUMMAN STD						
AR		G5830CF5-4		SLEEVE							
2		GR501A-4H		RIVET							
2		GR500A-5H		RIVET							
1		GR501A-4C		RIVET							
1		GR500A-5C		RIVET							
24		GR500A-4D		RIVET							
2		GN512CF-03L		NUT							
2		GN510CT632C		NUT							
3		GL10B2-18		LANYARD							
2		GB511W08-16		BOLT							
2		GB511J06-20	E	BOLT	GRUMMAN STD						
1		GR501A-5C	E	RIVET	GRUMMAN STD						
-1											

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

ENG 77.2 7-65

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

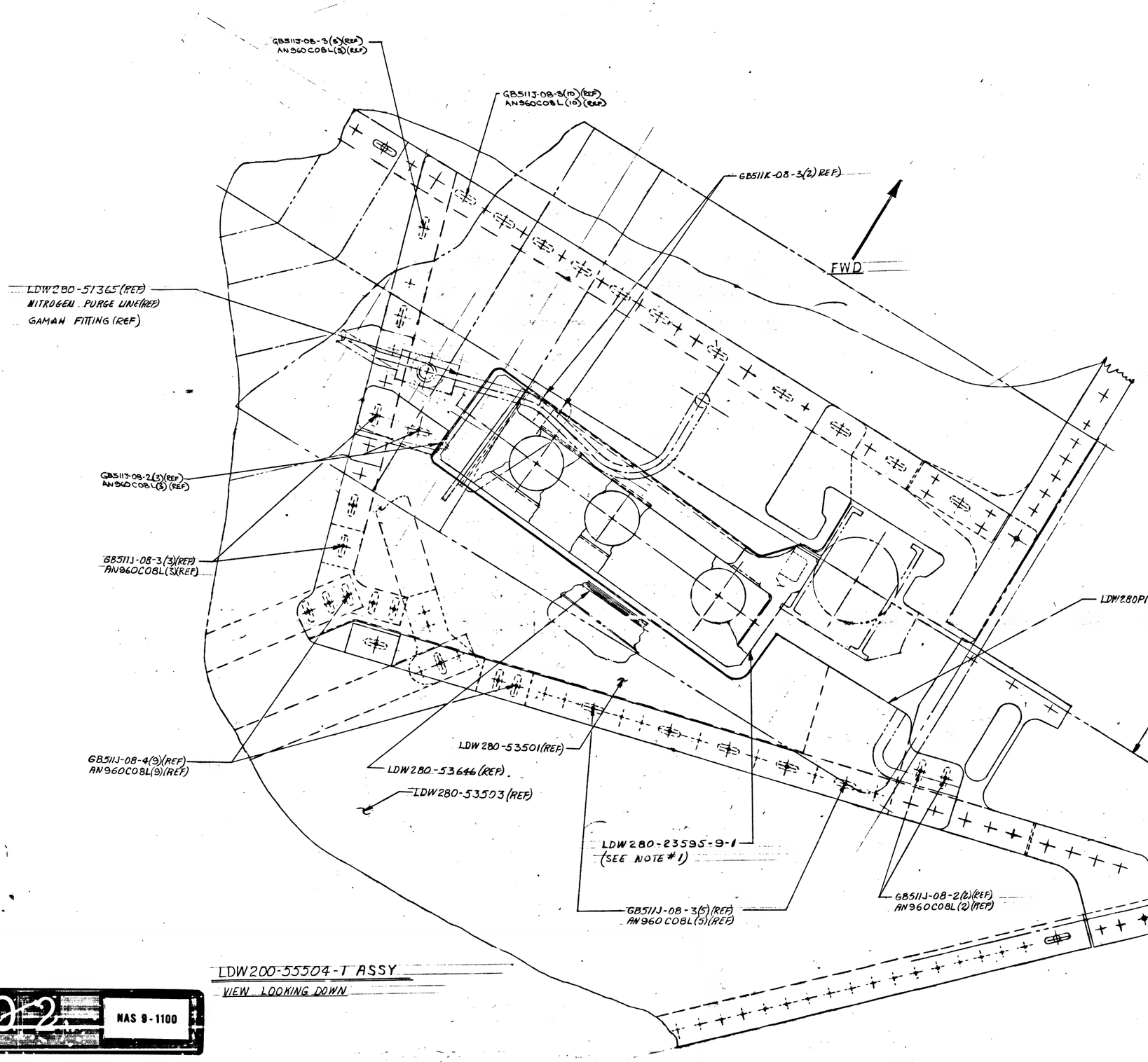
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200 55564

SCALE NONE SHEET 2.01

01

NAS 9-1100

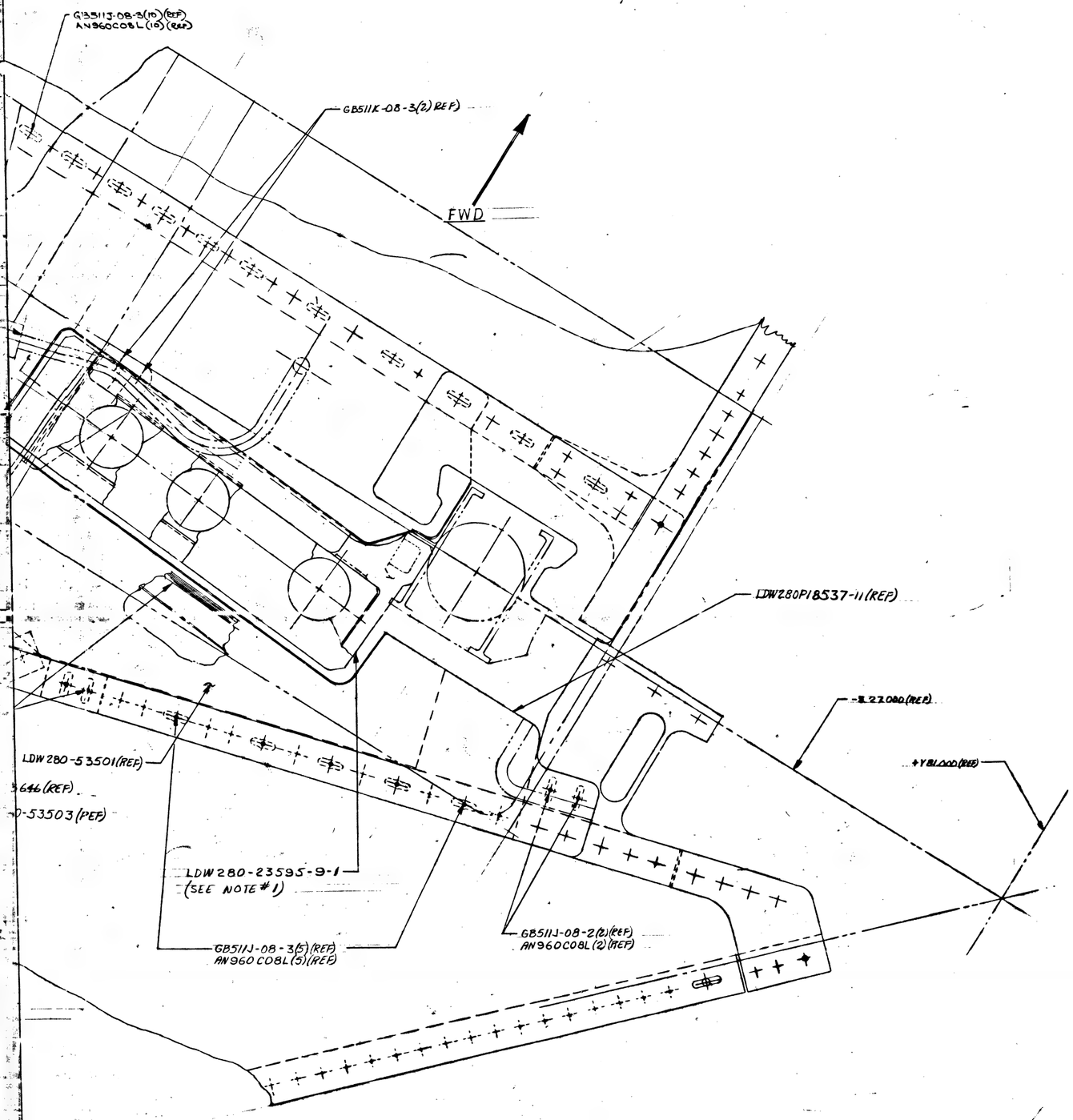


LDW200-55504-1 ASSY

VIEW LOOKING DOWN

01/02

NAS 9-1100



NOTE:

1. TO OBTAIN ACCESS FOR INSTL OF LDW280-23595-9-1, REMOVE: LDW280-53646 SHIELDING, LDW280P18537-11 ON LDW280-53501 FITH SHIELD, AND QUAD SHIELDING AS REQD, DISCONNECT NITROGEN PURGE LINE AT "T" JOINT SHOWN IF NECESSARY, TO INSTALL FASTENERS IN TOP DECK TEE. REINSTALL AFTER COMPLETION OF INSTL. PER LSP-14-17402

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I. NEW YORK

SIZE	CODE IDENT NO.	LDW200-55504
	26512	
SCALE FULL		SHEET 3.00

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200-55504 | EO NO. A1

CONTROL INFO NO. LDW280D7577

ADD -1-1 (-1-1 IS IDENT TO -1 EXCEPT AS NOTED)
ON -1-1 ADD LDW280-23595-9-2 WAS LDW280-23595-9-1
-1-1 N/A LDW280-54508 LM4(34) LFM 363

ADD -1-2 (-1-2 IS IDENT TO -1 EXCEPT AS NOTED)
ON -1-2 ADD LDW280-23595-9-3 WAS LDW280-23595-9-1
-1-2 N/A LDW280-54508 LM5(35) LFM 363

IN MOD BLK RESTRICT -1
TO N/A LDW280-52508 LM2 (32) LFM363
WAS
N/A LDW280-52508 LM2 LFM363
LDW280-54508 LM4, LM5 LFM363

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD 3776 PR 50 PG-2 ECP-D160

REASON FOR EO: WORK ACCOMPLISHED PER (EO C6 LDW280-23595) ON LM4

DESCRIPTION OF EO: IN F/D, B/M & MOD BLK ADDED -1-1 & -1-2. IN MOD BLK FOR -1 RESTRICTED TO LM2 WAS LM2, LM4 & LM5.

GAEC EO RELEASE: 4-10-69

MODEL	EFFECTIVITY	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 363	LM4(34) LM5(35)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO | DISPOSITION OF PARTS: REWORK ✓ | SCRAP

PRIORITY: C

DRAWING TITLE: FITH REWK ASSY D/S - QUAD GLVG. INST. SG. UHB COVER

DRAWING NO.: LDW200-55504

EO NO.: A1

APPROVED BY	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	PROJ ENGR
DATE	VDI		4-3-69	4-1-69	RLT 4/7/69

04/10/69 ISSUED BY DON RAGAS X86046 SECTION VDI GROUP NO. 280 PL 25

NAS 9-1100

LDW 200-55505

LEFT

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
	LFM 406	LDW280-54508	1M5(35) 1
PART NO. LDW200-55505-1		GAEC SCH NO.	

WORK PACKAGE FUNCTION NO. 111 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	2.00			3.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	B
LAST DASH NO. USED	-3

GRUMMAN REL INFO: PRIM NO. (ORIGINAL) 207 HE 16 4/13/69

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/16 — —

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓

LCD 2017 PKG 1 SH 1

CONTRACT NO. NAS 9-1100 LINE ITEM DOCUMENTATION TYPE III

DRAWN BY	RAGAS		
LAYOUT BY	RAGAS		
CHECKED BY	R C Cobb 4-14-69		
GR LEADER	Thomson 4-14-69		
V. D. I	Carpenter 4/14/69		
STRUCT.		PROJ ENGR	E Fuentes 4/14/69
STRUCT	WJH 4/14/69	REL GROUP	4-14-69

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

B
LANYARD STOWAGE
DECENT STAGE-QUAD II EASEP PACKAGE
(REWORK OF LDW280-54508 LFM406)

SIZE	CODE IDENT NO.	
B	26512	LDW 200-55505

SCALE NONE SHEET 1.000F 3

ENG 77.1 12-65

CDR 04-14-69

01

NAS 9-1100

QTY PER ASSEMBLY -3	QTY PER ASSEMBLY -1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
ALT			GT534D1	E	THREAD	GRUMMAN STD	SEE NOTE *2					
A/R			GT534C1	E	THREAD	GRUMMAN STD	SEE NOTE *2					
1			GT835GLCS-0083	E	TAPE	GRUMMAN STD						
1			GT835GHCS-0063	E	TAPE	GRUMMAN STD						
	2		LDW200-55505-3	E	LANYARD ASSY							
			LDW200-55505-1	E	LANYARD INSTL							

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

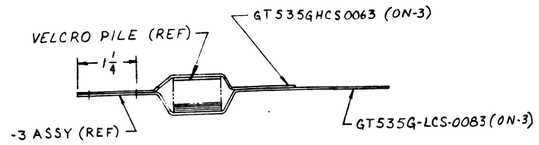
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55505

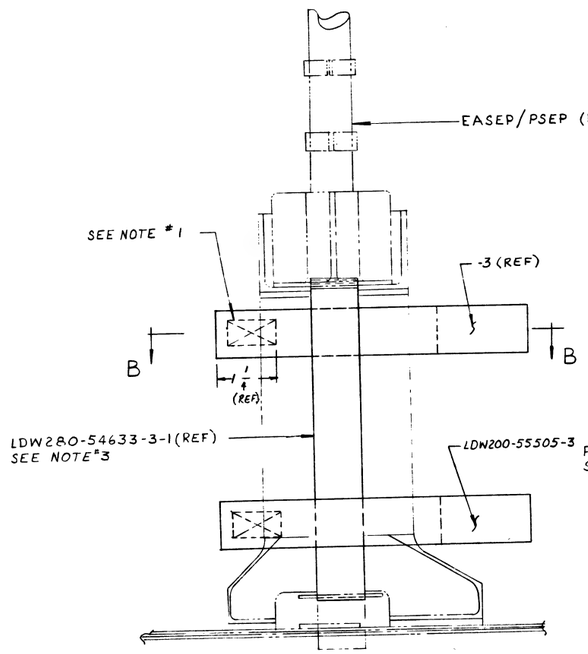
SCALE NONE SHEET 2.00 OF 3

ENG 77.2 7-65

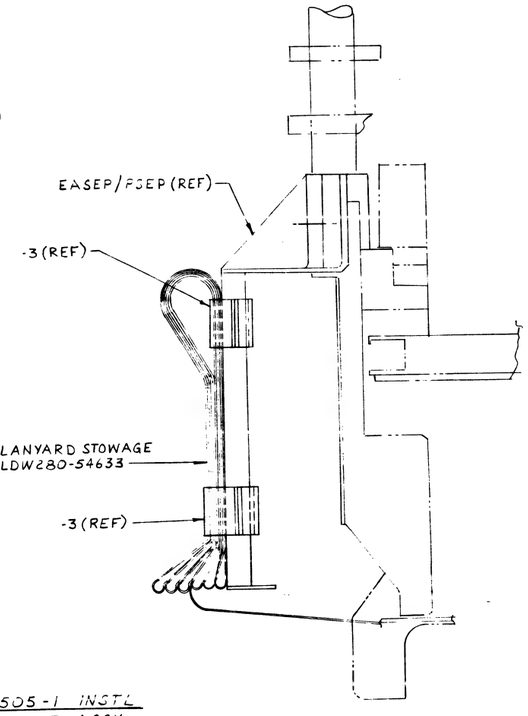
REVISIONS					
ZONE	LTR	DESCRIPTION	ENT CODE	MODEL	DATE	APPROVED



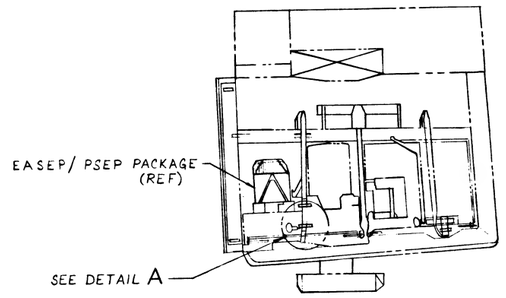
SECTION B-B



DETAIL A



LDW200-55505-1 INSTL
-3 ASSY



VIEW LOOKING INBD QUAD II
FOR ENGR. ONLY

NOTES
1- SEW TAPE AT $\frac{3}{16} \pm \frac{1}{16}$ FROM EDGES OF TAPE IN ACCORDANCE WITH FEDERAL STD #751 AND STITCH TYPE #301. USING GT534C1.
2 GT534D1 MAY BE USED AS AN ALTERNATE FOR GT534C1
3- RELOCATE LDW280-54633-3-1 BY REMOVING GT535GHCS-0044 AND GT535GLCS-0044 AND ADDING -1 INSTL AS SHOWN.

NAS 9-1100

FOR PARTS LIST, USAGE DATA, AND DWG SH STATUS, SEE DOCUMENT SAME NUMBER PREFIXED PL

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES			CONTRACT NO	GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714	
LINEAR TOL	XX	± .03	DRAWN BY		
	XXX	± .010	LAYOUT BY		
ANGULAR TOL		± 0°30'	CHECKED BY		
TOL ON LOFTED DIMENSIONS IS —			GR LEADER		
			REL GROUP		
			PROJ ENGR	SIZE E	CODE IDENT NO 26512 LDW200-55505
			QUAL APPD	SCALE NONE	SHEET 2 OF 3

1 DISTR LIST #

LDW200-55506

GAEC

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
PART NO.			

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
PART NO.			

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
LFM 410	LDW280-54508	LM-6(36)	1
LFM 410	LDW280-54508	LM-5(35)	1
PART NO. LDW200-55506 -1			

WORK PKG FUNCTION NO. 11 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00	2.00	3.00							
REV										
SHEET										
REV										
SHEET										
REV										

		GRUMMAN REL INFO		
LAST SECT LTR USED		PRIM NO.	JK(024)	
LAST DASH NO. USED	-1	207	ME-K-1	5/1/69

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/16 ±.010 ± 1/2°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD3911 PKG 50	

CONTRACT NO. NAS9-1100 LINE ITEM ... DOCUMENTATION TYPE II

DRAWN BY	G. BARNES		
LAYOUT BY	G. BARNES		
CHECKED BY	D. FASS 5-1-69		
GRP LDR	[signature] 4-30-69		
VDI	[signature]		
STRUCTURES		PROJ ENGR	[signature] 4/30/69
STRUCTURES	W/H 4/30/69	REL GROUP	[signature]
WEIGHTS			

(P) GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

GIMBAL DRIVE ACTUATOR IMPEDENCE BOX
(REWORK OF LDW280-54508)
LFM 410

SIZE	CODE IDENT NO.	
B	26512	LDW200-55506

SCALE NONE SHEET 1.00 OF 3

ENG 77.1 12-65

CDR 5/5/69

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
8		MS21043-06	E	NUT	GOVT STD						
AR		MS20470AD4		RIVET	GOVT STD						
8		AN960D6L		WASHER	GOVT STD						
AR		NAS1097AD3		RIVET	IND STD						
4		MAS697C08		NUT PLATE	IND STD						
4		GB511J-08-24		BOLT	GRUMMAN STD						
8		GB511J-06-2		BOLT	GRUMMAN STD						
1		GB11D-8-88		BRACKET ASSY	GRUMMAN STD						
4		LDW200-19704-11		CLIP	SEE DWG						
-1		LDW200-55506	E	INSTL					NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55506

SCALE NONE SHEET 2.00

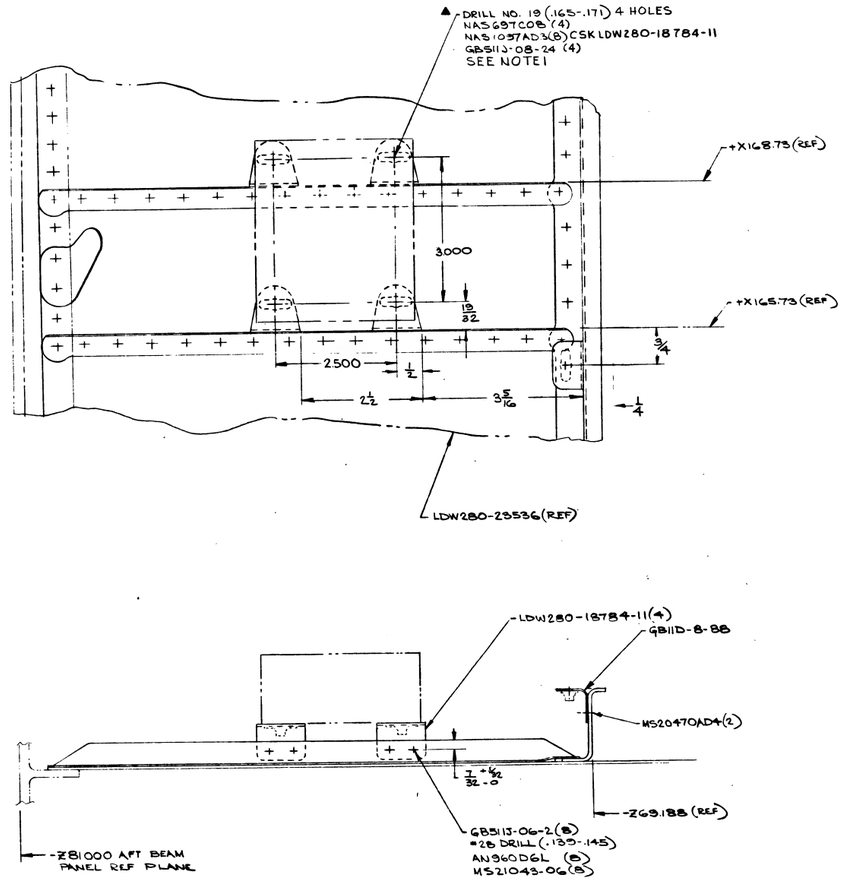
ENG 77.2 7-65

01

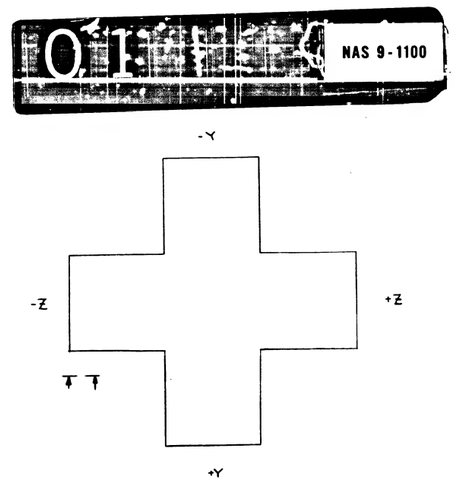
NAS 9-1100

SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG	
MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130	
AND ALL OTHER MARKINGS IN BROWN PART NUMBER FLUORESCENT USE BOTH SIDES IF NECESSARY	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL RIVETS IN ACCORDANCE WITH	

NOTES:
1.- FOR HOLES MARKED ▲ SEE LDW355-55010 FOR CORRESPONDING HOLE PATTERN



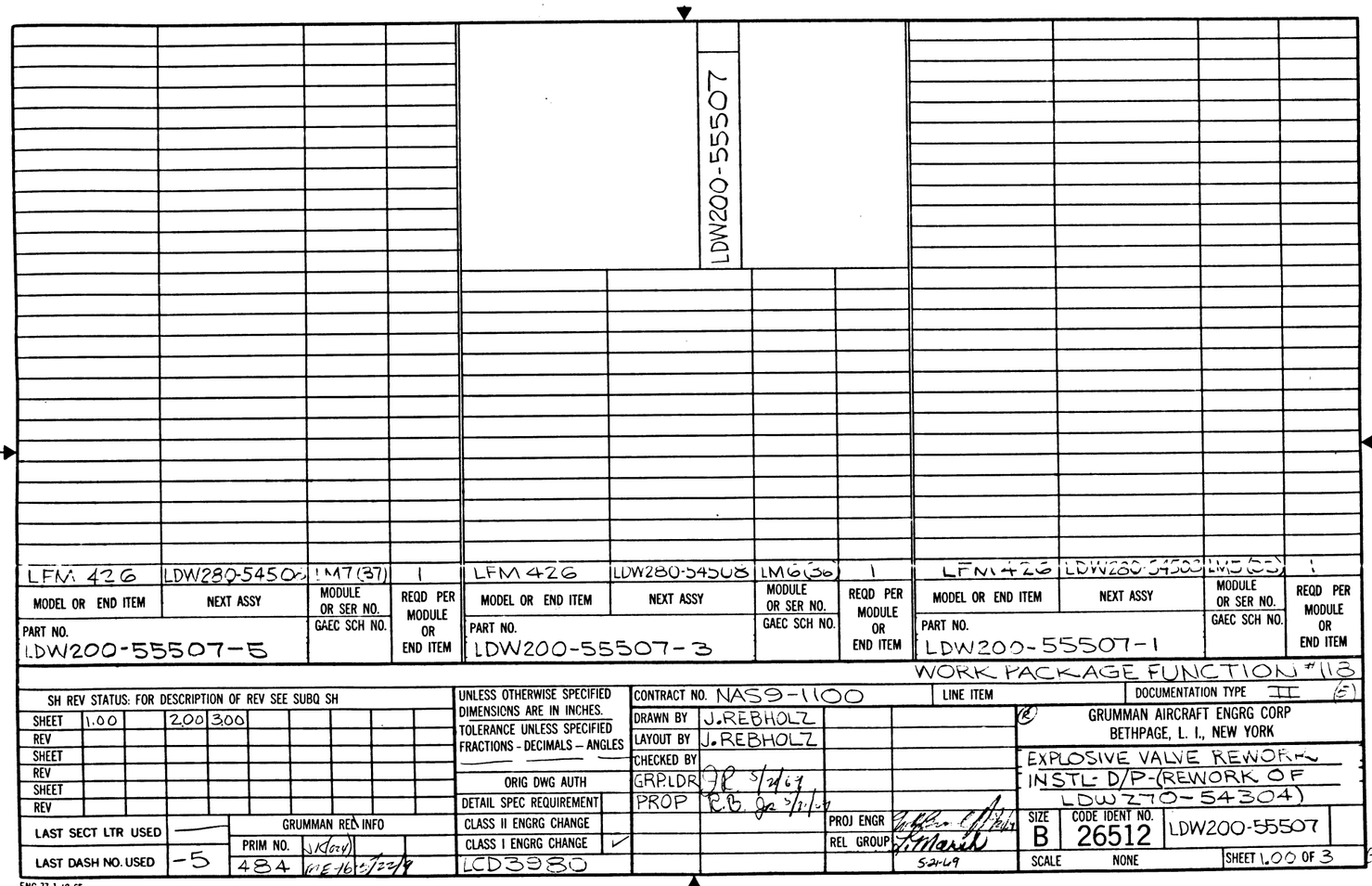
LDW200-55506-1 INSTL



FOR ENGR REF ONLY NO SCALE

GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714		
SIZE E	CODE IDENT NO. 26512	LDW200-55506
SCALE 1/1		SHEET 5

REV 5-67



LFM 426	LDW280-54502	LM7(37)	1	LFM 426	LDW280-54508	LM6(36)	1	LFM 426	LDW280-54503	LM5(35)	1
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW200-55507-5		GAEC SCH NO.		PART NO. LDW200-55507-3		GAEC SCH NO.		PART NO. LDW200-55507-1		GAEC SCH NO.	

WORK PACKAGE FUNCTION #113

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00		2.00	3.00						
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED	—
LAST DASH NO. USED	-5

GRUMMAN REL INFO: PRIM NO. 484 (WORK) 11E-16 5/22/69

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
	LCD3980

CONTRACT NO. NAS9-1100 — LINE ITEM — DOCUMENTATION TYPE II (F)

DRAWN BY	J.REBHOLZ	
LAYOUT BY	J.REBHOLZ	
CHECKED BY		
GRP LDR	JR 5/21/69	
PROP	R.B. for 5/21/69	
PROJ ENGR		
REL GROUP	5-21-69	

(B) GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

EXPLOSIVE VALVE REWORK
INSTL- D/P-(REWORK OF LDW270-54304)

SIZE	CODE IDENT NO.	
B	26512	LDW200-55507

SCALE NONE — SHEET 1.00 OF 3

ENG 77.1 12-65

01

NAS 9-1100

				6	2	4		GB511J-3-13	E	BOLT	GRUMMAN STD							
L				6	2	4		LDW280-18811-1	E	FITTING ASSY	SEE DWG							
L				3	1	2		LSC 270-81911	S	EXPLOSIVE VALVE	SEE NOTE 1							
K								LDW200-555075	E	REWORK INSTL						NONE	NONE	
K								LDW200-555073	E	REWORK INSTL						NONE	NONE	
K								LDW200-555071	E	REWORK INSTL						NONE	NONE	
CL.				-5	-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE		PROCESS SYM	FINISH NO.	ZONE

QTY PER ASSEMBLY

CLEANLINESS PER LSP14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55507

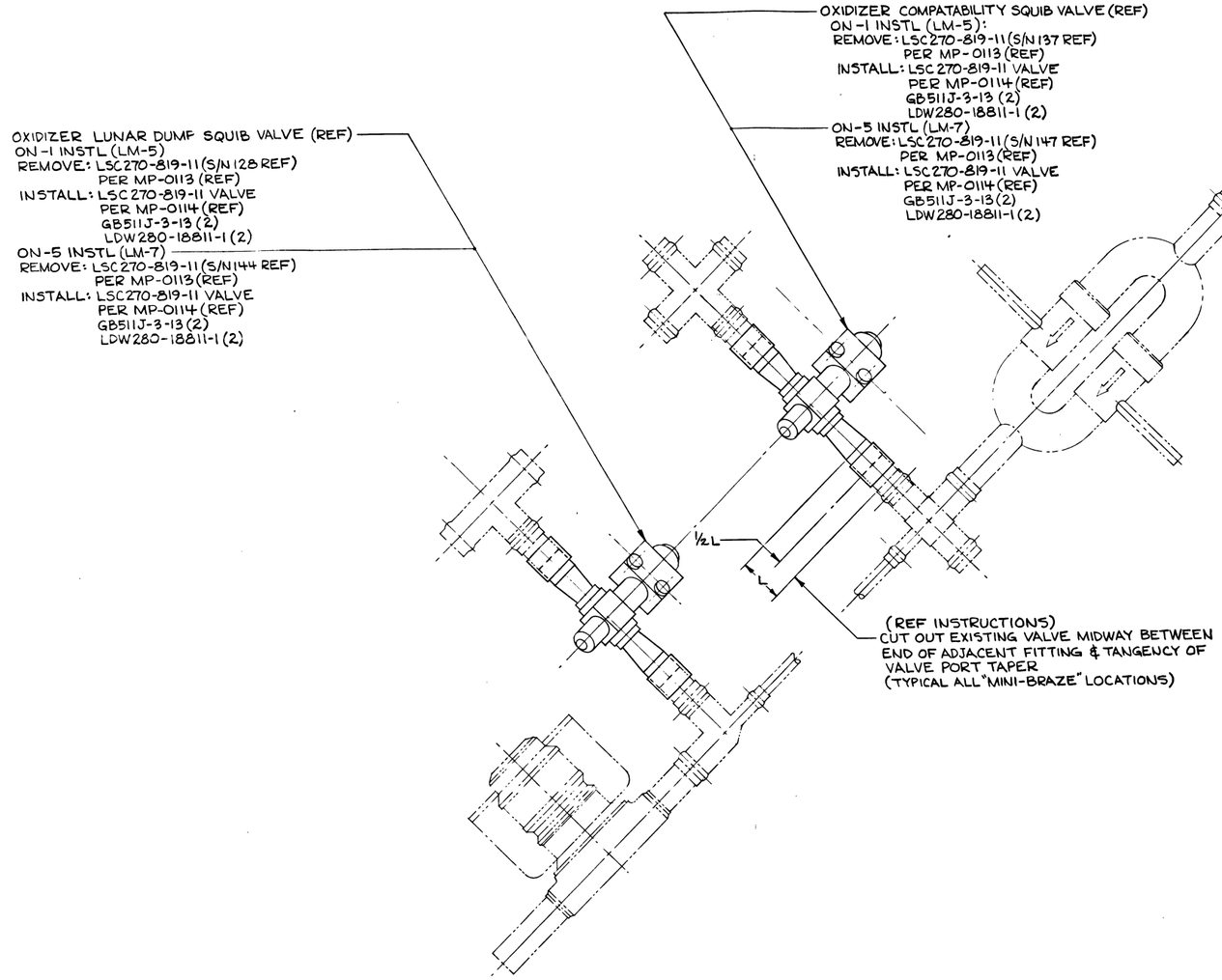
SCALE NONE SHEET 2.00

(2)

ENG 77.2 7-65

01

NAS 9-1100



-1 EXPLOSIVE VALVE REWORK INSTALLATION
-3 EXPLOSIVE VALVE REWORK INSTALLATION
-5 EXPLOSIVE VALVE REWORK INSTALLATION

01 / 02

NAS 9-1100

R COMPATABILITY SQUIB VALVE (REF)
NSTL (LM-[illegible]):
E: LSC270-819-11 (S/N 137 REF)
PER MP-0113 (REF)
LL: LSC270-819-11 VALVE
PER MP-0114 (REF)
GB511J-3-13 (2)
LDW280-18811-1 (2)
NSTL (LM-[illegible]):
E: LSC270-819-11 (S/N 147 REF)
PER MP-0113 (REF)
LL: LSC270-819-11 VALVE
PER MP-0114 (REF)
GB511J-3-13 (2)
LDW280-18811-1 (2)

REF INSTRUCTIONS)
UT OUT EXISTING VALVE MIDWAY BETWEEN
ND OF ADJACENT FITTING & TANGENCY OF
ALVE PORT TAPER
TYPICAL ALL "MINI-BRAZE" LOCATIONS)

FUEL COMPATABILITY SQUIB VALVE (REF)
ON-5 INSTL (LM-7):
REMOVE: LSC270-819-11 (S/N 145 REF)
PER MP-0113 (REF)
INSTALL: LSC270-819-11 VALVE
PER MP-0114 (REF)
GB511J-3-13 (2)
LDW280-18811-1 (2)

FUEL LUNAR DUMP SQUIB VALVE (REF)
ON-3 INSTL (LM-6):
REMOVE: LSC270-819-11 (S/N 134 REF)
PER MP-0113 (REF)
INSTALL: LSC270-819-11 VALVE
PER MP-0114 (REF)
GB511J-3-13 (2)
LDW280-18811-1 (2)

NOTES:
1. COMMERCIAL PART-SEE SPEC CONTROL DRAWING BEFORE ORDERING.

-1 EXPLOSIVE VALVE REWORK INSTALLATION
-3 EXPLOSIVE VALVE REWORK INSTALLATION
-5 EXPLOSIVE VALVE REWORK INSTALLATION

02/02 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK
SIZE D | CODE IDENT NO. 26512 | LDW200-55507
SCALE NONE | SHEET 3.00

LFM

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW200-55507		EO NO. A1
CONTROL INFO NO. LM 270-1912		

ADD NOTE *

* BRAZING OF LDW280-18811-1 FITTINGS SHALL BE IN ACCORDANCE WITH LSP14-6306 EXCEPT
a.) BRAZING INSERTION DEPTH SHALL BE .27 INCHES MINIMUM - METAL TO METAL CONTACT MAXIMUM.
b.) BRAZING INSPECTION LINE IS NOT REQ'D.

IN F.LD. REVISE, MP REF CALLOUTS AS SHOWN BELOW.
ON -3 MP-0122 (REF) WAS MP-0113(REF); MP-0123(REF) WAS MP-0114(REF)
ON -5 FOR FUEL COMPATIBILITY VALVE MP-0124(REF) WAS MP-0113(REF)
MP-0125(REF) WAS MP-0114(REF)
ON -5 FOR OX LUNAR DUMP & OX COMPATIBILITY, MP-0126(REF) WAS MP-0113(REF)
MP-0127(REF) WAS MP-0114(REF)

* USE NEXT AVAILABLE NOTE NUMBER

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓ LCO 3980 (5)

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
ESTABLISH BRAZING REQMTS JWK 5/29	ADDED NOTE *; REVISED MP REFERENCE CALLOUTS	SK 9/8/67

MODEL	EFFECTIVITY			DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
	PRECEDING ADVANCED NO. EO	GAEC UNIT NO.	SUB CONTR UNIT NO.	REVISE DWG	RECORD EO	REWORK	SCRAP	DATE								
									PROP	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ. ENGRG	CONT
LM	LFM426	LM 5(35)		✓		✓		9/27/67				9/26/67			9/26/67	9/29
LM	LFM426	LM 6(36)		PRIORITY		DRAWING TITLE						DRAWING NO.				EO NO.
LM	LFM426	LM 7(37)		C		EXPLOSIVE VALVE REWORK INSTL (REWORK OF LDW270-59304)						LDW200-55507				A1

ISSUED BY J. PAVLICA X1471 COORDINATED W/ J. MARTIN EEC SECTION LM PROPULSION GROUP NO. 270 PL 25

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200-55507 | EO NO. A2
CONTROL INFO NO. LM270-1918

ON -3,-5 INSTALL LSC270-819-11-1 (WAS)
INSTALL LSC270-819-11

FOR -3 ADD TO THE FOLLOWING CALLOUTS:
OXIDIZER LUNAR DUMP VALVE,
OXIDIZER COMPATIBILITY VALVE,
FUEL COMPATIBILITY VALVE,
"ON -3 REMOVE LSC270-819-11 "
INSTALL LSC270-819-11-1

FOR-5 ADD TO "FUEL LUNAR DUMP VALVE" CALLOUT
"ON -5 REMOVE LSC270-819-11
INSTALL LSC270-819-11-1 "

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCD 3980 cp (5)

REASON FOR EO: PRECLUDE INSTL OF INTERNALLY BRAZED EXPLOSIVE VALVES

DESCRIPTION OF EO: "NOTED"

GAEC EO RELEASE: VK 6/17/69

MODEL	EFFECTIVITY			DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
	~~PRELIMINARY AGREEMENT~~ EO	GAEC UNIT NO.	SUB CONTR UNIT NO.	REVISE DWG	RECORD EO	REWORK	SCRAP	DATE								
LM	LFM 426	LM 6(36) ✓						6/1/69			6/17/69			6/12/69	6/17/69	
		LM 7(37)						PROD	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ. ENGRG	DOC	
				PRIORITY	DRAWING TITLE			DRAWING NO.							EO NO.	
				C	EXPLOSIVE VALVE REMOVE INSTL -O/P REMOVE OF LDW270-54304-LFM426			LDW200-55507							A2	

ISSUED BY J. PAVLICA X1471 SECTION LM PROPULSION GROUP NO. 270 PL 25

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200-55307 | EO NO. A3

CONTROL INFO NO. LM270-1923

THIS EO CANCELS EO A_2
IN ITS ENTIRETY

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	1 LCD 3280	51

REASON FOR EO: ELIMINATE SCHEDULE IMPACT

DESCRIPTION OF EO: CANCELLED EO A_2

GAEC EO RELEASE: SAB 6/21/67; JK 6/23/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY EFF	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LEM 926	LM6(36), LM7(37)	

DRAWING CHANGE REQD: REVISE DWG ✓; RECORD EO; DISPOSITION OF PARTS: REWORK ✓; SCRAP

PRIORITY: C

DRAWING TITLE: EXPLOSIVE VALVE REWORK INSTL-OF REWORK OF LDW270-59504-LEM926

DRAWING NO.: LDW200-55307

EO NO.: A3

APPROVED BY										
DATE	6/20			6/21				6/21	6/21	6/21
	ADD	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG			

ISSUED BY J. PAVLICA X1471 SECTION LM PROPULSION GROUP NO. 270 PL 25

01

NAS 9-1100

LDW200-55508

LFM

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW200-55508-1		GAEC SCH NO.	
								LFM 443	LDW280-54508	LM-6(36)	1
								LFM 443	LDW280-54508	LM-5(35)	1

WORK PACKAGE FUNCTION NO. 111 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00		3.00					
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED: B
LAST DASH NO. USED: -1

GRUMMAN REL INFO
PRIM NO. JK(104)
207 MG-16 5-26-69

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ±.020 ± 1/2°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE V
LCD 5026, PKG #30, PG #1

CONTRACT NO. NAS9-1100 | LINE ITEM | DOCUMENTATION TYPE II

DRAWN BY	J.J.ROGERS 5/29/69			
LAYOUT BY	J.J.ROGERS 5/29/69			
CHECKED BY	J. Jarrs 5-26-69			
GR. LEADER	[illegible] 5/27/69			
VEH DES INT	[illegible] 5/26/69			
STRUCTURE		PROJ ENGR	[illegible]	
STRUCTURE	[illegible] 5/26/69	REL GROUP	[illegible]	

(6) GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

REWORK INSTL ~ DESCENT STAGE ~ AFT UPPER DECK
(REWORK OF LDW280-54508 LFM 443)

SIZE B | CODE IDENT NO. 26512 | LDW200-55508

SCALE NONE | SHEET 1.00 OF 3.00 (6)

C. D. R. ~ 5-26-69

ENG 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY	PART NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
	LDW200-55508-1	E		REWORK INSTL					NONE	120	

SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC
						120	BRUSH ALODINE	MIL-C-5541

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH NONE

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

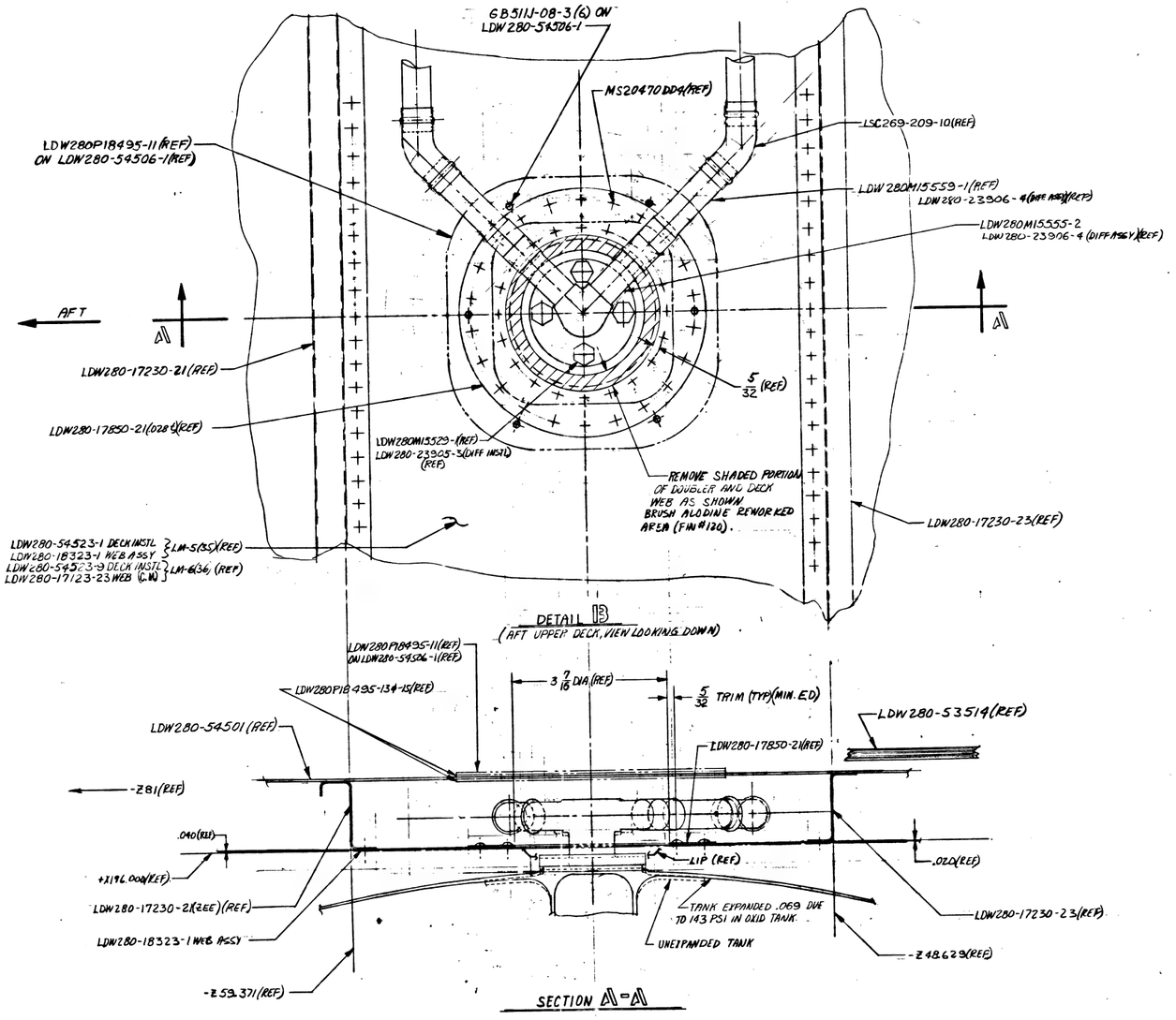
SIZE	CODE IDENT NO.	
B	26512	LDW200-55508

SCALE NONE SHEET 2.00

ENG 77.2 5-64

01

NAS 9-1100



PRINT THIS LINE
THIS SIZE SHEET WHEN TO 192 in 8.5 IN FT
IN THIS SIZE WHEN IN FT Follow 2.2 IN FT

DWG SIZE "B"
PRINTING ONLY

LDW200-55508 B

LDW200-55508 A

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK			
SIZE	CODE IDENT NO.	LDW200-55508	
	26512		
SCALE FULL		SHEET 3.00	

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200-5550B | EO NO. A1

CONTROL INFO NO. LM-5-21815

SHEET 3.00, ON -1 INSTL

IN ZONE 2A, ON "5/32 TRIM" CALLOUT ADD FOLLOWING: "LESS THAN 5/32 MIN E.D. PERMISSIBLE ON 10 RIVETS (MAX. OF 4 RIVETS 3/32 E.D. & REST OF 10, 1/8 MIN. E.D.)"

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	LCD 5026 (61)
			REASON FOR EO: TO INCREASE CLEARANCE BETWEEN OX TANK & UPPER DECK
			DESCRIPTION OF EO: ON -1 INSTL (ZONE 2A) ADDED "LESS THAN 5/32 MIN. E.D. ---" TO "5/32 TRIM" CALLOUT

GAEC EO RELEASE: (B) JK (C) JS

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 443	LM-5 (35)	
LM	LFM 443	LM-6 (36)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: REWORK ✓ | SCRAP

APPROVED BY									
	VDI	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
DATE				6-8-69	6-5-69	6/5/69	6/23/69	6-25-69

PRIORITY: C

DRAWING TITLE: REWORK INSTL D/S - AFT UPPER DECK

DRAWING NO.: LDW200-5550B

EO NO.: A1

ISSUED BY LIAISON E. V. BERGEMAN W86255 SECTION VD1 GROUP NO. 280 PL 25

01

NAS 9-1100

LDW200-55509 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW200-55509-1		GAEC SCH NO.	
								LFM 437	LDW280-54508	LM-7(37)	1
								LFM 437	LDW280-54508	LM-6(36)	1
								LFM 437	LDW280-54508	LM-5(35)	1

WORK PACKAGE FUNCTION NO. 110 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00	1.10	2.00	3.00						
REV	A	A	A	A						
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED	A	GRUMMAN REL INFO	A
LAST DASH NO. USED	-1	PRIM NO.	JK 10-4 WE-1C-P 5/7/9

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/16 ±.062 ±1/2°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
	LCD 5004

CONTRACT NO. NAS 9-1100 | LINE ITEM | DOCUMENTATION TYPE II

DRAWN BY				
LAYOUT BY	DON RAGAS 5-26-69			
CHECKED BY				
GR LEADER	P.S.T. 5-26-69			
VEH DESINT	J.H.S. 5-26-69			
STRESS	W.H. 5-26-69	PROJ ENGR	J.A.P. 5-26-69	
THERMO	E.L. 5-26-69	REL GROUP	A.C. 5-26-69	

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

STRAP INSTALLATION
DESCENT STAGE~QUAD II THERMAL
INSULATION (REWORK OF LDW280-54508 LFM)

SIZE	CODE IDENT NO.		
B	26512	LDW200-55509	A (A)

SCALE NONE | SHEET 1.00 OF 4

ENG 77.1 12-65

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00, 1.10, 2.00, 3.00		LFM-437		✓		EOA1 LCD 5004	INITIAL DRAWING RELEASE, INSTL MADE PER EO. ADDED SHEET 1.10	LM-5, LM-6 & LM-7	NOT	REQD	MARKARIAN 7/24/69		

CHG APPROVED	LTR	GROUP LDR	VEHDESINT	STRESS	THERMO
	A				

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW200-55509	A

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
AR		NAS1097AD3	E	RIVET	IND STD						
1		NAS697A08		NUT, PLATE	IND STD						
1		MS21042-08		NUT, SELF LOCKING	GOVT STD						
1		GS11P-1-054		STRIP	GRUMMAN STD						
1		GB511J-08-2		BOLT	GRUMMAN STD						
-1		LDW200-55509-1	E	STRAP INSTL					NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW200-55509	A (A)

SCALE NONE SHEET 2.00

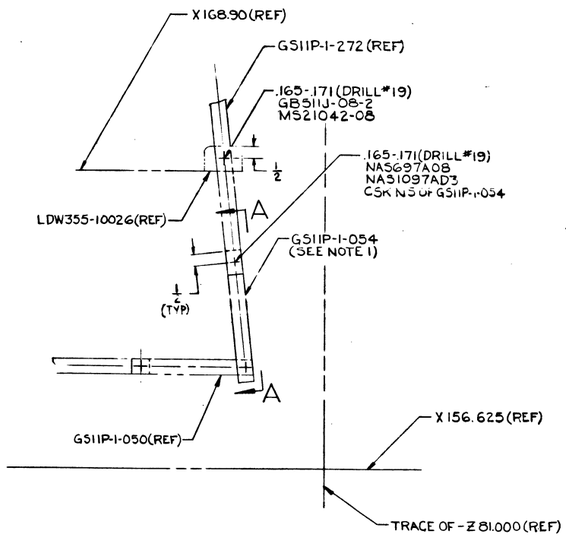
FNG 77 2 7-66

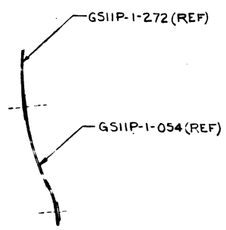
01

NAS 9-1100

SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED (DSC) USE BOTH SIDES IF NECESSARY	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL RIVETS IN ACCORDANCE WITH	

NOTES:
1. REMOVE GS11P-1-047 & ADD GS11P-1-054. (LDW280-54665 (REF))





VIEW A-A

LDW200-55509-1 INSTL

GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714			
SIZE D	CODE IDENT NO 26512	LDW200-55509	A
SCALE HALF		SHEET 3 OF	

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG NO. LOW200-55509 | EO NO. B1

CONTROL INFO NO. LOW280B8894

ON -1 IN FLD & B/M
To C/O GB511J08-2 & MS21042-08
ADD LM-5 (35) ONLY

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	LCD 5004

REASON FOR EO: LGC REPAIR MODULE INSTL PROVISIONS NOT USED LM-6 THRU LM-14 TK

DESCRIPTION OF EO: To C/O GB 511 J08-2 & MS 21042-08 ADD LM-5 (35) ONLY

(5)

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM437	LMC(36) & LM-7(37)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		✓	

PRIORITY: C

DRAWING TITLE: STRAP INSTL - DVS - QUAD II THERMAL INSULATION (REWORK OF LOW280-54508, LFM)

DRAWING NO.: LOW200-55509

EO NO.: B1

APPROVED BY	DATE	SUPPORT	RELIAB. GROUP	GAEC EO RELEASE	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
[illegible]	9/11/69			9/16/69	9/11/69	9/11/69	9/16/69	9/17/69

ISSUED BY E.J. COMISKEY, 87222 SECTION V01 GROUP NO. 335 PL 25

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 22.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200-55509 | EO NO. B2

CONTROL INFO NO. LM83-5113

ON -1 INSTALLATION

IN FIELD & B/M RESTRICT -1 INSTALLATION TO LM-5(35) & LM-6(36)

DETAIL SPEC REQ | CI 'Z' ENGRG CHG | CI 'T' ENGRG CHG | LCD 5004F (183)

REASON FOR EO: LGC REPAIR MODULE INSTALLATION PROVISIONS NOT REQD, MODULE NOT USED ON LM-7

DESCRIPTION OF EO: ON -1 RESTRICTED -1 INSTALLATION TO LM5 & LM6

GAEC EO RELEASE: R

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 437	LM-7	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: REWORK ✓ | SCRAP

APPROVED BY	DATE	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
[illegible]	10/23/69		11/1/69			10/23/69
VDI: KSC	11/6/69					10/27/69

PRIORITY: C

DRAWING TITLE: STRAP INSTL. D/S - QUAD II THERMAL INSUL (REWORK OF LDW 280-54508, LFM

DRAWING NO.: LDW200-55509

EO NO.: B2

ISSUED BY C.E. SCHULT

SECTION VDI/KSC

GROUP NO. 812 PL 83

01

NAS 9-1100

LDW200-55510

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LFM 456	LDW280-54508	LM-5(35)	1
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW200-55510-1		GAEC SCH NO.	

WORK PACKAGE FUNCTION NO. 111 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00		2.00		3.00					
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED	D
LAST DASH NO. USED	-11

GRUMMAN REL INFO

PRIM NO.	JK 10/4	
207	ME-16 6/13/69	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ± .020 ± 1/2°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD5048	

CONTRACT NO.	NAS 9-1100	LINE ITEM	DOCUMENTATION TYPE II
DRAWN BY	J.J. ROGERS 6-12-69	THERMO	
LAYOUT BY	J.J. ROGERS 6-12-69		
CHECKED BY	6-13-69		
GRP LDR	6-13-69		
VEH DES INT	6/13/69		
STRUCTURES		PROJ ENGR	6/13/69
STRUCTURES	6/13/69	REL GROUP	

(R) GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

MESA REWORK INSTL~DESCENT STAGE~CAM-LOCKPIN SAFETY
REWORK OF LDW280-54508 LFM 456)

SIZE	CODE IDENT NO.	
B	26512	LDW200-55510

SCALE NONE SHEET 1.00 OF 3.00

ENG 77.1 12-65

Q1 NAS 9-1100

QTY PER ASSEMBLY			CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
	A/R			GW511A2	E	WIRE	GRUMMAN STD						
	1			GW10P-1		WASHER							
	1			GW10H-1		WASHER							
	A/R			GT835P-8		TAPE							
2				GS830H-248N3		SLEEVE							
	8			GS530AC1		SLEEVE							
	2			GN512CF06C		NUT							
1				GL10G3-14		LANYARD							
	2			GB511J06-11		BOLT							
	1			GB10J-2		BUSHING	GRUMMAN STD						
1				LDW280M18192-11		FITTING	SEE DWG						4C
1				LDW200-55510-11		PIP PIN	MAKE FROM CP5130AT2						4B
		1		LDW200-55510-3		FITTING ASSY							
				LDW200-55510-1	E	MESA REWORK INSTL.							
	-3	-1											

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

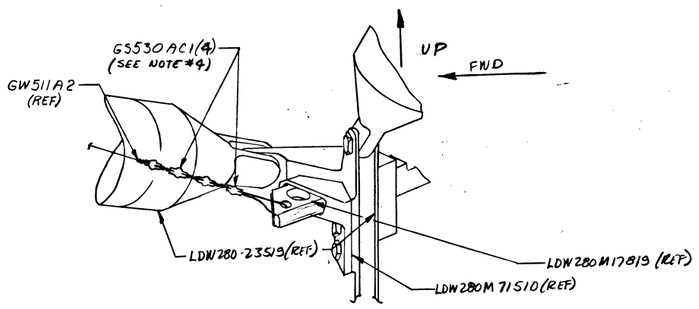
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55510

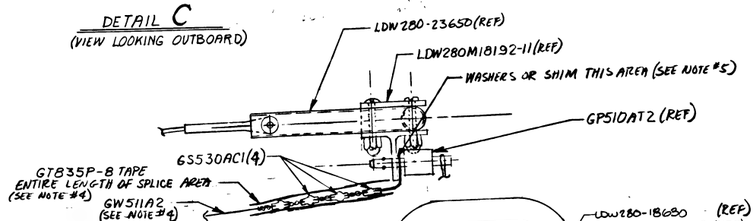
SCALE NONE SHEET 2.00

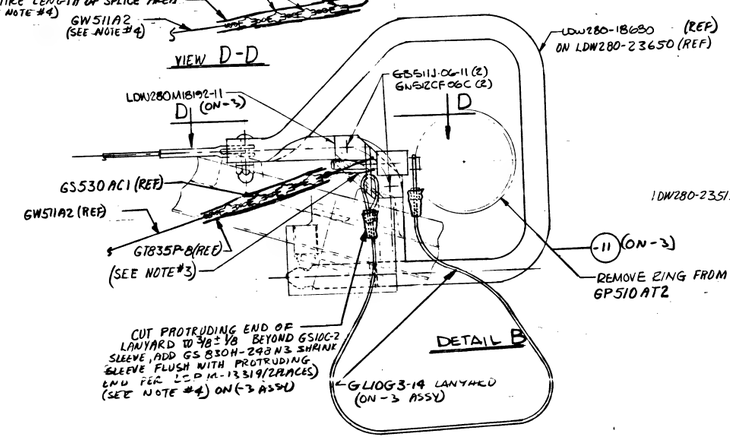
ENG 77.2 7-65

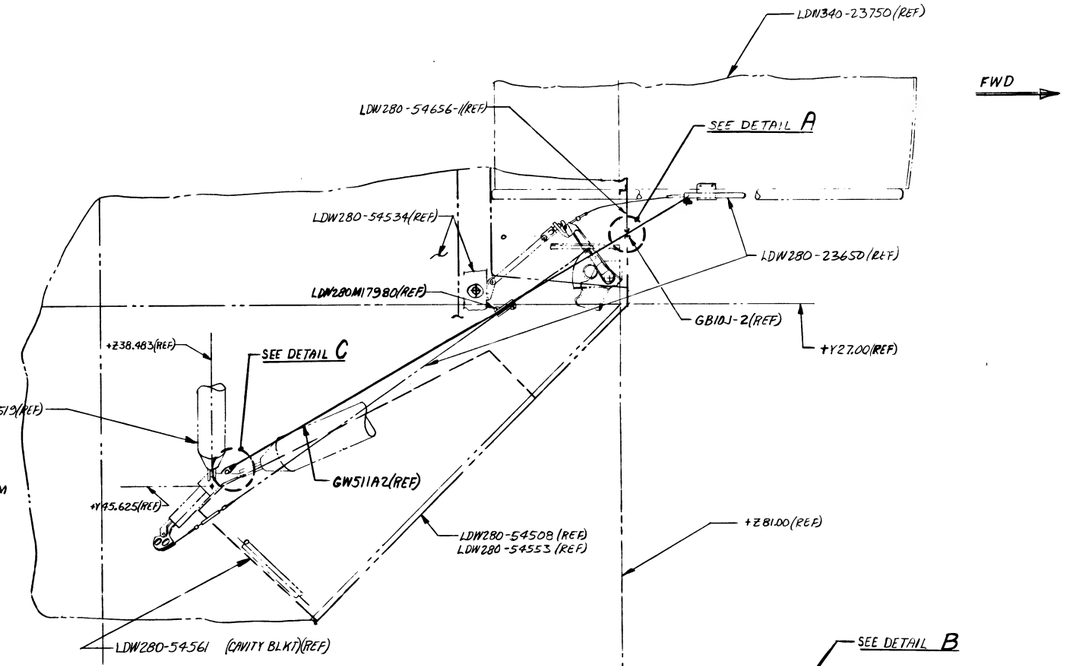
0 1 NAS 9-1100

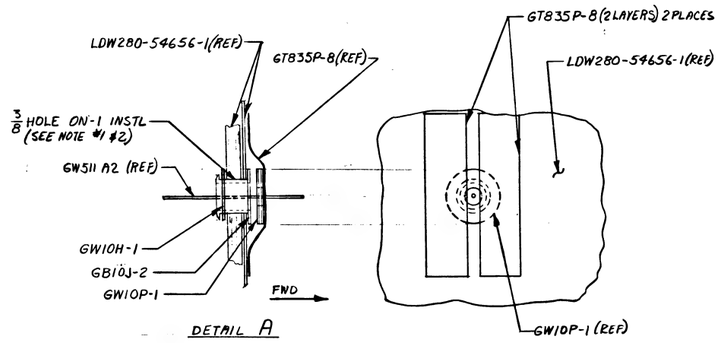


DETAIL C
(VIEW LOOKING OUTBOARD)



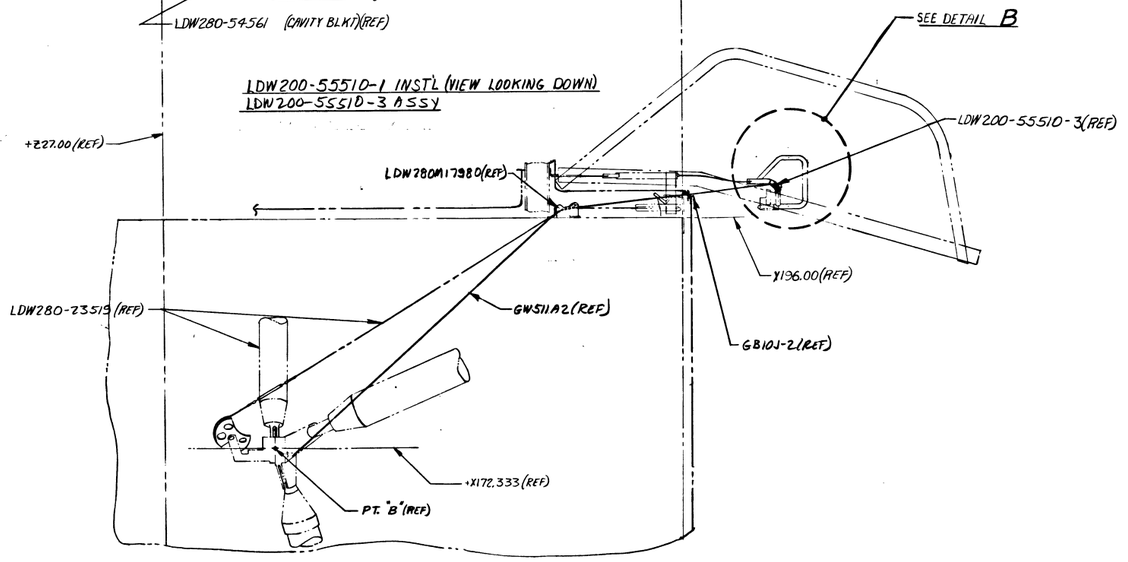






DETAIL A

LDW200-55510-1 INSTL (VIEW LOOKING DOWN)
LDW200-55510-3 ASSY



VIEW LOOKING INB'D

NOTES:

1. APPLICABLE
LPC 280

2. LOCATION OF
ENGINEERING

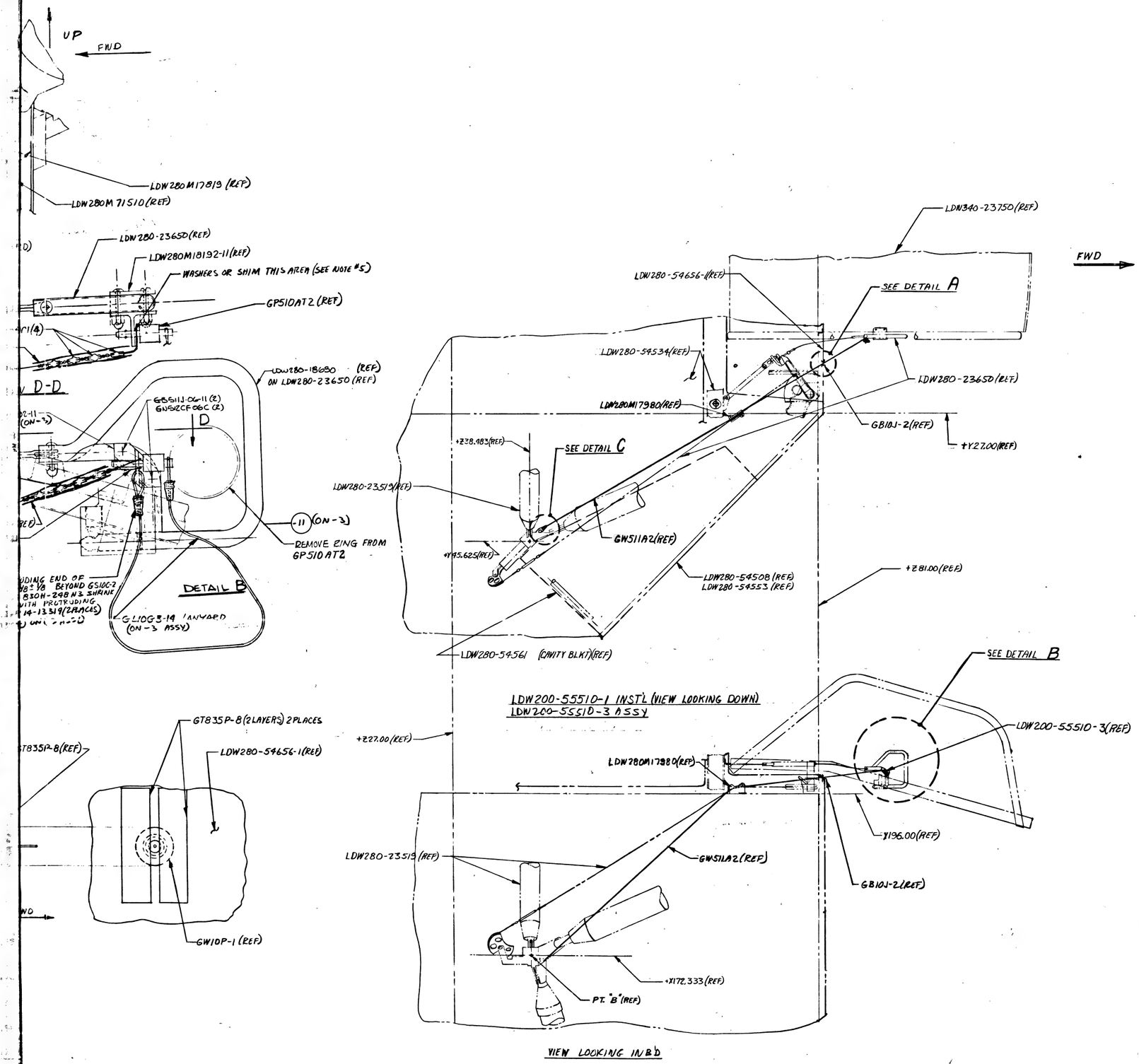
3. FILL VOID BET
LDW280-18630
CUKE HANGE I

4. CREW HAZARD-
COVERAGE OF

5. CUT GNS11A2 (
(SLEEVE) ON W
(CAM) AS SHOW
END THROUGH
AND 6 INCH
BERKLEY & C
SE IN LINE
3 TO 7 TURNS
FROM FIRST
& CLEANING
OFF MIRROR
THREAD FREE
(LDW280M179
TO EXIT LOC
BACK OFF C
FLUSH WITH
FULLY LOCKE
FOUR GS530A
TWIST FREE H
LOOP AROUND
WHILE MAIN
TWO IGN FIRE
TAIL AND CR
AS NOTED ABO
SLEEVES.
RETIGHTEN CAM
AND CYCLE M
(BE INSTALL G
TO INSERT W
LDW280M181
NECESSARY

FDM502 42210 4M-2000

NAS 9-1100



NOTES:

1. APPLICABLE PROCEDURES:
   LPC 280-1 FABRICATION

2. LOCATION OF HOLE SHALL BE DETERMINED FROM ENGINEERING APPROVED MASTER TEMPLATE.

3. FILL VOID BETWEEN LDW280M18192-11 FITTING AND LDW280-18630-5-2 HANDLE WITH EPON 934 PER LSP14-2250Q CURE RANGE 1(ROOM TEMP CURE), INSTALL WET.

4. CREW HAZARD- PARTS REQUIRE SPECIAL HANDLING TO INSURE COVERAGE OF ALL SHARP EDGES AND BURRS.

5. CUT GW511A2 (WIRE) TO 8 FT. LENGTH ±1". PLACE FOUR GS330AC1 (SLEEVE) ON WIRE, LEAD WIRE THROUGH HOLE IN LDW280M17319 (CAM) AS SHOWN IN DETAIL "C". FORMING LOOP, THREAD WIRE END THROUGH FIRST SLEEVE LEAVING APPROX 1 INCH LOOP AND 6 INCH TAIL. CRIMP 2 PLACES WITH TOOL #C18 MADE BY BERKLEY & CO. SPIRIT LAKE, IOWA. (C CRIMPS ON SLEEVE TO BE IN LINE NOT 90° TO EACH OTHER) TWIST WIRE ABOUT 5 TO 7 TURNS, SLIDE SECOND SLEEVE TO APPROX. ½ TO ⅝ INCH FROM FIRST SLEEVE, THEN DOUBLE CRIMP. REPEAT TWISTING & CRIMPING FOR NEXT TWO SLEEVES. CUT FREE END OF WIRE OFF APPROX ¾ INCH FROM LAST SLEEVE.
   THREAD FREE END OF WIRE THROUGH CABLE GUIDE (LDW280M17980) ON TOP DECK. RUN WIRE UNDER BLANKET TO EXIT LOCATION AS SHOWN IN DETAIL "A".
   BACK OFF CAM RETENTION NUT UNTIL BACK OF NUT IS FLUSH WITH END OF CAM THREAD. CHECK MESA LOCKPIN FOR FULLY LOCKED POSITION AS DEFINED IN LEI 280-021. PLACE FOUR GS530AC1 SLEEVE ON FREE END OF WIRE. PULL THE WIRE TAUT FORM 4 ROUND EDGE OF LDW280M18192 FITTING AND LOOP AROUND GP510AT2 PIP PIN AS SHOWN IN DETAIL "B". WHILE MAINTAINING TAUTNESS OF WIRE, THREAD WIRE END THROUGH FIRST SLEEVE MAINTAINING LOOP WITH APPROX ½ INCH TAIL AND CRIMP SLEEVE (2 PLACES) AS NOTED ABOVE. PROCEED AS NOTED ABOVE WITH INSTALLATION OF REMAINING THREE SLEEVES.
   RETIGHTEN CAM RETENTION NUT, RELEASE GP510AT2 PIP PIN AND CYCLE MESA LOCKPIN TO CHECK EASE OF OPERATION. REINSTALL GP510AT2 PIP PIN AND WIRE. IT IS PERMISSIBLE TO INSERT WASHERS OR SHIM UP TO .090 MAX. BETWEEN LDW280M18192 FITTING SURFACE AND WIRE LOOP IF NECESSARY TO MAINTAIN TAUTNESS.

102402 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK		
SIZE D	CODE IDENT NO. 26512	LDW200-55510
SCALE NONE		SHEET 3 OF 3

LDW200-55510 REV B

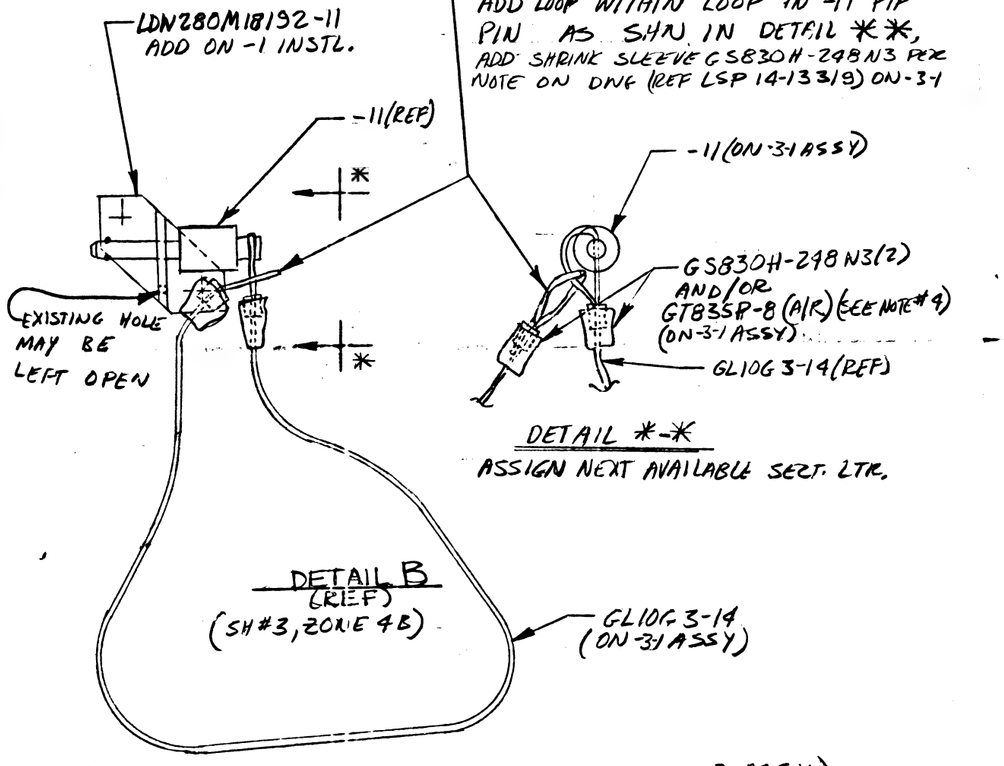
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LDW200-55510 | EO NO. A1
CONTROL INFO NO. LDW280B8195

ENG 32.2 REV 3-65

REMOVE LDW280M18192-11 FROM -3 ASSY & ADD TO -1 INSTL.
REMOVE -3 ASSY AND CREATE -3-1 ASSY IDENTICAL TO -3 ASSY
EXCEPT AS SHN. ADD -3-1 ASSY ON -1 INSTL.

(REWORK INFO ONLY):
REMOVE LOOP OF GL10G3-14 LANYARD FROM LDW280M18192-11 FITTING AND ADD LOOP WITHIN LOOP IN -11 PIP PIN AS SHN IN DETAIL **, ADD SHRINK SLEEVE GS830H-298N3 PER NOTE ON DWG (REF LSP 14-1331/9) ON -3-1



DETAIL **
ASSIGN NEXT AVAILABLE SECT. LTR.

(-3-1 ASSY MAY BE MADE BY REWORKING -3 ASSY)

NAS 9-1100

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG		V	LCD 5048 PKG #50, PG # 2										(5)
REASON FOR EO: ASTRONAUT FEELS TOO HIGH A LOAD CAN BE APPLIED TO "D" HANDLE AND NOT TO PIP PIN AS IS. (DIR #64) TR							DESCRIPTION OF EO: ADDED -3-1 ASSY & ADDED DETAIL **. REMOVED -3 ASSY. ADDED LDW280M18192-11 TO -1.										GAEC EO RELEASE: JK 6-27-69
EFFECTIVITY					DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
MODEL	EI [redacted]	GAEC UNIT NO.	SUB CONTR UNIT NO.		REVISE DWG	RECORD EO	REWORK	SCRAP	DATE	6/27/69	6/27/69		6/27/69	NM 6/27/69		JK 6/27/69	
										VDI	THERMO	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
LM	LFM456	LM-5(35)			PRIORITY C	DRAWING TITLE: MESA REWORK INSTLN D/S CAM LOCKPIN SAFETY (REWORK OF LDW280-5452 LFM456)			DRAWING NO. LDW200-55510								EO NO. A1

ISSUED BY J.J. ROGERS / P. THORJUSEN X87222 SECTION VEH DES & INT GROUP NO. 335 PL 25

6/27/69

LDW200-55511

LFM

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		LFM* 458	LDW320-23500	LM-5(35)	4
								PART NO. LDW200-55511-1		GAEC SCH NO.	

WORK PKG FUNCTION NO. 111 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH											
SHEET	1.00		2.00		3.00						
REV											
SHEET											
REV											
SHEET											
REV											

		GRUMMAN REF INFO	
LAST SECT LTR USED	C	PRIM NO.	JK(024)
LAST DASH NO. USED	-39	207	ME-16 6/12/69

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ~ ~

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 5046	

CONTRACT NO. NAS 9-1100 LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	F. SHANLEY	THERMO	R Hewitt	
LAYOUT BY	D. KLINGENER	M&E		
CHECKED BY	J.D.COBB 6-11-69			
GRP. LEADER	6-11-69			
VDI	6/11/69			
STRUCTURES	MK 6/11/69	PROJ ENGR		
STRUCTURES	W/H 6/11/69	REL GROUP	6-12-69	
WEIGHTS				

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BLANKET INSTL. - DESCENT STAGE
LANDING GEAR STRUT LOWER
REWORK OF LDW320-23500 FOR LFM* 458

SIZE	CODE IDENT NO.	
B	26512	LDW200-55511

SCALE NONE SHEET 1.00 OF 3

CDR 6-11-69

ENG 77.1 12-65

Q1 NAS 9-1100

QTY PER ASSEMBLY -5	QTY PER ASSEMBLY -3	QTY PER ASSEMBLY -1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
3				MS20427F4-4	E	RIVET	GOV. STD.						
A/R	A/R			GT835P-8	E	TAPE	GRUMMAN STD.						
	ALT.			GC501S-116	E	CLAMP	GRUMMAN STD.	SEE NOTE 6					
A/R				GW10N-3	E	WASHER	GRUMMAN STD.						
A/R				GR11B-1		RETAINER	GRUMMAN STD.						
2				GP15b-10-5		PATCH	GRUMMAN STD.						
1				LDW200-55511 -39		CLAMP	MAKE FROM	GC501S-80					
1				LDW200-55511 -37		CLAMP	MAKE FROM	GC501S-80					
	A/R			LDW200-55511-35		POLYIMIDE FILM	SEE NOTE 3						
A/R				-33		POLYIMIDE FILM	SEE NOTE 2						
	A/R			-31		POLYIMIDE FILM	SEE NOTE 1						
		2		-25		BLOCK	SHEET PHENOLIC	MIL-P15035		.125 x 1 x 1½	NONE	NONE	
		1		-23		BLANKET							
	1			-21		BLANKET							
		3		-19		BLANKET							
		2		-17		↕							
		2		-15									
		2		-13		BLANKET							
		1		-11		BLANKET							
		1		-5		CLAMP ASSY					NONE	NONE	
		1		-3		BLANKET ASSY.					NONE	NONE	
				LDW200-55511 -1	E	BLANKET INSTL.					NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55511

SCALE NONE SHEET 2.00

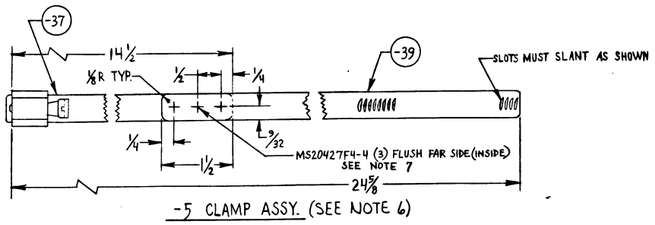
ENG 77.2 7-65

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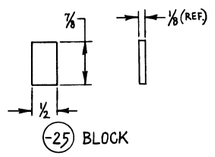
NAS 9-1100

NOTES:

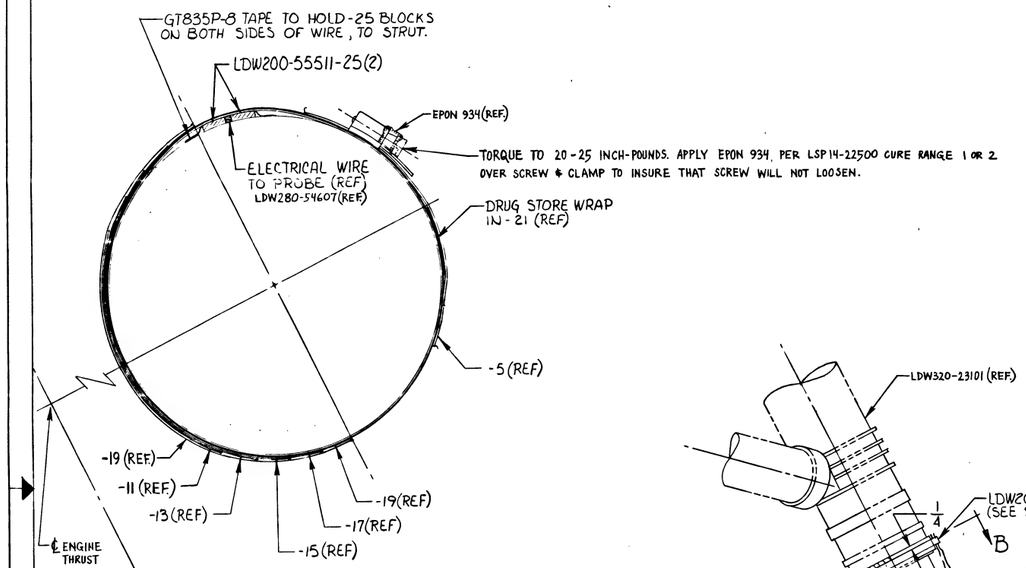
1. MAKE -31 FROM .005 POLYIMIDE FILM PER LSM14-5301A-TYPE VI A CLASS 1, 2 OR 3
2. MAKE -33 FROM .00025 POLYIMIDE FILM PER LSM14-5301A-TYPE II A CLASS 1
3. MAKE -35 FROM .005 POLYIMIDE FILM PER LSM14-5301A-TYPE VI - CLASS 1, 2 OR 3
4. APPLICABLE LPC'S - LPC280-1 - LPC280-2 - LPC280-3 - LPC280-8
5. FINAL SIZE & CONFIGURATION OF BLANKETS, WITH VENTS, FOLDS, FASTENERS & SEAM LOCATIONS, PER ENGINEERING APPROVED MASTER TEMPLATES.
6. GC5015-116 CLAMP MAY BE USED AS AN ALTERNATE FOR -5 CLAMP ASSY.
7. INSTALL FASTENERS PER LSP14-15302.



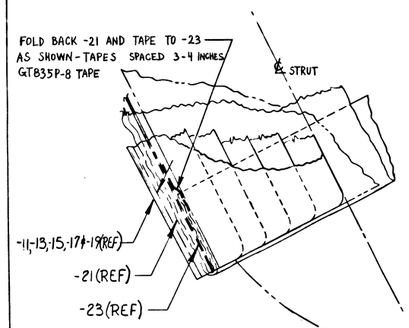
-5 CLAMP ASSY. (SEE NOTE 6)



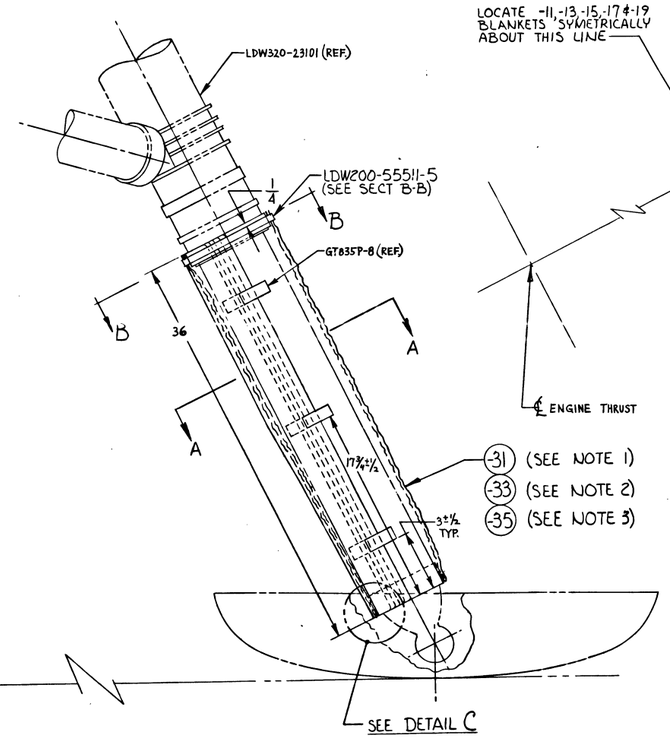
-25 BLOCK

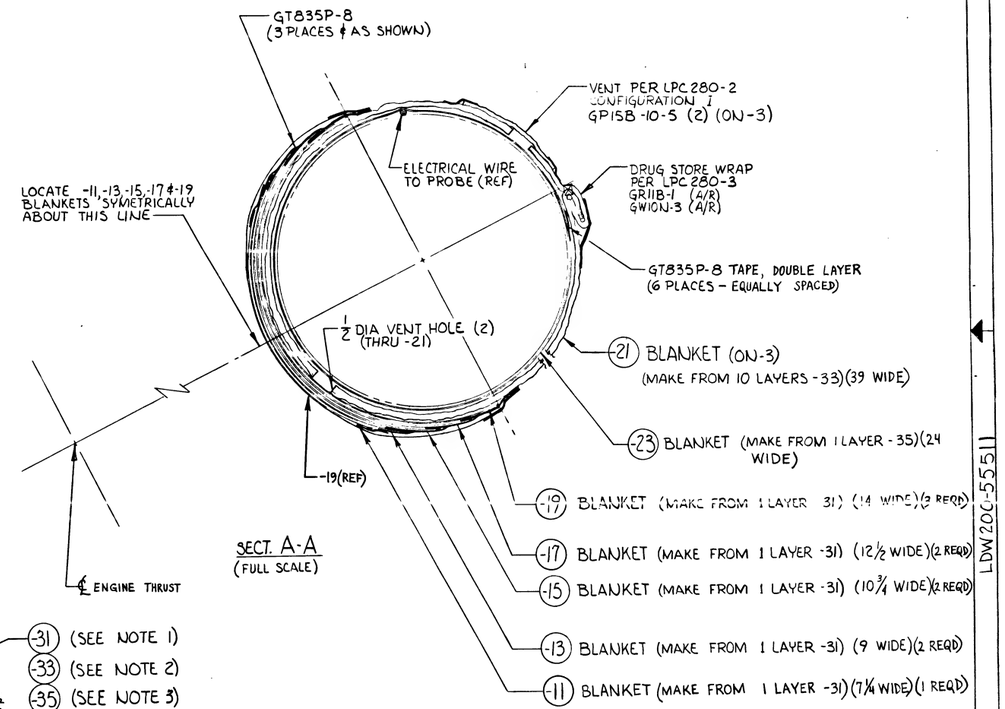


SECTION B-B
(FULL SCALE)



DETAIL C
(FULL SCALE)





SECT. A-A
(FULL SCALE)

LDW200-55511-1 BLANKET INSTL.
TYP. @ 4 LANDING GEAR STRUTS
(SCALE: ¼)

LDW200-55511-3 BLANKET ASSY (ON-1)

01 NAS 9-1100

LDW200-55511

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L.I., NEW YORK		
SIZE	CODE IDENT NO. 26512	LDW200-55511
SCALE NOTED		SHEET 3

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LE0280 | EO NO. 1466

CONTROL INFO NO. LDW280CB8010

ADD NOTE * TO THE FOLLOWING DWGS:
NOTE *: " PARTS MAY BE TRIMMED AS REQ'D ON INSTL"

PART NO.**	TITLE	NEXT ASSY	NOTE NO.	CHG LTR
LDW320-23700	SEE DWG	LDW320-54190		C4
LDW200-55511	SEE DWG	LDW280-54508		A1

* USE NEXT AVAILABLE NOTE NO

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	LCD5046 PKG 50 (5)

REASON FOR EO	DESCRIPTION OF EO
TO FACILITATE INSTL	IN FID ON ** ADDEDNOTE *

GAEC \ EO RELEASE DATE 6-14-69

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: NOT REQ'D	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP	APPROVED BY / DATE	GROUP LEADER	STRESS GROUP	DIVISION ENGINR	PROJ ENGRG	EO NO.
LM	LFM458	LM-5(35) LM-6(36) LM-7(37)		✓					VDI 6/14/69	6/14/69	6/14/69	6/14/69	6/14/69	1466
		LM-8(38) Thru LM-14(44)												

PRIORITY	DRAWING TITLE	DRAWING NO.
C	SEE ABOVE **	LE0280

ISSUED BY D.SHAPIRO/P.THORJUSEN X-87222 SECTION VDI GROUP NO. 335 PL 25

01

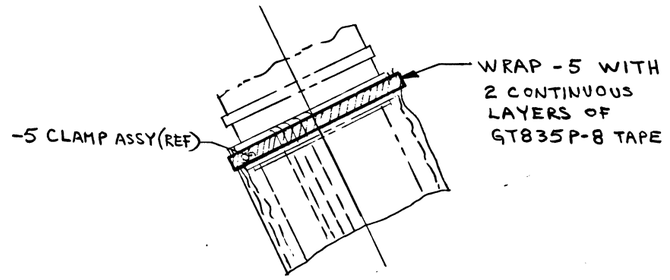
NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200-55511		EO NO. A2
CONTROL INFO NO. LDW280B 8011		



-1 INSTL

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	√	LCD 50462										PRG 50 (5)
REASON FOR EO: ADDITIONAL THERMAL REQUIREMENTS					DESCRIPTION OF EO: ON-5 ADDED GT835P-8 TAPE											GAEC EO RELEASE: JK 6/16/69
MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY								
LM	LFM 458	LM-5(35)						DATE	6/16/69	6/16/69		6-16-69	6-16-69	6/16/69	6/16/69	
									VDI	~~THERM~~	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
				PRIORITY: C	DRAWING TITLE: BLANKET INSTL. D/S LANDING GEAR STRUT LWR REWORK OF LDW320-23500							DRAWING NO.: LDW200-55511				EO NO.: A2

ISSUED BY V.A. CHRISTINA / P. THORJOSEN SECTION VDI x1153 GROUP NO. 280 PL 25

01 NAS 9-1100

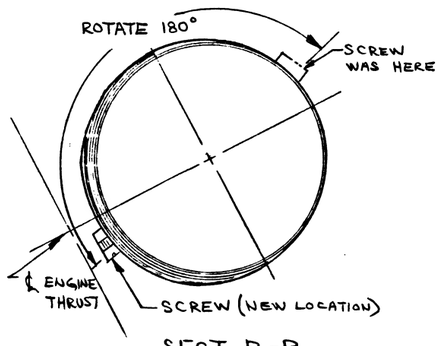
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

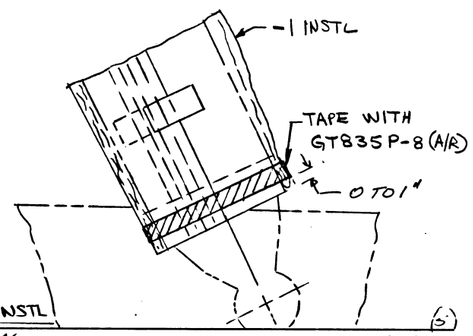
ENGINEERING ORDER

DWG. NO. LDW 200-55511		EO NO. A3
CONTROL INFO NO. LDW 280 B 8024		

REWORK -1 INSTL



SECT B-B
(REVISE PICTURE TO AGREE WITH INSTL)



(5)

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	J	LCD 5046	PKG 50

REASON FOR EO: ADDITIONAL THERMAL REQUIREMENTS

DESCRIPTION OF EO: ON-4 ADDED GT835P-8 TAPE TO LWR STRUT
REVISED SECTION B-B TO AGREE WITH INSTL

GAEC EO RELEASE: VK 7/17/69

MODEL	EFFECTIVITY			DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	REVISE DWG	RECORD EO	REWORK	SCRAP	DATE	6/16/69	6/16/69		NM 6-16-69	6-16-69		6/17/69	
LM	LFM 458	LM-5(3S)							VDI	SUPPORT THERMAL	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
				PRIORITY C		DRAWING TITLE: BLANKET INSTL B/S LANDING GEAR STRUT LWR REWORK OF LDW320-2						DRAWING NO. LDW200-55511				EO NO. A3

ISSUED BY V.A. CHRISTINA / P. THORJUSEN SECTION VDI X1153 GROUP NO. 280 PL 25

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LEO 280		EO NO. 1467
CONTROL INFO NO. LDW280B 8019		

IN MOD/BLK
ADD LM-6(36) & LM-7(37) REQMTS FOR LFM 458 TO THE FOLLOWING DWGS.

DWG NO.	DASH NO.	NO REQD	NEXT ASSY	TITLE	CHG NO
LDW200-55511	-1	4	LDW320-23500	SEE DWG	A4
LDW200-55514	-1-3	4EA	LDW280-54508	SEE DWG	A1

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD 5046 PKG 50	5

REASON FOR EO: ADDITIONAL INSULATION REQ'D ON LM-6 & LM-7 (LFM 458)

DESCRIPTION OF EO: IN MOD/BLK, ADDED LM-6 & LM-7 REQMTS FOR LFM 458 TO DASH NOS (*)

GAEC EO RELEASE: JK 6/16/69

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 458	LM-6(36) LM-7(37)	

DRAWING CHANGE REQD: ✓ REVISE DWG; RECORD EO

DISPOSITION OF PARTS: NOT REWORK; REQD SCRAP

APPROVED BY							
DATE	6/16/69	6/16/69	6-17-69	6/16/69	6-16-69	6/16/69	6/17/69
	VDI	SUPPORT THERMO	RELIABILITY	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG

PRIORITY: C

DRAWING TITLE: SEE DWG

DRAWING NO.: LEO 280

EO NO.: 1467

CDR 06/16/69
ISSUED BY S. TAMRES/P THORJUSEN x 86046 SECTION VDI GROUP NO. 280 PL 25

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NAS 9-1100

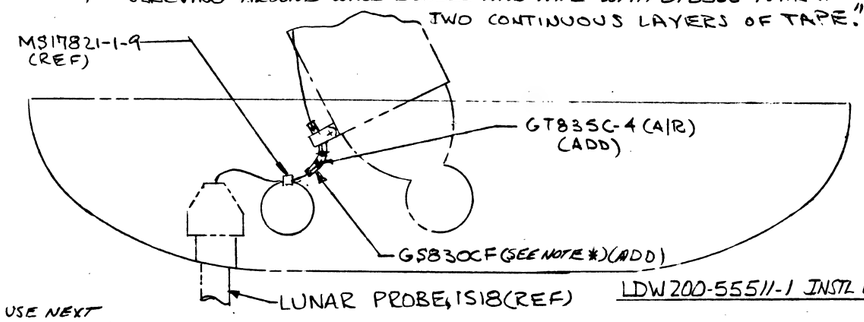
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200 55511 | EO NO. A5
CONTROL INFO NO. LDW200 B3191

REVISE MAIN VIEW AS SHOWN BELOW BY ADDING GS830CF SLEEVING AND GT835C-4 TAPE. IN B/M ON-1, ADD GT835C-4 TAPE(A/R) & GS830CF SLEEVING(1). ADD NOTE *: "USE GS830CF, 3" IN LENGTH AND CUT LONGITUDINALLY. WRAP SLEEVING AROUND WIRE BUNDLE AND TAPE WITH GT835C-4. WRAP TWO CONTINUOUS LAYERS OF TAPE."



LDW200-55511-1 INSTL (REF)

FOR * USE NEXT AVAILABLE NOTE NO.

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LDD 5016 PAGE 50 (5)

REASON FOR EO
TO COVER EXPOSED WIRING
TK

DESCRIPTION OF EO
IN F/D ADDED NOTE *. IN B/M F/D ADDED GT835C-4 TAPE & GS830CF SLEEVING. REVISED MAIN VIEW BY ADDING GT835C-4 & GS830CF

GAEC EO RELEASE: VK 6/26/69

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	DATE	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
LM	LFM458	LM-5(35) THRU LM-7(37)		✓		✓		VDI	4-6-69	4-21-69	6-24-69	6-26-69	6/26/69

PRIORITY: C
DRAWING TITLE: BLANKET INSTL - L.G. STRUT
DRAWING NO.: LDW200-55511
EO NO.: A5

ISSUED BY D. SHAPIRO/P. THORJUSEN X87222 SECTION VDI GROUP NO. 335 PL 25

Q1

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65 **ENGINEERING ORDER**

DWG. NO. LEO 280 | EC NO. 1673

CONTROL INFO NO. LDW 280 B 8343

ON THE FOLLOWING DWGS
REMOVE LM-7(37) EFFECTIVITY REMOVE LFM 458
(LFM 458)

DWG. NO.	TITLE	NEXT ASSY	CHG. LTR
LDW200-55511	SEE DWG.	LDW280-54508	AG
LDW200-55514	SEE DWG	LDW280-54508	AS

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | LCD 5046 PKG 50 (5)

REASON FOR EO: PARTS NO LONGER REQ'D

DESCRIPTION OF EO: REMOVED (LFM 458) FROM LM-7(37) EFF

GAEC EO RELEASE: 9-18-69 | 9/18/69 | 9/18/69 | 9/18/69

MODEL	EFFECTIVITY: PRODUCING ACTIVITY NO.	GAEC UNIT NO.	SUB-CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
LM	LFM 458	LM-7(37)					✓

APPROVED BY	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	VDI
DATE 9-15-69	VDI		9-15-69	9/16/69		9/18/69	

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SEE ABOVE	LEO 280	1673

CDR 9/22/69 ISSUED BY V.A. CHRISTINA / P. THORJUSEN SECTION VDI x87222 GROUP NO. 335 PL 25

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NAS 9-1100

LDW200-55512 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SEP NO.	REQD PER MODULE OR END ITEM
LFM 455	LDW280-54508	LM-7 (37)	1
LFM 455	LDW280-54508	LM-6 (36)	1
LFM 455	LDW280-54508	LM-5 (35)	1
PART NO. LDW200-55512-1		GAEC SCH NO.	

WORK PKG FUNCTION NO. 110 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH				
SHEET	1.00	1.10	2.00	3.00
REV	A	A	A	A
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED	A
LAST DASH NO. USED	-1

GRUMMAN REL INFO`A
PRIM NO. JK(624)
207 ME-JK-7/1/69

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
~ ~ ~

ORIG DWG`AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 5050	

CONTRACT NO. NAS 9-1100 LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	CHRISTINA	RELIABILITY	
LAYOUT BY	CHRISTINA	THERMO	MD 6/13/69
CHECKED BY	[signature]	MATL	FVO 6/13/69
GR LEADER	PST 6/13/69		
VEH DIS INT	JAP 6/13/69		
STRUCT	WJH 6/13/69	PROJ ENGR	JAP 6/13/69
STRUCT		REL GROUP	JK 6/13/69
WEIGHTS			

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

TEMP. CONT. COATING-DESCENT STAGE BASE HEAT SHIELD ~ REWORK OF LDW280-66661 FOR LFM455

SIZE	CODE IDENT NO.		
B	26512	LDW200-55512	A

SCALE NONE SHEET 1.00 OF 4

ENG 77.1 12-65

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00, 1.10, 2.00, 3.00		LFM 455		✓		EO A1 LCD 5050	EO A1 INITIAL DWG RELEASE. INSTL MADE PER EO.	LM 5	NOT	REQD	REDHEAD 6/25/69		
	2	2.00, 3.00		LFM 455		✓		EO A2 LCD 5050	IN F/D ADDED NOTE 3 & REMOVED NOTE 2.	LM 5	✓				
	3	1.00		LFM 455(6)		✓		EO A3 LCD 5050	ON -1 INSTL ADDED EFF LFM 455 LM-6 (36) & LM-7 (37) DF Hedrick	LM-6 & -7	NOT	REQD			

CHG APPROVED	LTR	GROUP LDR	VDI	STRUCT	STRUCT	WEIGHTS	RELIABILITY	THERMO	MATL
	A								

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW200-55512	A

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
-1		LDW200-55512-1	E	COATING INSTL					NONE	NOTE 3	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW200-55512	A

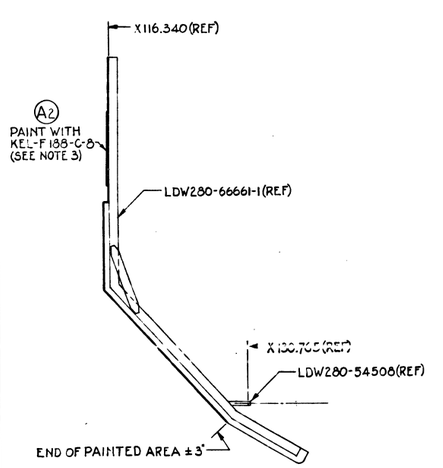
SCALE NONE SHEET 2.00

ENG 77.2 7-65

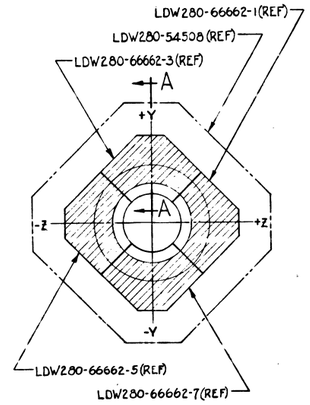
SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH MIL STD-130.	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.	
LENGTHS OF AN, MS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
INSTALL RIVETS IN ACCORDANCE WITH	

NOTES:

1. REWORK LDW280-66661-1 BY REMOVING LDW280-66662-19 & GT835P-8 TAPE.
2. ~~ON -1 INSTL CLEAN EXTERIOR SURFACE OF BASE HEAT SHIELD WITH SUITABLE FREON SOLVENT TO REMOVE TAPE RESIDUE. PAINT EXTERIOR SURFACE WITH WASH PRIMER, MIL-C-8514 PER LEI 521-6 TO THE AREA AS INDICATED.~~
3. ON -1 INSTL CLEAN EXTERIOR SURFACE OF BASE HEAT SHIELD WITH SUITABLE FREON SOLVENT TO REMOVE TAPE RESIDUE. PAINT EXTERIOR SURFACE WITH KEL-F 188-C-8 HEAT RESISTANT LACQUER PER LEI 521-7 TO THE AREA AS INDICATED.



SECTION A-A



VIEW LOOKING UP
ENGR REF ONLY

GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714			
SIZE C	CODE IDENT NO. 26512	LDW200-55512	A
SCALE NONE		SHEET 3.00	

LDW200-55512 A

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

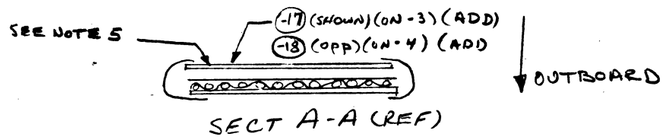
ENGINEERING ORDER

DWG. NO. LDW200-55513		EO NO. A1
CONTROL INFO NO. LDW280B8009		

IN B/M 4 F/D ON - 3 ADD -17(W)SKIN SEE NOTE *
IN B/M 4 F/D ON - 4 ADD -18(W)SKIN SEE NOTE *

ADD NOTE *: "-17 & -18 TO BE MADE FROM (1) LAYER OF .0005 INCONEL 600 FOIL PER AMS 5540"

REVISE NOTE 5 AS FOLLOWS: " -5 & -6" S/B "-17 & -18"
REVISE SECTION A-A AS SHOWN below



SECT A-A (REF)

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCD 5046 PKG 50	(5)

REASON FOR EO: PROVIDE MAT'L FOR ADHESION OF PAINT

DESCRIPTION OF EO: ADDED -17,-18 & NOTE * REVISED NOTE 5 AND SECTION A-A

GAEC EO RELEASE: S/B 6-4-69; VC 6/4/69

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	RGB	/		/	/		
								DATE	6/16/69	6/16/69	/	6/14/69	/	/	6/16/69 6/17/69
LM	LEM 458	LM-5(35)							VDI	SUPPORT ENGRG	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG

PRIORITY: C

DRAWING TITLE: SHIELD INSTL-L.G. STRUT

DRAWING NO.: LDW200-55513

EO NO.: A1

CODE 06146
ISSUED BY D. SHAPIRO / P. THORJUSEN X87224 SECTION VDI GROUP NO. 335 PL 25

01 NAS 9-1100

LDW200-55514

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM 458	LDW280-54508	LM-5035	4
PART NO. LDW200-55514-3		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM 458	LDW280-54503	LM-5035	4
PART NO. LDW200-55514-1		GAEC SCH NO.	

WORK PKG FUNCT. III (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00		2.00		3.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	F
LAST DASH NO. USED	-28

GRUMMAN REL INFO: PRIM NO. (K/224Y) 207 ME-16 6/4/69

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES
SEE NOTE 2
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE ✓
LCD 5046 PKG 50

CONTRACT NO. NAS 9-1100 | LINE ITEM | DOCUMENTATION TYPE II

DRAWN BY	S. TAMBES 6-12-69	THERMO	R. Buchholz 6/12/69
LAYOUT BY	H. PALLMEYER 6-13-69		
CHECKED BY			
GR LEADER			
VEH DES IN			
STRUCT		PROJ ENGR	
STRUCT		REL GROUP	6-14-69
WEIGHTS			

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SHIELD & BLANKET INSTL-DIS-LANDING GEAR STRUT UPPER CREWORK OF LDW280-54508 FOR LFM 458)

SIZE	CODE IDENT NO.	
B	26512	LDW200-55514

SCALE NONE | SHEET 1.00 OF 3

ENG 77.1 12-66

01

NAS 9-1100

QTY PER ASSEMBLY												CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
-17	-17	-15	-14	-13	-12	-11	-8	-7	-6	-5	-3	-1												
													GS577A-4	E	STAPLE		GRUMMAN STD					
AIR	AIR	AIR	AIR	AIR	AIR	AIR							GT835P-8	E	TAPE	SEE NOTE 10	GRUMMAN STD					
													LDW200-55514-29	E	SKIN	SEE NOTE 3				NONE	NOTE 6	
													-27		SKIN	SEE NOTE 3					NOTE 6	
													-25		MESH	SEE NOTE 3					NONE	
													-23		FOIL	SEE NOTE 7						
													-21		INSULATION	SEE NOTE 3						
													-19		BLANKET	SEE NOTES 1 & 2						
													-17		BLANKET							
													-15		BLANKET							
													-14		BLANKET							
													-13		BLANKET							
													-12		BLANKET							
													-11		BLANKET							
													-8		FOIL ASSY							
													-7		FOIL ASSY							
													-6		SHIELD ASSY							
													-5		SHIELD ASSY	SEE NOTES 1 & 2						
													-3		BLANKET INSTL	SEE NOTE 5						
													LDW200-55514-1	E	SHIELD INSTL	SEE NOTE 5				NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

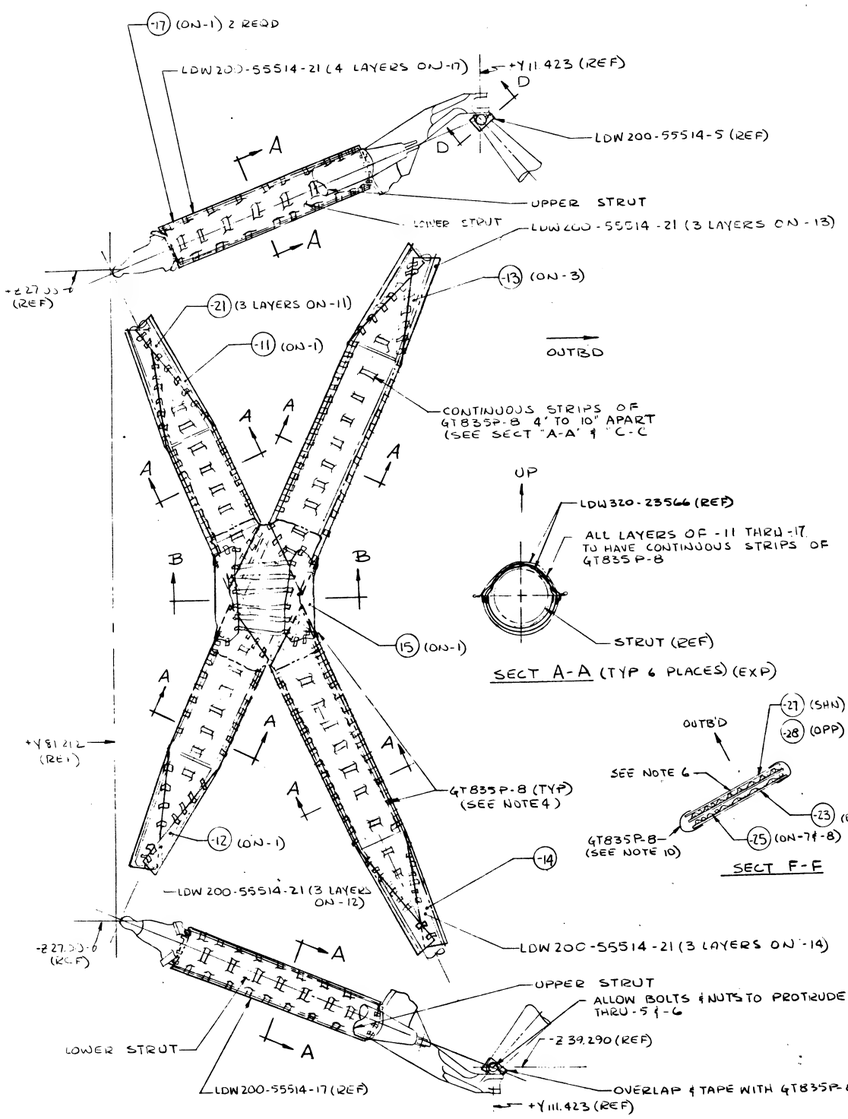
SIZE	CODE IDENT NO.	
B	26512	LDW200-55514

SCALE NONE SHEET 2

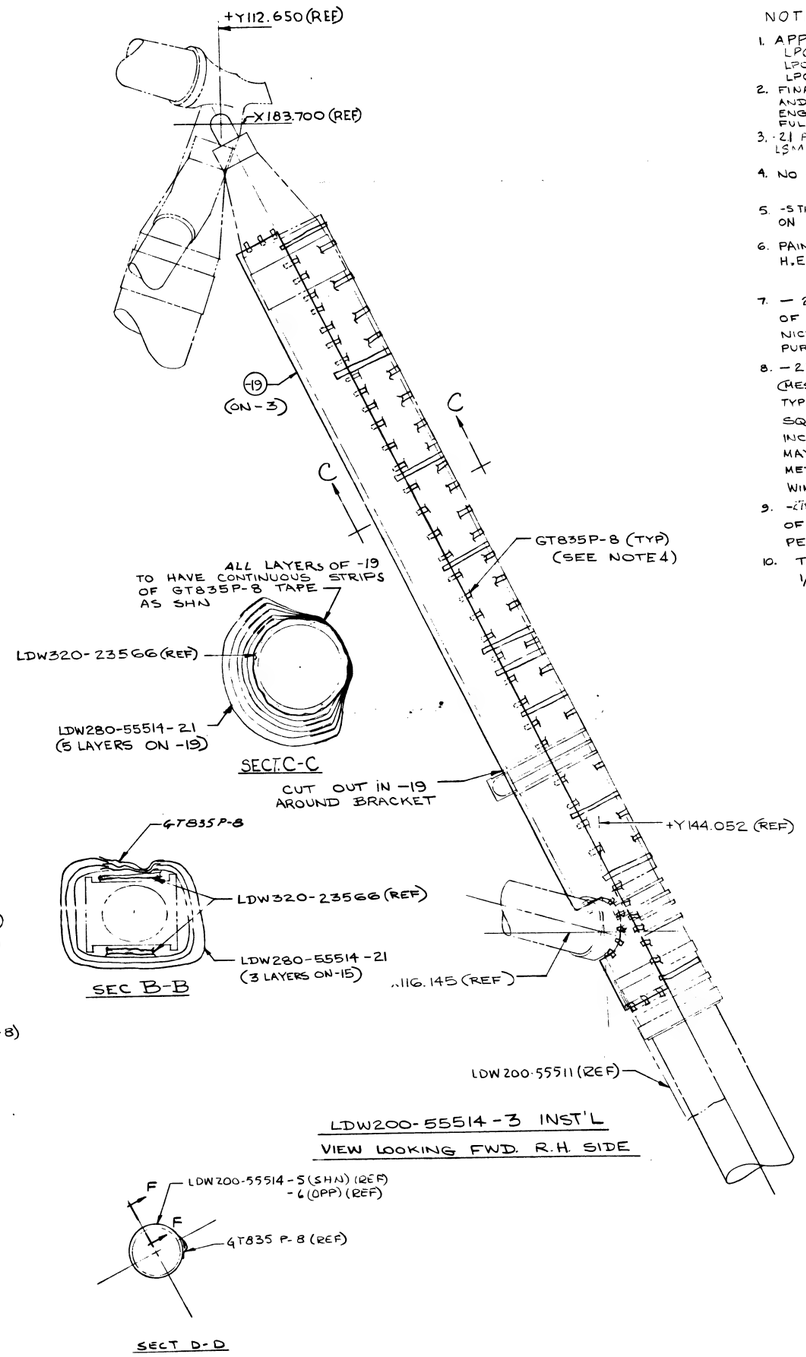
ENG 77.2 7-65

NAS 9-1100

REVISIONS						
ZONE	LTR	DESCRIPTION	EFF CODE	MODEL	DATE	APPROVED



LDW200-55514-1 INSTL
-5 ASSY
-6 ASSY
-7 ASSY
-8 ASSY



LDW200-55514-3 INST'L
VIEW LOOKING FWD. R.H. SIDE

SECT D-D

NOTES

1. APPLICABLE PROCEDURES
   LPC 280-1 FABRICATION
   LPC 280-4 ABRASION PROTECTION PROCEDURE
   LPC 280-19 FABRICATION (WELDING)
2. FINAL SIZE OF SHIELD AND FOIL ASS'Y AND BLANKETS SHALL BE DETERMINED FROM ENGRG APPROVED MASTER TEMPLATE AND/OR FULL SIZE MOCK-UP.
3. .21 ALUMINIZED POLYIMIDE .005 PER LSM 14-5302 TYPE II A CLASS 2
4. NO TOOLING HOLES PERMITTED IN PARTS.
5. -5 THRU -8 MAY BE TRIMMED AS REQ'D ON INST'L.
6. PAINT OUTBOARD SIDE OF -27 & -28 WITH H.E. BLACK PYROMARK PER LPC 280-5.
7. -23 TO BE MADE FROM (1) LAYER OF ANNEALED BRIGHT ROLLED NICKEL FOIL .0005 COMMERCIALLY PURE INCONEL 200 OR EQUIVALENT.
8. -25 TO BE INCONEL KNIT WIRE CLOTH (MESH) MADE OF KNIT PATTERN SQUARE TYPE WIRE CLOTH SLEEVING 5 TO 7 SQUARES PER LINEAR INCH WIRE INCONEL 600 (.0026-.0040 DIA ROUND) MAY BE PURCHASED FROM MONTGOMERY METAL FABRIC CO. 59 CANAL ST WINDSOR LOCKS CONN (CODE IDENT 94725)
9. -27 & -28 TO BE MADE FROM (1) LAYER OF .00125 INCONEL 600 FOIL PER AMS5540
10. TAPE, USING 2 TO 3 IN STRIPS, 1/2 TO 3/4 APART.

01 NAS 9-1100

FOR PARTS LIST, USAGE DATA, AND DWG SH STATUS, SEE DOCUMENT SAME NUMBER PREFIXED PL

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES			CONTRACT NO.	GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714	
LINEAR TOL	XX ± .03 XXX ± .010		DRAWN BY		
ANGULAR TOL	± 0°30'		LAYOUT BY		
TOL ON LOFTED DELINEATIONS IS			CHECKED BY		
			DSL LEADER		
			REL GROUP		
			PROJ ENGR		
			GOVT APPD	SIZE E / CODE IDENT NO. 26512 / LDW200-55514	SHEET 3 OF 3
				SCALE NONE	

1 DISTR LIST #

LDW200-55514

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LEO 280 | EO NO. 1467

CONTROL INFO NO. LDW280B 8019

IN MOD/BLK
ADD LM-6(36) & LM-7(37) REQMTS FOR LFM 458 TO THE FOLLOWING DWGS:

DWG NO.	DASH NO.	NO. REQD	NEXT ASSY	TITLE	CHG NO.
LDW200-55511	-1	4	LDW320-23500	SEE DWG	A4
~~LDW200-55514~~	-1,-3	4EA	LDW280-54508	SEE DWG	A1

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	√	LCD 5046 PKG 50	15

REASON FOR EO: ADDITIONAL INSULATION REQ'D ON LM-6 & LM-7 (LFM 458)

DESCRIPTION OF EO: IN MOD/BLK, ADDED LM-6 & LM-7 REQMTS FOR LFM 458 TO DASH NOS(*)

GAEC EO RELEASE: VK 6/16/69

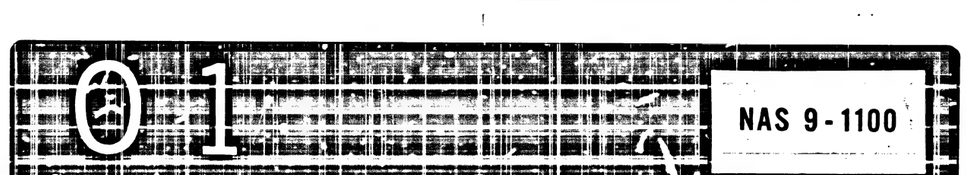
MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 458	LM-6(36), LM-7(37)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
√		NOT	REQD

APPROVED BY									
DATE	6/16/69	6/16/69	6/17/69	6/16/69	6/16/69				
	VD1	(SUPPORT THEREOF)	(MECHANICAL HANDLING EQUIP)	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG		

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SEE DWG	LEO 280	1467

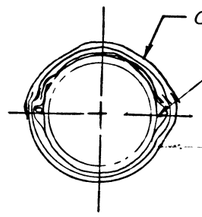
CDR 06/16/69
ISSUED BY S. TAMRES/P THORJUSEN x 86046 SECTION VD1 GROUP NO. 280 PL 25



ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW200-55514		EO NO. A2
CONTROL INFO NO. LDW280B 8071		



CONTINOUS STRIPS OF GT835P-8 (REF)

LDW320-23566 (REF)

REVISE PICTURE TO SHOW
-11 THRU-17 EDGES OUTBD OF LDW320-23566
WAS SHOWN INBOARD

REVISE SECT A-A AS SHOWN

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCD 5046 PK 50 (5)

REASON FOR EO: TO FACILITATE INSTL OF DETAIL PARTS 4PAR 6/21/69

DESCRIPTION OF EO: REVISED SECT A-A

GAEC EO RELEASE: SWB 6-21-69; JK 6/21/69

MODEL	EFFECTIVITY			DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
	~~PROVISIONAL APPROVED~~ NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	REVISE DWG	RECORD EO	REWORK	SCRAP	DATE	6/20/69	6-20-69		6/20/69	6/20/69		6/20/69	6-21-69
LM	LFM458	LM5(35) LM6(36) LM7(37)		✓		✓			VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY: C

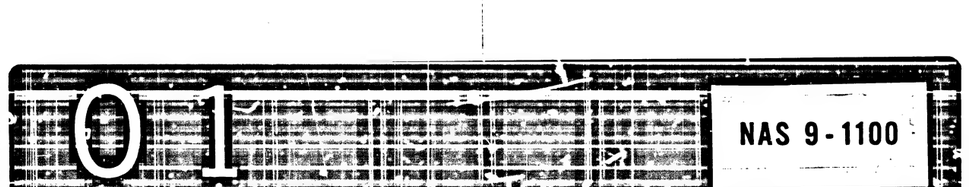
DRAWING TITLE: SHIELD & BLANKET INSTL D/S - LANDING GEAR STRUT

DRAWING NO.: LDW200-55514

EO NO.: A2

CDR 06 21-69

ISSUED BY DON RAGAS 286046 SECTION VDI GROUP NO. 280 PL 25



GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

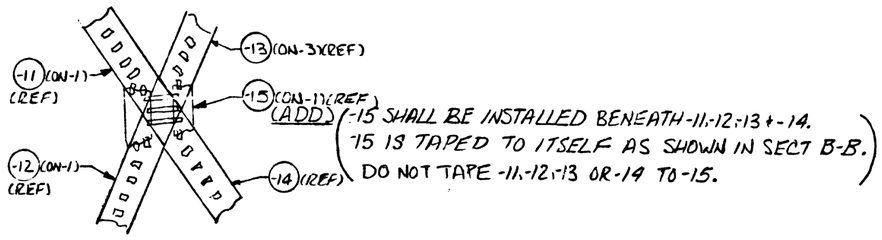
ENGINEERING ORDER

DWG NO LDW200-55514 | | EO NO A3

CONTROL INFO NO. LDW280B8082

IN F/D REVISE MAIN VIEW

ADD CALLOUT TO -15 AS SHOWN BELOW



(ADD) (-15 SHALL BE INSTALLED BENEATH -11,-12,-13 & -14.
-15 IS TAPED TO ITSELF AS SHOWN IN SECT B-B.
DO NOT TAPE -11,-12,-13 OR -14 TO -15.)

LDW200-55514-1 INSTL (REF)

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	MLD-5046 PK650	(5)

REASON FOR EO: TO CLARIFY INSTL. JK

DESCRIPTION OF EO: IN F/D REVISED MAIN VIEW. BY ADDING CALLOUT TO -15.

GAEC EO RELEASE: JK 7/24/69

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	DATE	SUPERVISOR TECH PUBS	RELIAB GROUP	GROUP LEADER	STRESS GROUP	MANUF ENGRG	PROJ ENGRG
LM	LFM 458	LM-5(35), LM-6(36), LM-7(37)				NOT REQ'D			6/26/69	VDI		6-23-69	6/26/69		7/24/69

PRIORITY: C

DRAWING TITLE: SHIELD & BLANKET INSTL-DJS-LAND'NG GEAR STRUT UPPER (REWORK OF LDW280-54508)

DRAWING NO. LDW200-55514 EO NO A3

CDR062369 ISSUED BY D. SHAPIRO/P. THORTUSEN Y87222 SECTION VDI GROUP NO. 335 PL 25

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NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.2 REV 3-65

DWG. NO. LDW200-55514 | EO NO. A4
CONTROL INFO NO. LDW2.80.88172

IN B/M & F/D ON -1 ADD -29 BLANKET (2 REQ'D) (SEE NOTES 1,2 & 5)
-29 IS MADE FROM -21 (AIR)

IN F/D ADD SECT *-*, REVISE MAIN VIEW AS SHOWN BELOW AND ALL OTHER APPROPRIATE VIEWS

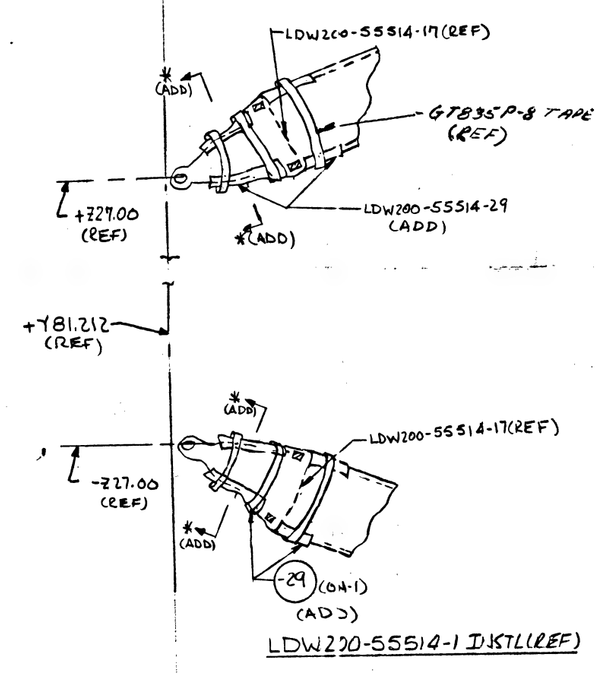
IN B/M & F/D REMOVE -5,-6,-7,-8,-23,-25,-27,-28

IN F/D REMOVE NOTES 6, 7, 8 & 9

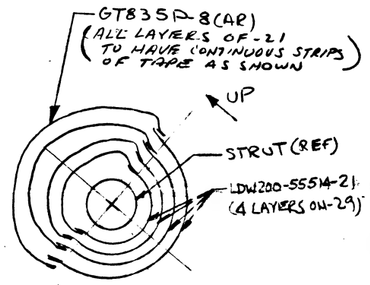
REVISE NOTE 5 AS FOLLOWS: "-11 THRU -19 & -29" (WAS) "-5 THRU -8"

REVISE NOTE 1 AS FOLLOWS: REMOVE LPC280-4 & LPC280-19

REMOVE SECT D-D & SECT F-F



LDW200-55514-1 INSTL (REF)



SECT *-* (ADD)

FOR *-* USE NEXT AVAILABLE SECTION LETTERS

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCD 5046 PKG 50	(5)

REASON FOR EO: TO MEET THERMAL REQUIREMENTS

DESCRIPTION OF EO: ADDED -29 & SECT *-*. REMOVED -5, -6, -7, -8, -23, -25, -27, -28, & NOTES 6, 7, 8 & 9. REVISED NOTE 1 BY REMOVING LPC280-4 (LPC280-19. REVISED NOTE 5 AS FOLLOWS "-11 THRU -19 & -29" (WAS) "-5 THRU -8". REVISED MAIN VIEW BY ADDING -29 & REMOVING -5 & -6. REMOVED SECT D-D & SECT F-F

GAEC EO RELEASE: JK 6/26/69

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
LM	LEM 458	LM-5 (35) THRU LM-7 (17)		✓			✓

APPROVED BY	ALB							
DATE	6/24/69	6/25/69		6-25-69	6/25/69	6-25-69	6/26/69	6/26/69
	VDI	SUPPORT ENGRG	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	QUAL

PRIORITY: C

DRAWING TITLE: SHIELD & BLANKET INSTL-DIS-LANDING GEAR STRUT UPPER (REWORK OF LDW280-54508)

DRAWING NO.: LDW200-55514

EO NO.: A4

CDR 062569

ISSUED BY D SHAPIRO / P. THORTJUSEN) X87222 SECTION VDI GROUP NO. 335 PL 25

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG NO. LEO 280 | EO NO. 1673

CONTROL INFO NO. LDW 280 B 8343

ON THE FOLLOWING DWGS
REMOVE LM-7 (37) EFFECTIVITY REMOVE (LFM 458)
(LFM 458)

	DWG. NO.	TITLE	NEXT ASSY	CHG. LTR
L	LDW 200-55511	SEE DWG.	LDW280-54508	A6
V	LDW 200-55514	SEE DWG	LDW280-54508	A5

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | J LCD 5046 PKG 50

REASON FOR EO: F. PARTS NO LONGER IN K.S. IN REQ'D

DESCRIPTION OF EO: REMOVED (LFM 458) FROM LM-7(37) EFF

(5) (2) GAEC EO RELEASE: SR 9-8-69; VK 9/8/69; WR 9/8/69; BM 9/16/69

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB-CONTR UNIT NO.
LM	LFM 458	LM-7(37)	

DRAWING CHANGE REQD: REVISE DWG ✓; RECORD EO

DISPOSITION OF PARTS: REWORK; SCRAP ✓

APPROVED BY / DATE: VDI 9-15-69; SUPPORT; RELIAB GROUP; GROUP LEADER 9-15-69; STRESS GROUP 9/16/69; LIAISON ENGRG; PROJ ENGRG 9/16/69

PRIORITY: C

DRAWING TITLE: SEE ABOVE

DRAWING NO.: LEO 280

EO NO. 1673

CDR 9/22/69 ISSUED BY V.A. CHRISTINA / P. THORJUSEN SECTION VDI x87222 GROUP NO. 335 PL 25

01

NAS 9-1100

LDW200-55515

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		LFM 263	LDW280-54000	LM-6(36)	1
								PART NO. LDW200-55515-1		GAEC SCH NO.	

WORK PKG FUNCTION 111 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00		2.00		3.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	G
LAST DASH NO. USED	-17

GRUMMAN REL INFO: PRIM NO. JK(CEV) 207 VHE-16 6/27/69

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES ± 1/16 — —

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	V
LCD 3499 PKG 50	

CONTRACT NO.	NAS 9-1100	LINE ITEM	DOCUMENTATION TYPE II
DRAWN BY	S. TAMKES 6-19-69		GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE, L. I., NEW YORK
LAYOUT BY	S. TAMKES		
CHECKED BY	D. Fass 6-20-69		SHIELD INSTL-LIGHTWEIGHT KIT REPLACEMENT FOR PLUME DEFLECTOR - D/S RNK OF LDW280-54000 FOR LFM 268
GR LEADER	[illegible] 6-20-69		
VDI	[illegible] 6/24/69		
STRUCT		PROJ ENGR J. Fusaterio 6/26/69	SIZE B | CODE IDENT NO. 26512 | LDW200-55515
STRUCT	W/H 6/26/69	REL GROUP J. Ford 6/27/69	SCALE NONE | SHEET 1.00 OF 3
THERMO	[illegible] 6/26/69		

FORM 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY			CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
	15			GW10M-1	E	WASHER	GRUMMAN STD						
A/R	A/R			GT83ST-8		TAPE	↕						
2	1			GS577A-4		STAPLE	↕						
	1			GS20D-06-16		SCREW	GRUMMAN STD						
	1			MS21043-06		NUT	STD PART						
	5			AN960C6		WASHER	STD PART						

4 3 2 1

C B A

4T835P-8 (ON-3) (WRAP COMPLETELY AROUND)

-11 (ON-3)

-15 (ON-5)

-19 (REF)

-17 (REF)

-17 (ON-5)

GS577A-4 (2) (ON-3) (LOCATE APPROX AS SHN)

LDW200-55515-3 ASSY

-5 ASSY

-13

FOR HOLES MARKED (+), REMOVE 4W10R-06 & ADD 4W10M-1

LDW280-56666 (REF)

VIEW D-D (QUAD III)
(ROTATED 90° CW)

(ADD) GS577A-4 (ON-1 INSTL)

(ADD) LDW200-55515-3 (REF)

RELOCATE GS20D-06-16 & 4W10R-16 THRU SAME HOLE & REMOVE 4W10M-1 (WAS) THRU LDW280-54739-1-1 (4W11W-1 HOLES IN LDW280-54739-1-1 MAY BE ELONGATED AS REQD TO ACCOMMODATE BULGE CAUSED BY PROTRUDING SCREW HD & -3)

LDW280-54739-1-1 (REF)

4T835P-8 (ON-1) (SEE NOTE 6)

LDW280-54742 (REF)

SECT G-G
TYP 2 PLACES

(ADD) GS20D-06-16

(ADD) AN960C6

GS20D-06-16 (REF)

(ADD) AN960C6 (2)

(REMOVE) LDW280-18661-11 (3)

LDW280-54742 (REF)

(ADD) AN960C6 (2)

(ADD) MS21043-06

(ADD) LDW200-55515-13 (REF) (SEE NOTE 6)

LDW280-56648 (REF)

GS500AE-9 (REF)

GS11P-1-600 (REF)

AN960C6 (REF)

MS21043-06 (REF)

SECT F-F (EXPLODED)

NOTES:

1. FABRICATE PER LPC 280-4 ABRASION PROTECTION LPC 280-19 FABRICATION PROCEDURE LPC 280-25 INSTALLATION PROCEDURE
2. -15 TO BE MADE FROM (1) LAYER OF .0005 NICKEL FOIL, COMMERCIALLY PURE INCO 200 OR EQUIV.
3. -17 TO BE INCONEL KNIT WIRE CLOTH (MESH) MADE OF KNIT PATTERN SQUARE TYPE WIRE CLOTH SLEEVING 6 TO 7 SQUARES PER LINEAR INCH. WIRE INCONEL 600 (.0035-.0040 DIA ROUND) MAY BE PURCHASED FROM MONTGOMERY METAL FABRIC CO, 25 CANAL ST, WINDSOR LOCKS, CONN. (CODE IDENT 94725).
4. -11 TO BE MADE FROM (1) LAYER OF .00125 INCONEL 600 FOIL PER AMS 5540.
5. PAINT EXTERIOR SIDE OF -11 WITH H.E. BLACK PYROMARK AS PER LPC 280-9.
6. AFTER GS20D SCREW HAS BEEN INSTALLED, COVER SCREW HEAD WITH -3 OR -13 & ATTACH TO ADJACENT MATL WITH 4T835P-8 TAPE ALL AROUND.
7. PARTS MAY BE TRIMMED AS REQD ON INSTL.
8. -13 ALUMINIZED POLYIMIDE (.005) PER LSM 18-5304, TYPE II A, CL 2.
9. NO TOOLING HOLES PERMITTED IN PARTS.

FOR FASTENERS MARKED (+), REMOVE 4W10R-06 & ADD 4W10M-1

LDW280-56661 (REF)

VIEW C-C (QUAD IV)
(ROTATED 180°)

DETAIL E

QUAD IV

QUAD I

QUAD II

QUAD III

SEE DETAIL E

LDW200-55515-1 INSTL
VIEW LOOKING DN

FOR FASTENERS MARKED (+), REMOVE 4W10R-06 & ADD 4W10M-1

LDW280-56664 (REF)

LDW280-56658 (REF)

VIEW B-B (QUAD I)
(ROTATED 90° CCW)

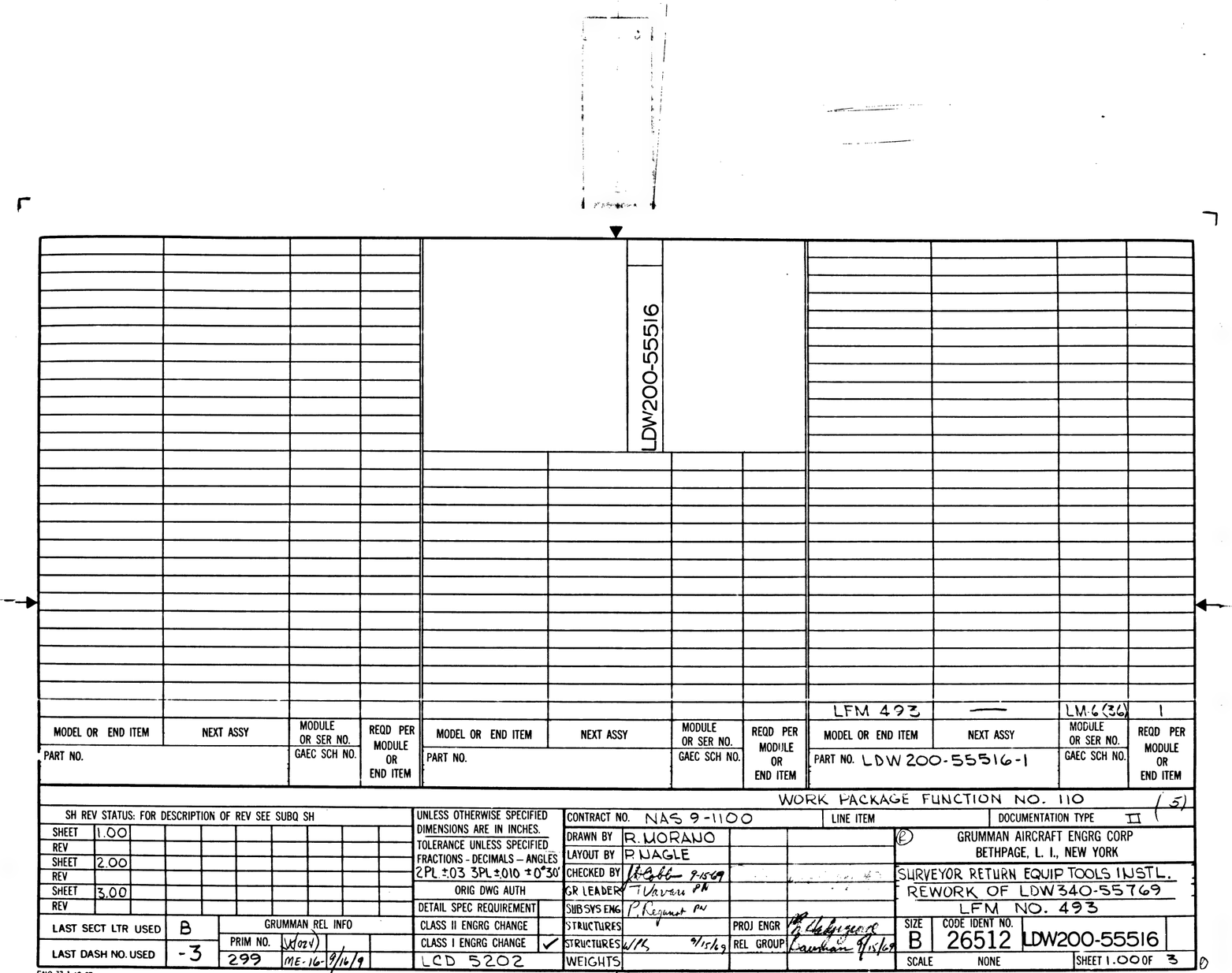
LDW280-56665 (REF)

VIEW A-A (QUAD II)

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
	26512	LDW200-55515
SCALE NONE		SHEET 3 OF

NAS 9-1100



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	LFM 493	—	LM-6 (36)	1
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW200-55516-1		GAEC SCH NO.	

WORK PACKAGE FUNCTION NO. 110 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH												
SHEET	1.00											
REV												
SHEET	2.00											
REV												
SHEET	3.00											
REV												

LAST SECT LTR USED	B	GRUMMAN REL INFO	
LAST DASH NO. USED	-3	PRIM NO.	299

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
2PL ±.03 3PL ±.010 ±0°30'

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
	LCD 5202

CONTRACT NO.	NAS 9-1100	LINE ITEM	DOCUMENTATION TYPE	II
DRAWN BY	R. MORANO			
LAYOUT BY	P. NAGLE			
CHECKED BY	9-15-69			
GR LEADER	T. Vavers PM			
SUBSYS ENG	P. Regunot PM			
STRUCTURES		PROJ ENGR		
STRUCTURES	W/K 9/15/69	REL GROUP	9/15/69	
WEIGHTS				

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SURVEYOR RETURN EQUIP TOOLS INSTL.
REWORK OF LDW340-55769
LFM NO. 493

SIZE	CODE IDENT NO.	
B	26512	LDW200-55516

SCALE NONE SHEET 1.00 OF 3

ENG 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY								CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
					2				MAS1056C8-022	E	SPACER	IND STD						
						A/R			MS21266-2T	E	GROMMET	GOVT STD						
									MS20470AD5		RIVET							
									MS20470AD4		RIVET							
									MS20426AD4		RIVET							
									MS20426AD3		RIVET	GOVT STD						
						A/R			SEE NOTE 4		SHIM							
						1			GS11E0012J11		SHIM	GRUMMAN STD						
					4	2			GS830G-25C3		SLEEVE	GRUMMAN STD						
						1			GN11BE-162		NAMEPLATE							
					4	1			GS10C-2		SLEEVE							
					2				GL10B2-19		LANYARD	GRUMMAN STD						
						1			LDW340-55770-1		LANYARD ASSY	SEE DWG						
						1			LDW340-55231-5-1		STRAP ASSY	SEE DWG						
						2			LDW340-11262-25		PIN	SEE DWG						2B
						2			LDW340P11642-15		SUPPORT	SEE DWG						7B
						1			LDW340P11642-13		SUPPORT							7B
						1			LDW340P11642-11		SUPPORT							7B
						1			LDW340-11643-19		DOUBLER							6D
						1			-7		SUPPORT ASSY							8C
						1			-5		SUPPORT ASSY							5D
					1				LDW340-11643-1		BRACKET ASSY	SEE DWG						3A
						1			LDW200-55516-3		RETAINER ASSY					NOTE 3	NONE	
									LDW200-55516-1	E	SURV. RET. EQUIP TOOLS	INSTL				NOTE 3	NONE	
					-3	-1												

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

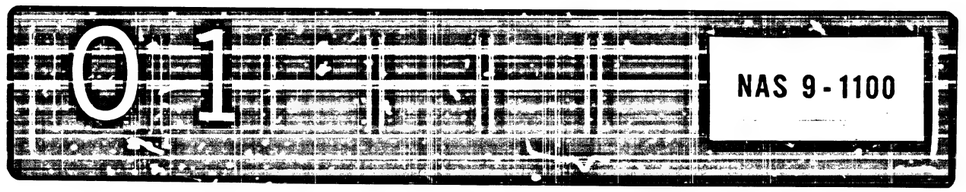
I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55516

SCALE NONE SHEET 2.00

ENG 77.2 7-65



LDW340-11643-5 (REF)
LDW340-11643-19
MS20426AD3(6)(FLUSH NS)
LDW340-55769(REF)
.30
SECT A-A (ZONE 5B)

.249-.255 DIA HOLE
LOCATE FROM LDW340-11643-5
THRU LDW340-11643-19 &
LDW200-55516-3

LDW340-11643-5
LDW200-55516-3
B (ZONE 3C)
LDW340-11643-19(REF)
B
MS20470AD4(7)
GN11BE-162
LDW340-55769(REF)

REMOVE
MS20470AD4(4)
ADD
MS20426AD4(4)
CSK NS LDW340-11643-7

SHIM AS REQD
.010 MAX
(SEE NOTE 4)

MS20426AD4(4)
CSK IN LDW340-11643-7

MS20426AD4(4)
CSK FS LDW340P11642-11

MS20470AD4(6)

LDW340-11643-7

1.00
1.00
.188
.188
1.281
.937
30.372
.42
CUTTER
5.50
.88
.50
.25
.781
.500
GS11E0012J11
MS20470AD4(6)

MS21266-2T
(SEE NOTE 3)
LDW340P11642-13
(SEE NOTE 3)
LDW340P11642-15(2)
(SEE NOTE 3)
LDW340P11642-11

SHIM AS REQD
.070 MAX
(SEE NOTES 3&4)

LDW200-55516-1 INSTL
VIEW LOOKING INBD AT RH S
(MESA).

LDW200-55516-3(REF)
(ZONE 6D)
A
LDW340-11643-5(REF)
LDW340-11643-19(REF)
1.500
A

.650
MS21266-2T (REF)
LDW340-55769(REF)

LDW340-11643-7(REF)
LDW340P11642-13(REF)
LDW340P11642-15(REF)
LDW340P11642-11(REF)

01 / 02

NAS 9-1100

CODE IDENT NO	DWG NO	REV	SHEET
26512	LDW200-55516		3

FRAME 1 FRAME 2

REVISIONS					
ZONE	LTR	DESCRIPTION	EFF CODE	MODEL	DATE	APPROVED

NOTES:

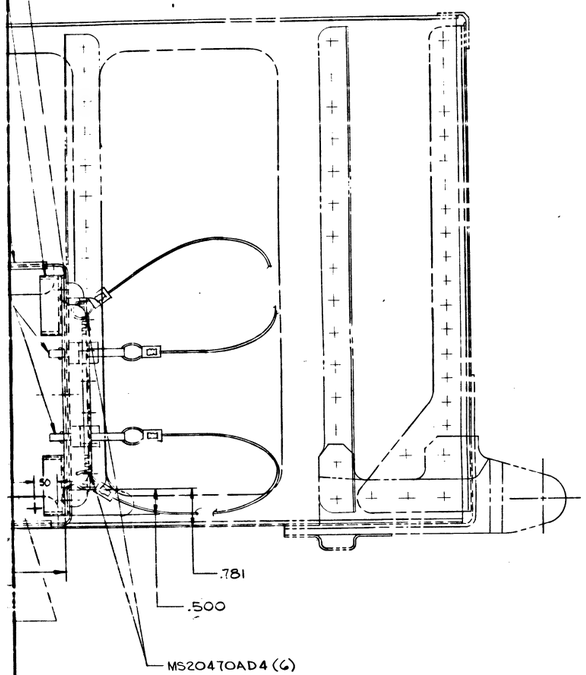
1. CUT 3/8 ± 1/8 PROTRUDING END OF LANYARD FLUSH WITH SLEEVE.
2. INSTALL GS10C-2 PER GL10A.
3. BOND IN PLACE USING EPON 934 IN ACCORDANCE WITH LSP14-22500 CURE RANGE I, ROOM TEMPERATURE CURE PERMISSIBLE.
4. SHIM AS REQ'D USING LAMINATED SHIM STOCK PER MIL-S-22499A, COMP I, TYPE I, CLASS II.
5. FOR NOMINAL GAPS OF LESS THAN .010 INCH, CLOSE GAP WITH EPON 934 PER LSP14-11700, TYPE II.
6. CREW HAZARD - PARTS REQUIRE SPECIAL HANDLING TO INSURE REMOVAL OF ALL SHARP EDGES AND BURRS.
7. INSTALL FASTENERS PER LSP 14-15302
8. FOR AREA INDICATED DRY FILM LUBE TYPE I AS PER LSP 14-10300
9. RUBBER STAMP PART NO. IN REGION MARKED ⊠
10. LENGTHS OF RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED

V340-11643-5

LDW200-55516-3

B (ZONE 3C)

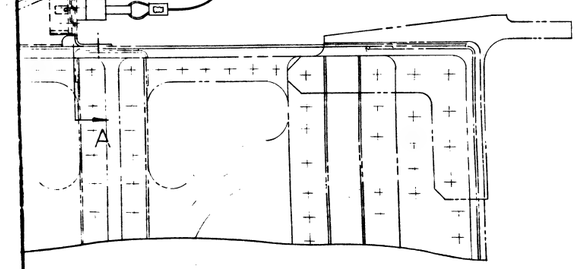
LDW340-11643-19(REF)



(ZONE 6D)

A

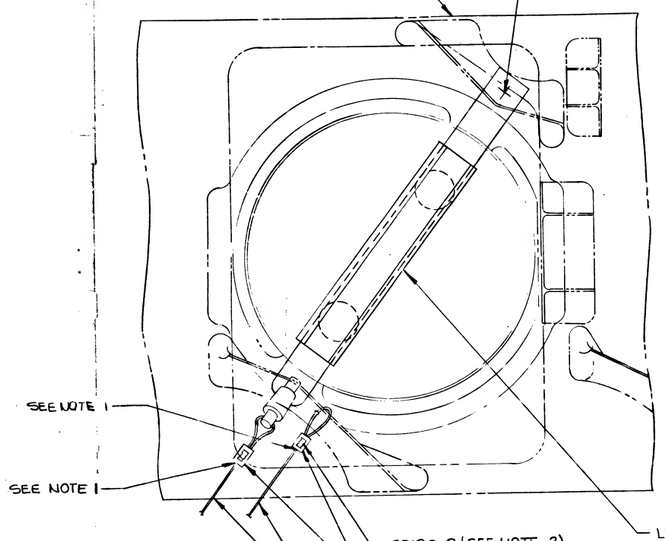
LDW340-11643-19 (REF)



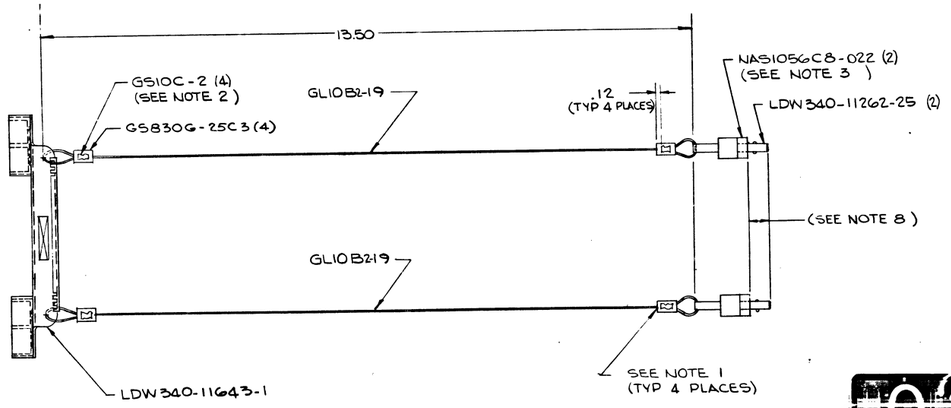
A

LDW340-55769 (REF)

MS20470AD5



VIEW B-B (ZONE 5D)



LDW 200-55516-3 ASSY

02402 NAS 9-1100

FOR PARTS LIST, USAGE DATA, AND DWG SH STATUS: SEE DOCUMENT SAME NUMBER PREFIXED FL

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES			CONTRACT NO.	GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714
LINEAR TOL	XX	± .03		
	XXX	± .010	DRAWN BY	
ANGULAR TOL		± 0° 30'	LAYOUT BY	
TOL ON LOFTED DELINEATIONS IS			CHECKED BY	
			SR. LEADER	
			REL GROUP	
			PROJ ENGR	SIZE J · CODE IDENT NO. 26512 · LDW200-55516
			GOVT APVD	SCALE FULL · SHEET 3.00 OF

DISTR. LIST #

LDW200-55516 REV SHEET 3

FRAME FRAME 2

LDW200-55516 B

LDW200-55516 A

DWG SIZE 24 X 36 = FULL SIZE SHEET AREA ON 3 MIL = 24.5 SQ FT
½ SIZE SHEET AREA ON ¼ FULL = 6.5 SQ FT

PRINTING INFO ONLY

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

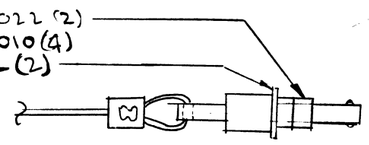
ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG NO. LDW 200-55516		EO NO. A1
CONTROL INFO NO. LDW 340-7584		

IN F/D & B/M ON -3 ASSY

REMOVE NAS1056C8-022 (2)
ADD NAS 1056 C8-010 (4)
AN960C416L (2)



DETAIL SPEC REV	CL II ENGRG CHG	CL I ENGRG CHG	MLCD5202	(5)

REASON FOR EO: HARDWARE UNAVAILABLE & NOT ADEQUATE FOR DESIGN — TR

DESCRIPTION OF EO: ON -3 INF/D & B/M REMOVED NAS1056C8 022(2) ADDED NAS1056C8910(4) & AN960C416L(2)

GAEC EO RELEASE: VK 9/29/65

MODEL	EFFECTIVITY: EI PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 493	LM 6 (36)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
		✓	

PRIORITY: C

DRAWING TITLE: SURVEYOR RETRN EQUIP TOOLS INSTL REWORK OF LDW340-55769 LFM# 493

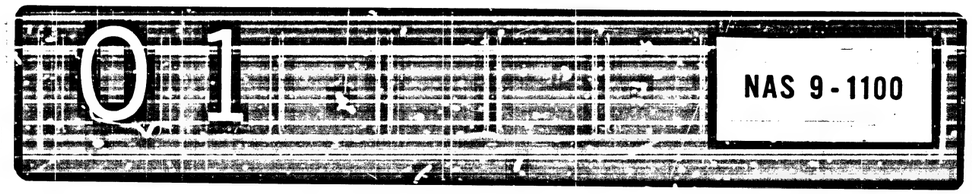
APPROVED BY								
DATE				SUPPORT	RELIAB GROUP	GROUP LEADER: OK 9-28-65	STRESS GROUP: VPS 9-28-65	LIAISON ENGRG

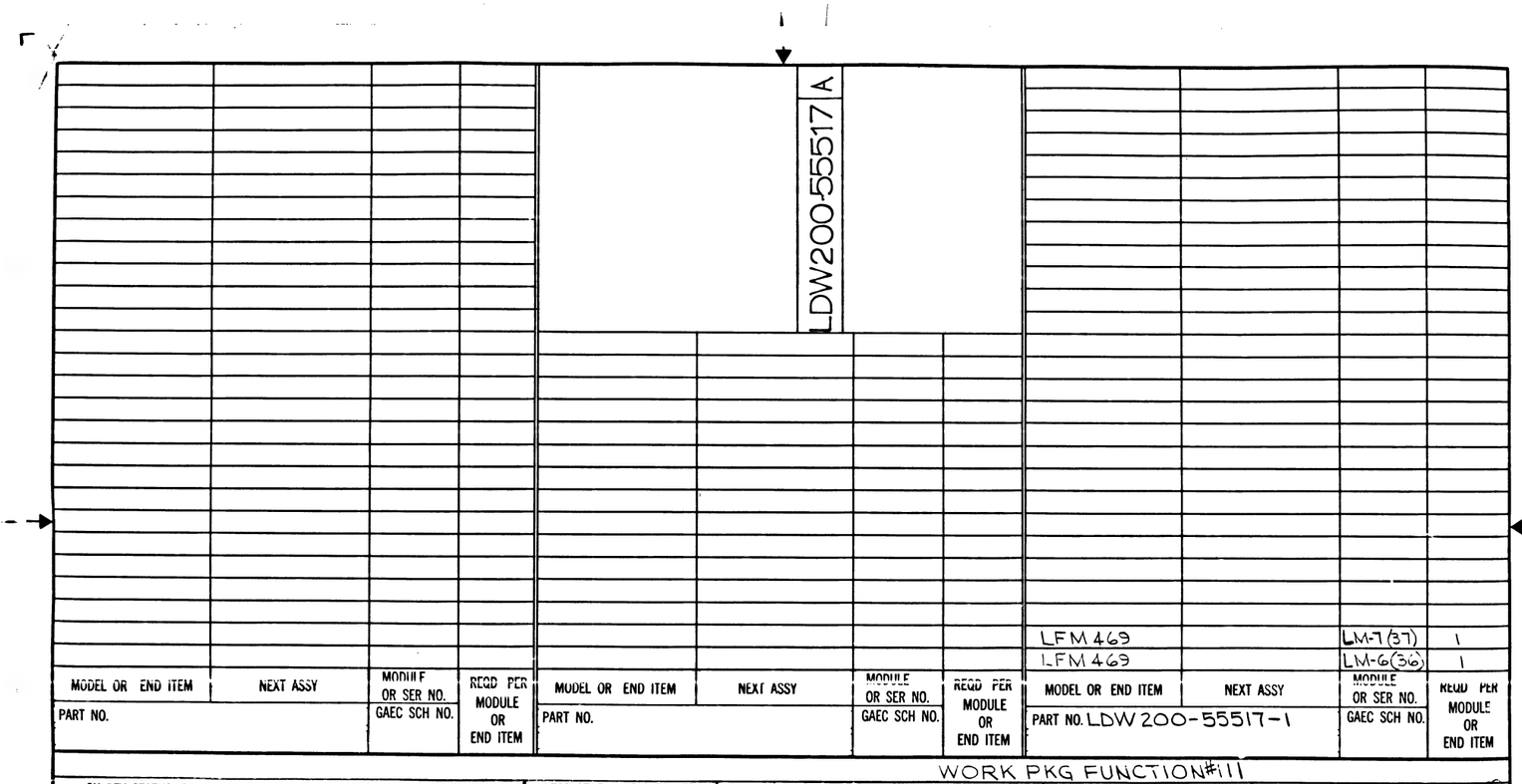
DRAWING NO.: LDW200-55516 — EO NO.: A1

PROJ ENGRG: NH 9/29/65 — CONF: [illegible]

ISSUED BY D. NAGLE X7277 — SECTION CREW PROV — GROUP NO. 313 — PL 25

9/30/65 GP





										LFM 469		LM-7 (37)	1
										LFM 469		LM-6 (36)	1
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW 200-55517-1		GAEC SCH NO.	

WORK PKG FUNCTION#111

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH											
SHEET	1.00	1.10		2.00		3.00					
REV	A	A		A		A					
SHEET											
REV											
SHEET											
REV											

LAST SECT LTR USED	A	GRUMMAN REL INFO											
LAST DASH NO. USED	-13	PRIM NO.	HF-001										
		207	ME 16	10/14/69									

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES SEE NOTE 1													
ORIG DWG AUTH													
DETAIL SPEC REQUIREMENT													
CLASS II ENGRG CHANGE													
CLASS I ENGRG CHANGE	✓												
LCD 5033													

CONTRACT NO. NAS 9-1100													
DRAWN BY	V. CHRISTINA 10-8-69												
LAYOUT BY	V. CHRISTINA 9-17-69												
CHECKED BY													
GP LEADER	M.P. 9-17-69												
VDI	F.D.R 9-17-69												
STRUCT	WPH 9-17-69												
STRUCT													
WEIGHTS													

LINE ITEM													
DOCUMENTATION TYPE II (5)													
RELIABILITY													
THERMO	AB 9-18-69												
PROJ ENGR	J.M.S. 9-17-69												
REL GROUP	G.B. 9-18-69												

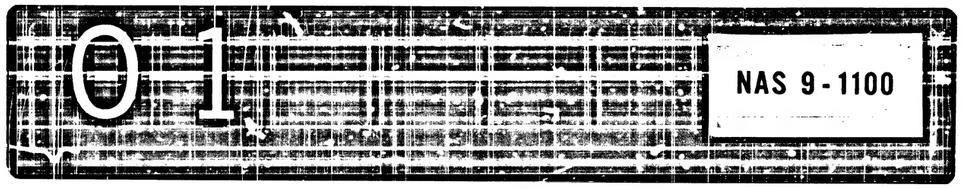
GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

STRAP INSTALLATION
DESCENT STAGE - QUAD IV - MESA
(REWORK OF LDW280-54508)

SIZE	CODE IDENT NO.		
B	26512	LDW200-55517	A

SCALE NONE SHEET 1.00 OF 4

ENG 77.1 12-65



REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00, 1.10, 2.00, 3.00		LFM469 (R)		✓		EO A1 LCD5093	EO A1 INITIAL DWG RELEASE INSTL MADE PER EO	LM-6 LM-7	NOT	REQD			

APPROVED	LTR	GROUP LDR	VDI	STRUCT	STRUCT	WEIGHTS	RELIABILITY	THERMO				
	A											

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW200-55517	A

SCALE NONE SHEET 1.10

01

NAS 9-1100

QTY PER ASSEMBLY			CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
	3			MS27980-6N	E	FASTENER, SNAP	GOVT STD						
	3			MS27980-1N	↓	FASTENER, SNAP	GOVT STD						
AR	AR			GT835P-8		TAPE	GRUMMAN STD	SEE NOTE 3					
	1			GT535G-HCS0040		TAPE HOOK	GRUMMAN STD						
1				GT535G-LAS0290		TAPE LOOP		MAKE FROM	GT535G-LCS0290				
1				GT535G-HAS0030		TAPE HOOK		MAKE FROM	GT535G-HCS0030				
	ALT			GT534D-1		THREAD	GRUMMAN STD	SEE NOTE 3					
	AR			GT534C-1		THREAD	GRUMMAN STD	SEE NOTE 3					
	3			LDW280-18717-5		STRAP ASSY	SEE DWG						
	1			LDW280-18717-3		STRAP ASSY	SEE DWG						
	2			LDW280-18717-1		STRAP ASSY	SEE DWG						
AR				LDW200-55517-13		INSULATION	SEE NOTE 2				NONE	NONE	
AR				-11		INSULATION	SEE NOTE 2				NONE	NONE	
	1			-3	↑	COLLAR ASSY	SEE NOTE 1&3				NONE	NONE	
				LDW200-55517-1	E	STRAP INSTL	SEE NOTE 1&3				NONE	NONE	
-3	-1												

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW200-55517	A

SCALE NONE SHEET 2.00

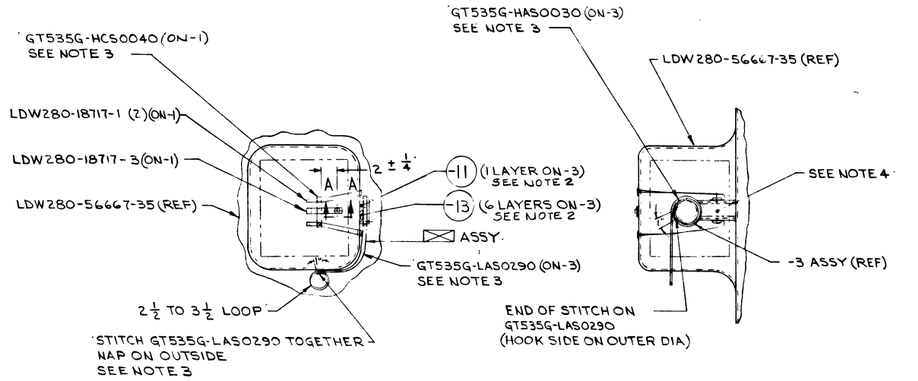
ENG 77.2 7-65

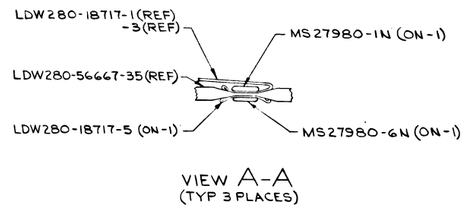
01

NAS 9-1100

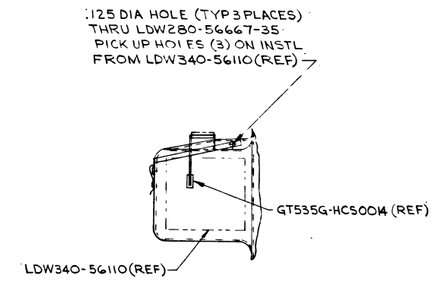
SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN RECKON MARKED ☒ USE BOTH SIDES IF: ☐ NECESSARY	✓
LENGTHS OF AN, MS & NS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL RIVETS IN ACCORDANCE WITH	

NOTES:
1. FINAL SIZE OF BLANKET SHALL BE DETERMINED FROM ENGRG APPROVED MASTER TEMPLATE.
2. -11 ALUMINIZED POLYIMIDE (.0005) PER LSM14-5301 TYPE 1A, CL 1 (OUTER LAYER).
   -13 ALUMINIZED MYLAR (.00015) PER LSM14-5302.
3. LOCATIONS OF GT535G TO BE DETERMINED FROM APPROVED MASTER TEMPLATE. BACKUP BLANKET WITH GT835P8 TAPE (A/R) BEFORE SEWING VELCRO TO BLANKET. SEW AT 3/16 ± 1/16 FROM EDGES OF GT535G IN ACCORDANCE WITH FED STD #751 AND STITCH TYPE #301 USE THREAD GT534C-1 OR GT534D-1 (A/R). HAND STITCHING PERMISSIBLE.
4. ALLOW SOME SLACK IN BLANKET BETWEEN HOLES.





VIEW A-A
(TYP 3 PLACES)



LDW200-55517-1 INSTL
-3 ASSY

GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714			
SIZE D	CODE IDENT NO. 26512	LDW200-55517	A
SCALE NONE		SHEET 3 OF 3	

DWG 73.3 REV. 3-67

NAS 9-1100

LDW200-55517 A

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

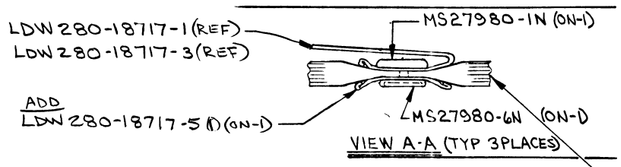
ENG 32.2 REV 3-65

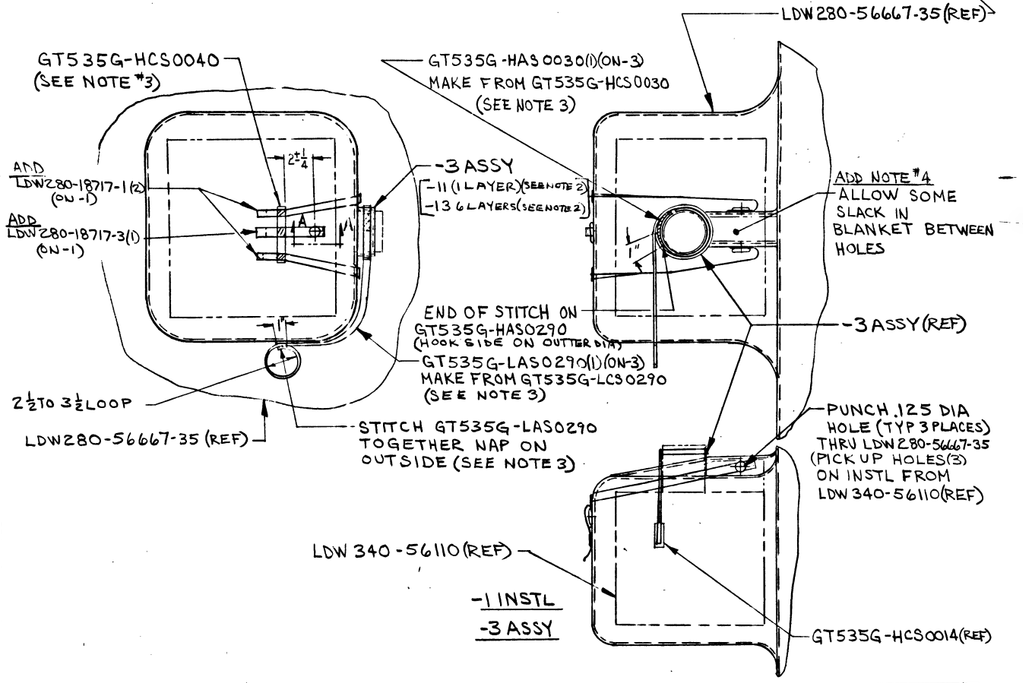
ENGINEERING ORDER

DWG NO. LDW200-55517		EO NO. A1
CONTROL INFO NO. LDW280B8868		

ADD-1 INSTL (1 REQD/MOD) N/A LDW 280-54508 EFF LM6 & LM7 LFM 469
CONTRACT NO. NAS 9-1100, WORK PKG III, DOC TYPE II, I&T-E
ON-1 INSTL REWORK LDW280-56667-35 ASSY BY REMOVING LDW280-56667-43(1) &
ADD-3 COLLAR ASSY(1) TAPE TO EXISTING FLAPS OF LDW280-56667-35, USE GT835P-8 (A/R)
ON-1 ADD MS27980-1N(3), MS27980-6N(3), LDW280-18717-1(2), -3(1) & -5(3), GT535G-HAS0030(1), GT535G-LAS0290(1) GT835P-8 (A/R)
-3 CONSIST OF -11(1 LAYER) & -13(6 LAYERS) (SEE NOTE 2)

ADD NOTES: (*1 THRU *4)
(1.) FINAL SIZE OF BLANKET SHALL BE DETERMINED FROM ENGRG APPROVED MASTER TEMPLATE.
(2) -11 ALUMINIZED POLYIMIDE (.0005) PER LSM 14-5301 TYPE IA, CL1. (OUTTER LAYER)
-13 ALUMINIZED MYLAR (.0015) PER LSM14-5302
(3.) LOCATIONS OF GT535G TO BE DETERMINED FROM APPROVED MASTER TEMPLATE. BACKUP BLANKET WITH GT835P8 TAPE (A/R) BEFORE SEWING VELCRO TO BLANKET. SEW AT $\frac{3}{16} \pm \frac{1}{16}$ FROM EDGES OF GT535G IN ACCORDANCE WITH FED STD *751 AND STITCH TYPE *301 USE THREAD GT534C-1 OR GT534D-1 (A/R). HAND STITCHING PERMISSIBLE.





DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCD 5093 PKG 50

REASON FOR EO: MODIFY BLANKET FOR NEW COLOR T.V. CAMERA IN MESA. 9-17

DESCRIPTION OF EO: E.O. A1 INITIAL DWG RELEASE
INSTL MADE PER E.O.

GAEC EO RELEASE: JK 9/18/69

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR'S ITEM NO.
LM	LFM 469	LM-6(36)	
LM	LFM 469	LM-7(37)	

DRAWING CHANGE REQD: ✓ REVISE DWG; RECORD EO
DISPOSITION OF PARTS: NOT REQD; REWORK; SCRAP

APPROVED BY							
DATE	9-17-69	9/18/69	9-17-69	9-17-69	9-17-69	9-17-69	9/17/69
	VDI	SUPPORT THRU PHO	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ. ENGRG

PRIORITY: C

DRAWING TITLE: STRAP INSTL D/S-QUAD IV-MESA (REWORK OF LDW280-54509)

DRAWING NO.: LDW200-55517 EO NO.: A1

CDR 9/19/69
ISSUED BY V.A. CHRISTINA / P. THORJUSEN SECTION VDI x87222 GROUP NO. 335 PL 25

NAS 9-1100

ENG 32.1 REV 3-65

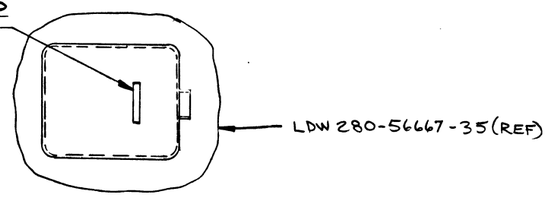
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LDW200-55517		EO NO. B1
CONTROL INFO NO. LDW28089240		

REVISE NOTE *3
IN NOTE 3 REMOVE STATEMENT "HAND STITCHING PERMISSIBLE."
ADD NOTE ** (USE NEXT AVAILABLE NOTE NUMBER)
*. LOCATION OF GT535G TO BE DETERMINED ON INSTL. BACKUP BLANKET WITH GT835P-8 TAPE (A/R) BEFORE SEWING VELCRO TO BLANKET. SEW AT 3/16 ± 1/16 FROM EDGES OF GT535G IN ACCORDANCE WITH FED. STD #751 AND HAND STITCH TYPES #201 OR #202. USE THREAD GT534C-1 OR GT534D-1 (A/R).

REVISE CALLOUT IN F/D
GT535G-HCS0040
(SEE NOTE *3)
SHOULD BE
(SEE NOTE *)



-1 INSTL

DETAIL SPEC REQ	CL 'T' ENGRG CHG	CL 'T' ENGRG AUG	LVI LCD 5013 FRG 50. (5)

REASON FOR EO: INCORRECT STITCHING CALLOUT FOR KSC REWORK (REF. DR 616)

DESCRIPTION OF EO: REM "HAND STITCHING PERMISSIBLE" FROM NOTE 3, ADDED NOTE *
REVISED CALLOUT IN F/D GT535G-HCS0040 (SEE NOTE *) WAS (SEE NOTE *3)

GAEC EO RELEASE: LK 9/29/69

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM469	LM-6(36)	
LM	LFM469	LM-7(37)	

DRAWING CHANGE REQD: REVISE DWG ✓; RECORD EO; DISPOSITION OF PARTS: REWORK ✓; SCRAP

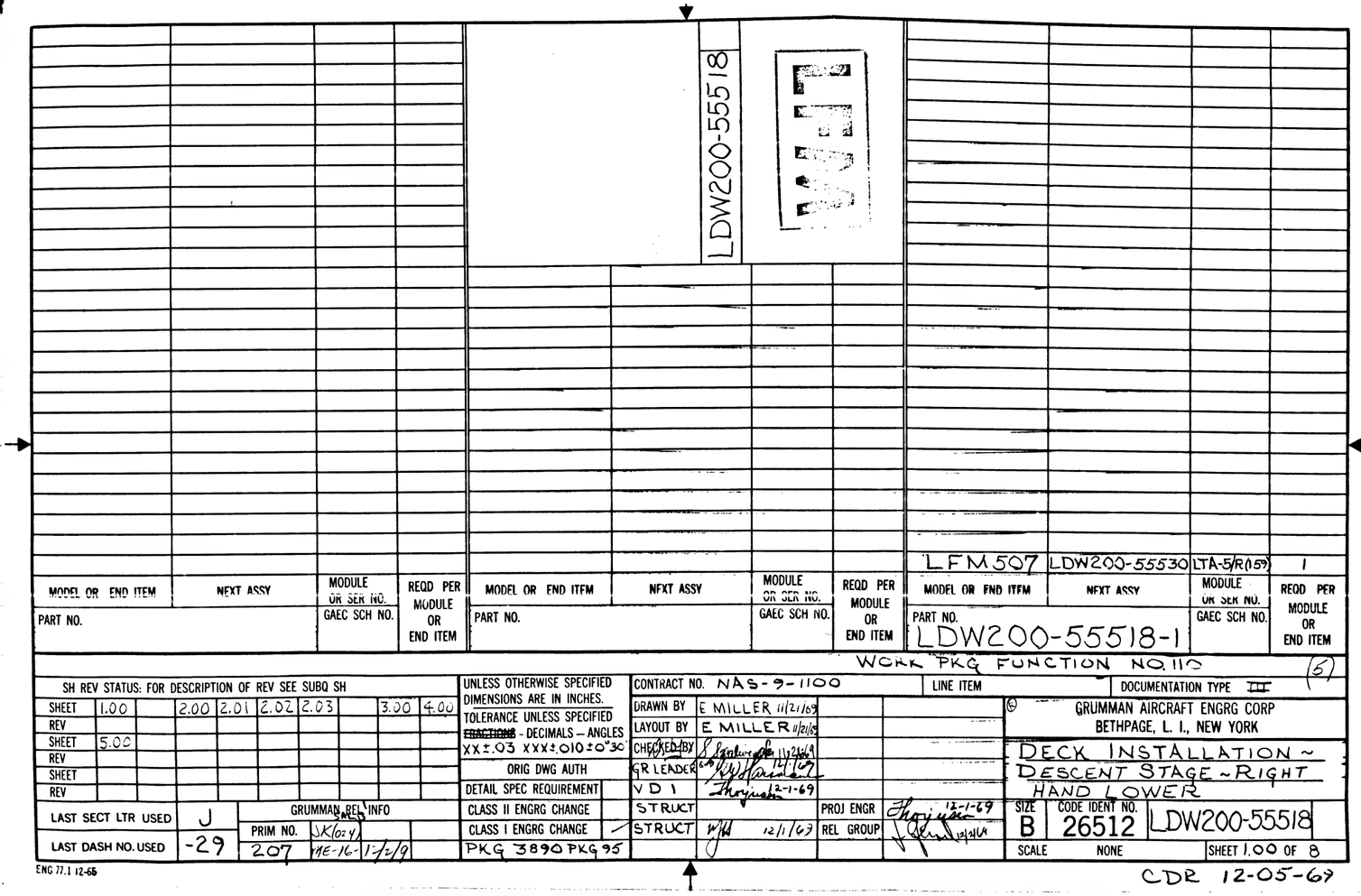
APPROVED BY	F.K.R	Mur		1st GST w/H	
DATE	11/25/69	10/29/69		10-28-69	9/29/69
	VDI (SURGERY THERMO)	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG

PRIORITY: C
DRAWING TITLE: STRAP INSTL - D/S - QUAD IV HESA (REWORK OF LDW280-54508)
DRAWING NO.: LDW200-55517
EO NO.: B1

CDR 11/3/69
ISSUED BY V.A. CHRISTINA / P. THORJUSEN
SECTION VDI X1153
GROUP NO. 335 PL 25

01

NAS 9-1100



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LFM507	LDW200-55530	LTA-5/R(15)	1
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW200-55518-1		GAEC SCH NO.	

WORK PKG FUNCTION NO. 110 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00		2.00	2.01	2.02	2.03		3.00	4.00
REV									
SHEET	5.00								
REV									
SHEET									
REV									

LAST SECT LTR USED	J	GRUMMAN REL INFO	
LAST DASH NO. USED	-29	PRIM NO. 207	SALES JK(024) ME-16-1-2/9

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
XX±.03 XXX±.010 ±0°30'

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	/
PKG 3890 PKG 95	

CONTRACT NO. NAS-9-1100 LINE ITEM DOCUMENTATION TYPE III

DRAWN BY	E MILLER 11/21/69		
LAYOUT BY	E MILLER 11/21/69		
CHECKED BY	S Gardner 11/24/69		
GR LEADER	W/H Hammond 12/1/69		
V D I	Thorjussen 12-1-69		
STRUCT		PROJ ENGR	Thorjussen 12-1-69
STRUCT	W/H 12/1/69	REL GROUP	J Grant 12/1/69

© GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

DECK INSTALLATION ~ DESCENT STAGE ~ RIGHT HAND LOWER

SIZE	CODE IDENT NO.	
B	26512	LDW200-55518

SCALE NONE SHEET 1.00 OF 8

ENG 77.1 12-65

CDR 12-05-69

01

NAS 9-1100

QTY PER ASSEMBLY						CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
					1		LDW280-17906-13	E	PLATE	SEE DWG						4E
				1			LDW280-18760-17		ANGLE							5B
				1			-16									4D
				1			-13									5B
				1			-12									6B
				1			LDW280-18760-11		ANGLE							8B
					2		LDW280-17419-17		BRACKET							6H/7H
					1		-14									6H
					1		-13									7H
					1		-12									7G
					1		LDW280-17419-11		BRACKET	SEE DWG						7H
					1		LDW200-55518-29		FITTING	AL ALLOY	QQ-A-225/9	7075-T7351	1.00 x 4 x 17	NONE	88	9C
				1			-27		ANGLE	AL ALLOY SH	QQ-A-250/12	7075	.071 x 2 x 11	T6	76	9B
				1			-25		ANGLE	(MAKE FROM LDW280-17746-11)				NONE	NONE	10B
				1			-23		STIFFNER	AL ALLOY SH	QQ-A-250/12	7075	.063 x 13 x 20	T6	76	10B
					1		-21		ANGLE				.063 x 2 x 10			9F
					1		-19		CLIP				.071 x 3 x 4			10E
					1		-17		ANGLE				.071 x 3 x 14			10E
				1			-15		ANGLE	AL ALLOY SH	QQ-A-250/12	7075	.050 x 3 x 12	T6	76	10G
					1		-13		PLATE	(MAKE FROM LDW280-17906-13)				NONE	NONE	11E
				1			-11		WEB	AL ALLOY SH	QQ-A-250/12	7075-T6	.040 x 57 x 59	NONE	76	9B
					1		-3		DECK ASSY.					NONE	NONE	7A
							LDW200-55518-1	E	DECK INSTL					NONE	NONE	7A

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
76	ALODINE	LSP-14-9010
88	ANODIZE	LSP-14-9030
T6	AL HEAT TREAT	MIL-H-6088

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55518

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

QTY PER ASSEMBLY		CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
1			LDW280M18120-11	E	FITTING	SEE DWG						9D
	1		LDW280M18115-11		FITTING							7B
1			LDW280M18114-11		FITTING							4E
1			LDW280-18767-11		RING							6C
2			LDW280-18766-13		TEE							4D/10D
1			LDW280-18766-11		TEE							7G
1			LDW280-18763-15		ANGLE							4G
1			LDW280-18762-14		STIFFNER							10G
1			LDW280-18762-13		STIFFNER							5G
1			LDW280-18762-11		STIFFNER							4B
	1		LDW280-18067-23		BRACKET							8H
	1		LDW280-18067-21		BRACKET							8H
	1		LDW280-18066-11		BRACKET							8H
1			LDW280-18761-19		ANGLE							9C
1			-18									6G
1			-17									8G
1			-16									6G
1			-15									8G
1			-14									5G
1			-13									9G
1			LDW280-18761-12	E	ANGLE	SEE DWG						4F

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55518

SCALE NONE SHEET 2.01

ENG 77.2 7-65

NAS 9-1100

QTY PER ASSEMBLY -3	QTY PER ASSEMBLY -1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
5			GB511J08-4	E	BOLT	GRUMMAN STD						
15			GB511J08-3		BOLT							
2			GR500A5L		RIVET							
4			GR500A5K									
11			GR500A5J									
3			GR500A5H									
48			GR500A5G									
31			GR500A5F									
8			GR500A5E									
38			GR500A5D									
2			GR500A5C									
2			GR500A4H									
4			GR500A4E									
105			GR500A4C		RIVET							
44			GN512H-08		NUT	GRUMMAN STD						
3			MS90354-0505		FASTENER	GOVT STD						
2			MS90354-0606		FASTENER	GOVT STD						
3			MS90354-0605		FASTENER	GOVT STD						
1			MS90354-0604		FASTENER	GOVT STD						
3			GB511K08-6		BOLT	GRUMMAN STD						
5			-5									
16			-4									
3			GB511K08-3	E	BOLT	GRUMMAN STD						

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55518

SCALE NONE SHEET 2.02

ENG 77.2 7-65

NAS 9-1100

QTY PER ASSEMBLY		CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
	2		NAS680C4	E	PLATE NUT	IND STD						
	AS REQD		NAS1097DD5		RIVET	↕						
AS REQD			NAS1097DD7		RIVET	↕						
	2		NAS674V4		BOLT	IND STD						
	24		MS21043-08		NUT	GOVT STD						
AS REQD			MS20470DD5		RIVET	↕						
AS REQD			MS20470DD4		↕	↕						
AS REQD			MS20426DD4		↕	↕						
AS REQD			MS20426AD3		RIVET	↕						
	24		AN960D8L		WASHER	↕						
	2		AN960D416L		WASHER	GOVT STD						
3			GS12E-075A12B05		SHIM	GRUMMAN STD						
2			GS12E-060A12B04		↕	↕						
1			GS12E-060A04B10		↕	↕						
1			GS12E-050A04B10		↕	↕						
4			GS12E-045A04B10		↕	↕						
1			GS12E-040A05B12		↕	↕						
2			GS12E-040A04B10	E	SHIM	GRUMMAN STD						
-3	-1											

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55518

SCALE NONE SHEET 2.03

ENG 77.2 7-65

01

NAS 9-1100

NAS 9-1100

CODE IDENT NO	DWG NO	SHEET
26512	LDW200-55518	3

FRAME 1 FRAME 2

9 10 11 12

A B C D

SECTION A-A (ZONE B7)

SECTION B-B (ZONE B4)

SECTION H-H

LDW280-25528 (REF)

LDW280-25524(REF)

+Z 27.000(REF) FWD BEAM PANEL REF PLANE

+Y81.000 (REF)

LDW280-25509 (REF)

LDW280-60528 (REF)

LDW280-60902 (REF)

LDW280-18762-13

LDW280-18766-13

LDW280-18767-11(REF)

LDW280M18115-11(REF)

LDW200-55518-11(REF)

LDW200-55518-13(REF)

LDW200-55518-19

LDW200-55518-25(FS)

LDW200-55518-27

LDW200-55518-29 (ON-1)

LDW280-18760-17 (REF)

LDW280-18762-11 (REF)

LDW203-55518-11(REF)

LDW280M18120-11

MS20470D

MS20470DD

MS20470DD4(3)

MS20470DD4(4)

MS20470DD4(6)

MS20470DD4(8)

MS20470DD4(10)

MS20470DD4(11)

MS20470DD4(12)

MS20470DD4(ON-1)

MS20470DD5

MS20470DD5(2)

MS20470DD5(6)

MS20470DD5(7)(ON-1)

MS20470DD5(9)

MS20470DD5(ON-1)

GR500A-4C (8)(ON-1)

GR500A-4E(2)(ON-1)

GR500A-5E (ON-1)

GR500A-5G(2)(ON-1)

GR500A-5J(ON-1)

GR500A-5K(4)

GR500A-5F (ON-1)

GR500A-5G(2) (ON-1)

GR500A-5G(5)(ON-1)

GR503A-5F(2) (ON-1)

GR500A-5D(9) (ON-1)

GBS11K-08-4(3)

GBS11K-08-6(3)

GBS11K-08-3(3) (HD NS)

GBS11W08-3(3) (

GS12E-045A04BIO

GS12E-060A04B10

GS12E-060A12B04

GS12E-075A12B05

GS12E-075A16B05

GS12E-075A20B05

GS12E-075A24B05

GS12E-075A28B05

GS12E-075A32B05

GS12E-075A36B05

GS12E-075A40B05

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GS12E-075A104B05

GS12E-075A108B05

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GS12E-075A116B05

GS12E-075A120B05

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GS12E-075A148B05

GS12E-075A152B05

GS12E-075A156B05

GS12E-075A160B05

GS12E-075A164B05

GS12E-075A168B05

GS12E-075A172B05

GS12E-075A176B05

GS12E-075A180B05

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GS12E-075A188B05

GS12E-075A192B05

GS12E-075A196B05

GS12E-075A200B05

GS12E-075A204B05

GS12E-075A208B05

GS12E-075A212B05

GS12E-075A216B05

GS12E-075A220B05

GS12E-075A224B05

GS12E-075A228B05

GS12E-075A232B05

GS12E-075A236B05

GS12E-075A240B05

GS12E-075A244B05

GS12E-075A248B05

GS12E-075A252B05

GS12E-075A256B05

GS12E-075A260B05

GS12E-075A264B05

GS12E-075A268B05

GS12E-075A272B05

GS12E-075A276B05

GS12E-075A280B05

GS12E-075A284B05

GS12E-075A288B05

GS12E-075A292B05

GS12E-075A296B05

GS12E-075A300B05

GS12E-075A304B05

GS12E-075A308B05

GS12E-075A312B05

GS12E-075A316B05

GS12E-075A320B05

GS12E-075A324B05

GS12E-075A328B05

GS12E-075A332B05

GS12E-075A336B05

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GS12E-075A440B05

GS12E-075A444B05

GS12E-075A448B05

GS12E-075A452B05

GS12E-075A456B05

GS12E-075A460B05

GS12E-075A464B05

GS12E-075A468B05

GS12E-075A472B05

GS12E-075A476B05

GS12E-075A480B05

GS12E-075A484B05

GS12E-075A488B05

GS12E-075A492B05

GS12E-075A496B05

GS12E-075A500B05

GS12E-075A504B05

GS12E-075A508B05

GS12E-075A512B05

GS12E-075A516B05

GS12E-075A520B05

GS12E-075A524B05

GS12E-075A528B05

GS12E-075A532B05

GS12E-075A536B05

GS12E-075A540B05

GS12E-075A544B05

GS12E-075A548B05

GS12E-075A552B05

GS12E-075A556B05

GS12E-075A560B05

GS12E-075A564B05

GS12E-075A568B05

GS12E-075A572B05

GS12E-075A576B05

GS12E-075A580B05

GS12E-075A584B05

GS12E-075A588B05

GS12E-075A592B05

GS12E-075A596B05

GS12E-075A600B05

GS12E-075A604B05

GS12E-075A608B05

GS12E-075A612B05

GS12E-075A616B05

GS12E-075A620B05

GS12E-075A624B05

GS12E-075A628B05

GS12E-075A632B05

GS12E-075A636B05

GS12E-075A640B05

GS12E-075A644B05

GS12E-075A648B05

GS12E-075A652B05

GS12E-075A656B05

GS12E-075A660B05

GS12E-075A664B05

GS12E-075A668B05

GS12E-075A672B05

GS12E-075A676B05

GS12E-075A680B05

GS12E-075A684B05

GS12E-075A688B05

GS12E-075A692B05

GS12E-075A696B05

GS12E-075A700B05

GS12E-075A704B05

GS12E-075A708B05

GS12E-075A712B05

GS12E-075A716B05

GS12E-075A720B05

GS12E-075A724B05

GS12E-075A728B05

GS12E-075A732B05

GS12E-075A736B05

GS12E-075A740B05

GS12E-075A744B05

GS12E-075A748B05

GS12E-075A752B05

GS12E-075A756B05

GS12E-075A760B05

GS12E-075A764B05

GS12E-075A768B05

GS12E-075A772B05

GS12E-075A776B05

GS12E-075A780B05

GS12E-075A784B05

GS12E-075A788B05

GS12E-075A792B05

GS12E-075A796B05

GS12E-075A800B05

GS12E-075A804B05

GS12E-075A808B05

GS12E-075A812B05

GS12E-075A816B05

GS12E-075A820B05

GS12E-075A824B05

GS12E-075A828B05

GS12E-075A832B05

GS12E-075A836B05

GS12E-075A840B05

GS12E-075A844B05

GS12E-075A848B05

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GS12E-075A904B05

GS12E-075A908B05

GS12E-075A912B05

GS12E-075A916B05

GS12E-075A920B05

GS12E-075A924B05

GS12E-075A928B05

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GS12E-075A936B05

GS12E-075A940B05

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GS12E-075A948B05

GS12E-075A952B05

GS12E-075A956B05

GS12E-075A960B05

GS12E-075A964B05

GS12E-075A968B05

GS12E-075A972B05

GS12E-075A976B05

GS12E-075A980B05

GS12E-075A984B05

GS12E-075A988B05

GS12E-075A992B05

GS12E-075A996B05

GS12E-075A1000B05

NAS 9-1100

02 03

GS12E-075A12B05

GR500A-5D
MS20470DD

LDW280-6

MS20470DD4(7)

MS20470
LDW280-1
GR500A-4
(ON-1)

GR500A-5F(ON-1)
GR500A-4C(6)(ON-1)

MS20470DD4(7)
MS20470DD5(2)

LDW280-18762-11(R
MS20470DD5
MS20470DD4(5
(ON-1)

MS20470DD4(9)
MS20470DD5(2)

MS20470DD5(ON-1)
MFD HD NS

GS12E-045A04B10
MS20470DD4(6)

MS20470
LDW280-6

±Z 0.000 (REF)

LDW280-18767-11

MS20470DD4(10)
MS20470DD5(2)

NAS1097DD4 CSK FS
LDW200-55518-11

LDW280-18760-13
MS20470DD4(8)

MS20470DD5(2)
MS20470DD4(7)

MS20470DD5(2)
MS20470DD4(7)

A (ZONE A12)

MS20470DD4(7)

MS20470DD5(10)

LDW280-18762-11(REF)

MS20470DD4
(11) (ON-1)

MS20470DD5(9)

LDW200-55518-11(REF)

GS12

LDW280-18760-12

LDW280M18115-11(ON-1)

GR500A-5F(ON-1)

MS20470DD5(7)
MS20470DD5(ON-1)
MS20470DD4(4)
(ON-1)
GR500A-4C(6)
(ON-1)

LDW280-18760-11

MS20470DD5(2)
GR500A-4C(6)
(ON-1)

MS20470DD5(ON-1)
MFD HD NS
MS20470DD4(4)
(ON-1)

MS20470DD5(7)
GR500A-5E(ON-1)

MS20470DD5(18)(ON-1)

GR500A-4C(8)
(ON-1)

GR500A-5G(2)(ON-1)
GR500A-4C(8)
(ON-1)

LDW280-18762

LDW280-18760-

LDW200-55518-11(REF)

LDW280-60902(REF)

3.28
(6 EQ SPS)

3.16
(5 EQ SPS)

MS20470DD5(2)

GR500A-4H(2)(ON-1)

MS20470DD5(20)

GB511N08-3(3)(HD NS)
AN960D8L(3)(UNDER BOLT HD)
MS21043-08(3)(FS)
(ON-1) (SEE NOTE 11)

GR500A-5D(9)
(ON-1) ▲ (SEE NOTE 10)

GR500A-5D(8)
(ON-1) ▲ (SEE NOTE 10)

GR500A-5F (ON-1)
▲ (SEE NOTE 10)

A

.250-.254 DIA (2 HOLES)
NAS674V4(2)
AN960D416L(2)
NAS680C4(2)
MS20426AD3(4)
CSK IN LDW280M17118 (NS)
(ON-1) ▲ (SEE NOTE 10)

GR500A-5D(8) (ON-1)
▲ (SEE NOTE 10)

GR500A-5D (9) (ON-1)
▲ (SEE NOTE 10)

GR500A-5F (ON-1)
▲ (SEE NOTE 10)

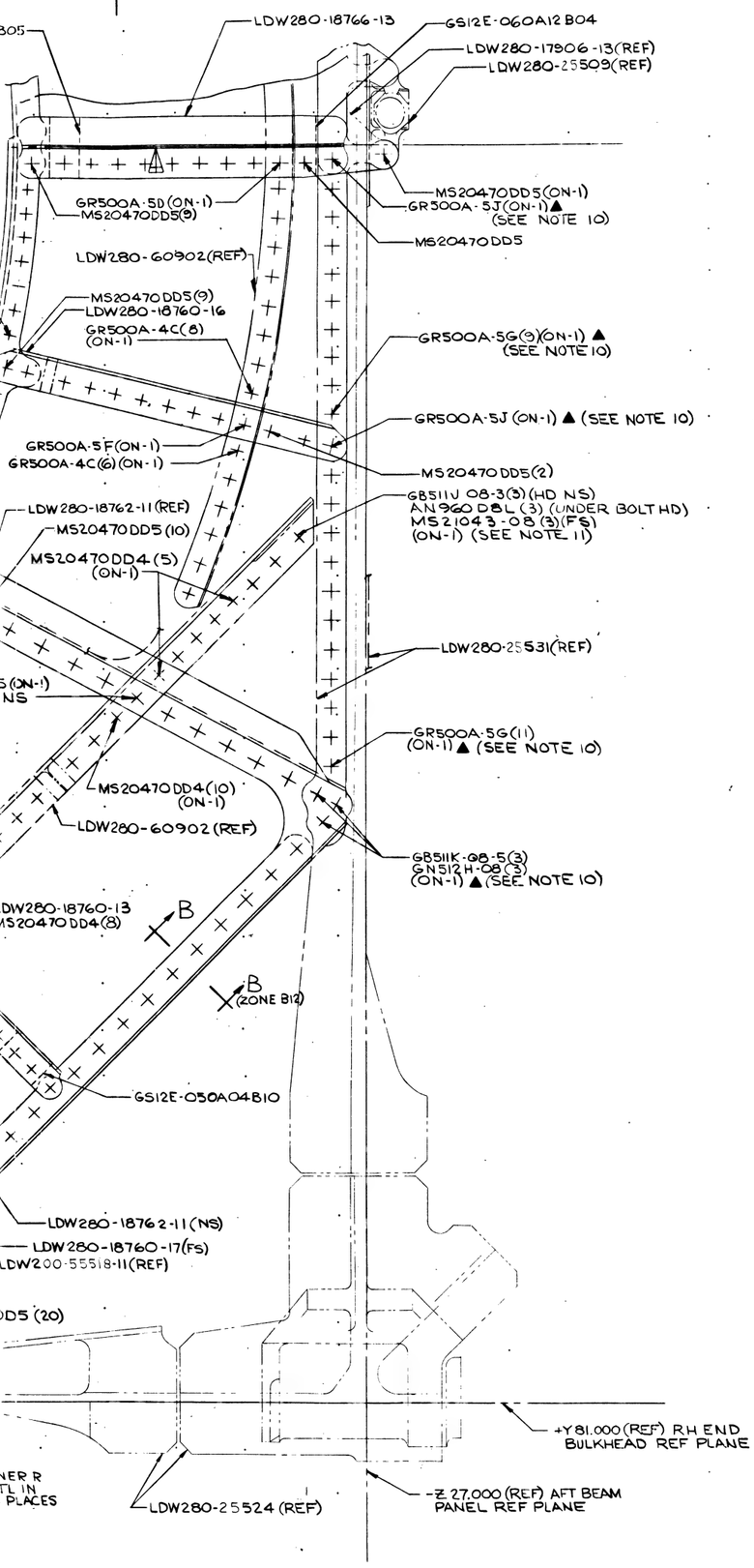
GB511N08-3(3)(HD NS)
AN960D8L(3)(UNDER BOLT HD)
MS21043-08(3)(FS)
(ON-1) (SEE NOTE 11)

GB511K08-4(3)
GN512H08(3)
C'BORE .343 DIA. x .031 CORNER R
x.089/.089 REMAINING MATL IN
LDW280M17118(FS) TYP 3 PLACES
(ON-1) ▲ (SEE NOTE 10)

LDW200-55518-1 INSTL
-3 ASSY
VIEW LOOKING UP

5518 SHEET 3
FRAME 1 FRAME 2

CODE IDENT NO 26512 DWG NO LDW200-55518 SHEET 3
FRAME 2

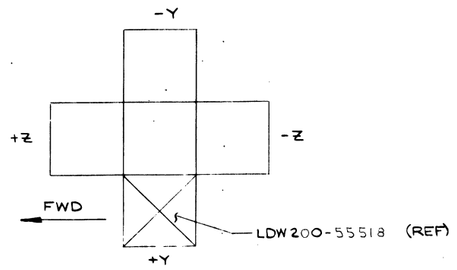


NOTES:

1. FOR BASIC JIG DATA SEE LDW280-23511.
2. FULL SIZE DWG MAY BE SCALED FOR DIMENSIONS NOT SHOWN
3. ALL RIVET LOCATIONS ARE IDENTICAL TO LDW280-60541 EXCEPT AS NOTED IN 10. (SEE NOTE 10)
4. INSTALL RIVETS WET WITH EPON 919 PER LSP14-14102 IN AREAS INDICATED.
5. FASTENER MANUFACTURED HEAD (OTHER THAN CSK ATTACHMENTS) TO BE ON WEB SIDE UNLESS OTHERWISE SPECIFIED.
6. SHIM PER LPC 280-33.
7. SHIM AS REQUIRED USING AL ALLOY 2024 T3, QQ-A-250/4, FINISH 76 PER LSP14-9010.
8. REMOVE LDW 280-2554-1 FROM PANEL PRIOR TO REWORK AND REPLACE WITH LDW 200 55518-1 EXCEPT FOR THESE PARTS: LDW280-1453-17 & -19 AND LDW280 M17189 3.
9. 1/8 MINIMUM CLEARANCE WITH ADJACENT OXIDIZER LINES IS PERMISSIBLE.
10. FOR FASTENER LOCATIONS MARKED ▲ DRILL HOLES FROM EXISTING STRUCTURE
11. FINAL HOLE SIZE FOR GB511J-08 TO BE .1640 - .1660

SUPPLEMENTARY DATA
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

MARK PART NUMBER IN ACCORDANCE WITH MIL STD-130	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKING IN ACCORDANCE WITH MIL-STD-130	✓
LENGTHS OF AN, MS & NS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	✓
INSTALL RIVETS IN ACCORDANCE WITH LSP14-15302 LSP14-15303	✓
INSPECTION INFORMATION MINIMUM PERMISSIBLE EDGE DISTANCE IS 1 1/2 FASTENER DIA FROM FASTENER ℄	✓
INSTAL FASTENERS IN ACCORDANCE WITH LSP14-15304 LSP14-15306	✓



FOR ENGRG REF ONLY
NO SCALE
VIEW LOOKING UP

NAS 9-1100

10703

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SIZE	CODE IDENT NO	LDW200-55518
K	26512	

SCALE FULL SHEET 3.00

LDW200-55518 SHEET 3

FRAME 2

LDW200-55518 B

LDW200-55518 A

9
10
11
12
E
F
G
H
NAS 9-1100
LDW703

LDW200-55518-11NSTL (REF)
-3 ASSY (REF)
VIEW LOOKING UP

NAS 9-1100

02/03

NAS1097DD5 CSK NS
LDW280M17140-17 (ON-1)
▲ (SEE NOTE 10)
LDW280M17101 (REF)
DW200-55526 (REF)
GB511K08-4 (3)
GN512H08 (3) (ON-1)
& SEE NOTE 10)
-Z 27.000 (REF)
+Y 27.000 (REF)
MS20470DD5 (16)
LDW280-18763-15 FS
LDW280-18762-13 NS
LDW200-55518-11 (REF)
(REF)
4 (12)
F (ZONE G2)
F
GS12E-040A04B10
LDW280-18761-14
MS20470DD5 (9)
DW280-60902 (REF)
DW280-18762-13 (REF)
GB511K08-4 (3)
GN512H08 (3)
(ON-1) ▲ (SEE NOTE 10)
MS20470DD5 (3) (ON-1) ▲ (SEE NOTE 10)
GB511K08 (2 (REF))
+Y 38.483 (REF)
G
G
(ZONE 12G)
LDW200-55526 (REF)
NAS1097DD4
CSK FS OF
LDW200-55518-11
NAS1097DD5
CSK NS (ON-1) ▲ (SEE NOTE 10)
MS20470DD5 (5) (ON-1)
▲ (SEE NOTE 10)
MS20470DD5 (3)
0470DD4 (29) (ON-1)
20470DD5 (ON-1)
0A 5E (ON-1)
GR500A 5G (2) (ON-1) ▲ (SEE NOTE 10)
GB511N08-4 (3) (HD NS)
AN960D8L (3) (UNDER BOLT HD)
MS21043-08 (3) (FS) (ON-1) PICKUP LOCATIONS
7188-3 (SEE NOTE 11)
NAS1097DD5
CSK NS (ON-1)
▲ (SEE NOTE 10)
MS90354-0604 (ON-1)
▲ (SEE NOTE 10)
MS90354-0605 (2) (ON-1)
▲ (SEE NOTE 10)
LDW280M17188-3 (REF) (SEE NOTE 8)
GR500A 4C (7)
(ON-1)
LDW280-18761-12
LF (ZONE 12F)
L
GR500A 4E (2)
(ON-1)
MS20470DD4 (16)
MS90354-0606 (2) (ON-1)
▲ (SEE NOTE 10)
SEE NOTE 6
MS90354-0605 (ON-1)
▲ (SEE NOTE 10)
MS20470DD4 (3)
GR500A 5G (2) (ON-1)
▲ (SEE NOTE 10)
LDW280M18114-11
GR500A-4C (7)
(ON-1)
LDW280-60902 (REF)
GR500A 5J (3) (ON-1)
▲ (SEE NOTE 10)
MS20470DD5 (ON-1)
GR500A-5L (ON-1)
▲ (SEE NOTE 10)
LDW280-25509 (REF)
LDW280-17906-13 (ON-1)
+Y 54.000 (REF)
GS12E-075A12B05 (REF)
LDW280-18766-13 (REF)
GS12E-060A12B04 (REF)
MS20470DD5
GR500A-5E (ON-1)

LDW280-18067-21 (REF)
LDW280-25535 (REF)
LDW280-18066-11 (REF)
LDW280M17101 (REF)
+X 131.140 (REF)
-Z 5.805 (REF)
MS20470DD5 (3)
(ON-1)
LDW280-18066-11 (REF)
VIEW D-D (ZONE H8)

+X 131.140 (REF)
LDW280-18762-14 (REF)
LDW200-55518-15 (REF)
LDW200-55518-11 (REF)
SECTION E-E (ZONE G10)

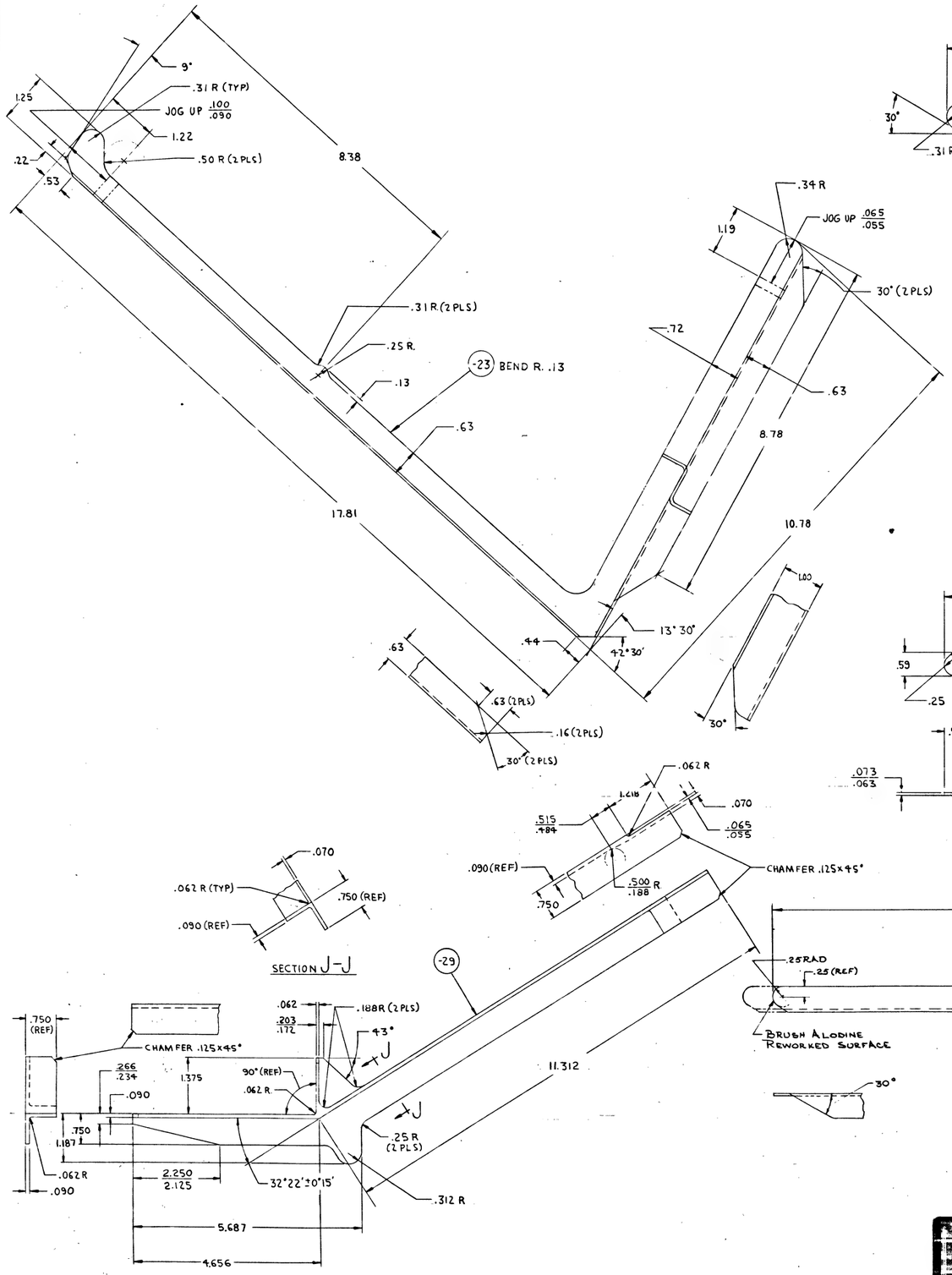
LDW280-18762-13 (REF)
LDW280-18763-15 (REF)
LDW200-55518-11 (REF)
+X 131.140 (REF)
SECTION F-F (ZONE G4)

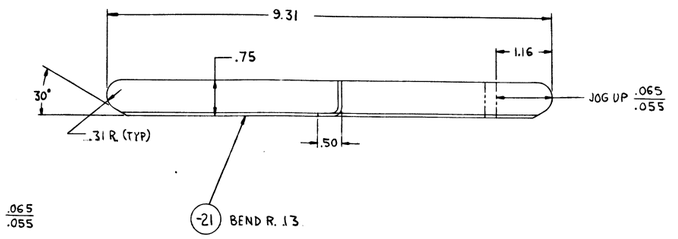
10370303
NAS 9-1100

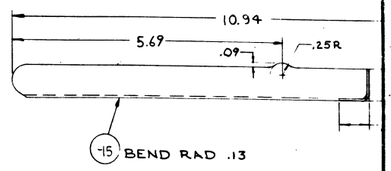
H
G
F
E
LDW200-55518
LDW200-55518

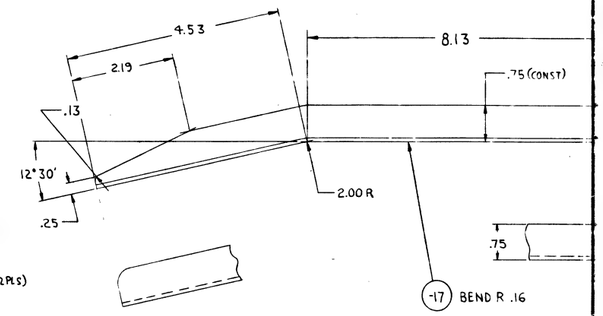
THIS IS AN ORIGINAL DRAWING
GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE L.I. NEW YORK
SIZE K | CODE IDENT NO 26512 | LDW200-55518
SCALE FULL | SHEET 4.00
3FR

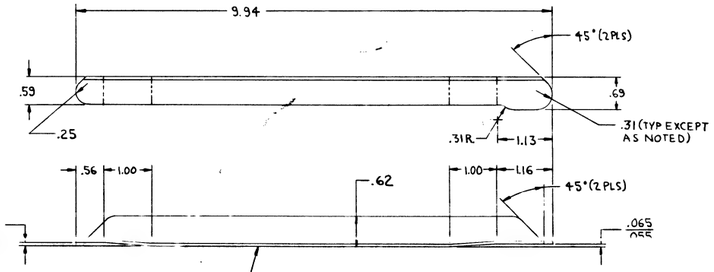
55518 | SHEET 4
FRAME 2 | FRAME

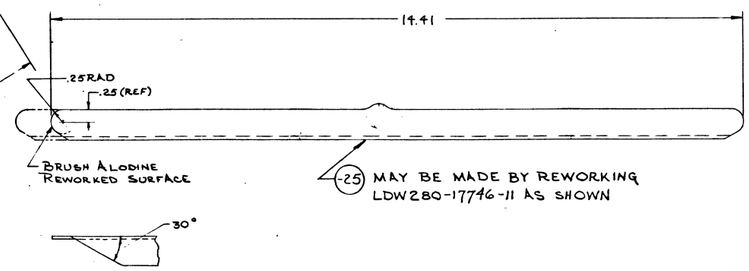


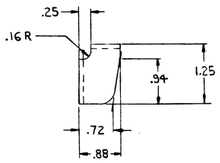


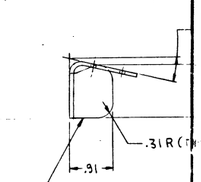


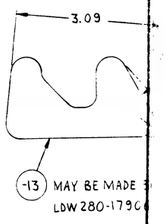












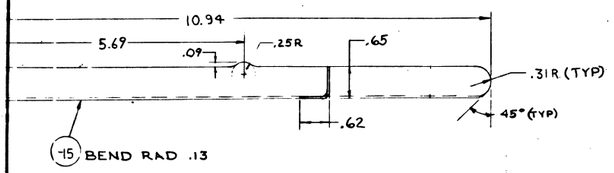


011/02 NAS 9-1100

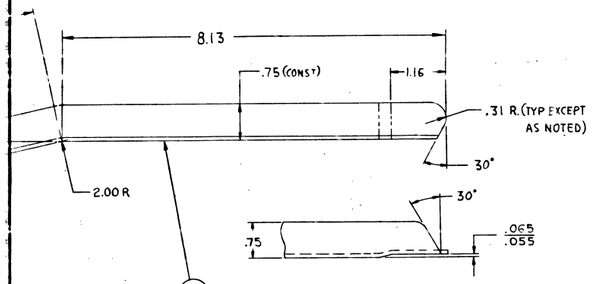
CODE IDENT NO	DWG NO	REV	SHEET
26512	LDW200-55518		

FRAME FRAME

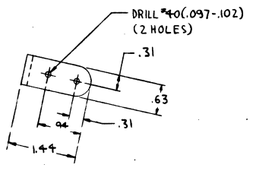
REVISIONS						
ZONE	LTR	DESCRIPTION	EFF CODE	MODEL	DATE	APPROVED

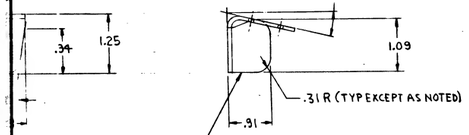


(-15) BEND RAD .13

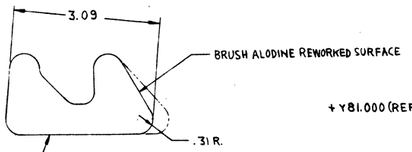


(-17) BEND R .16

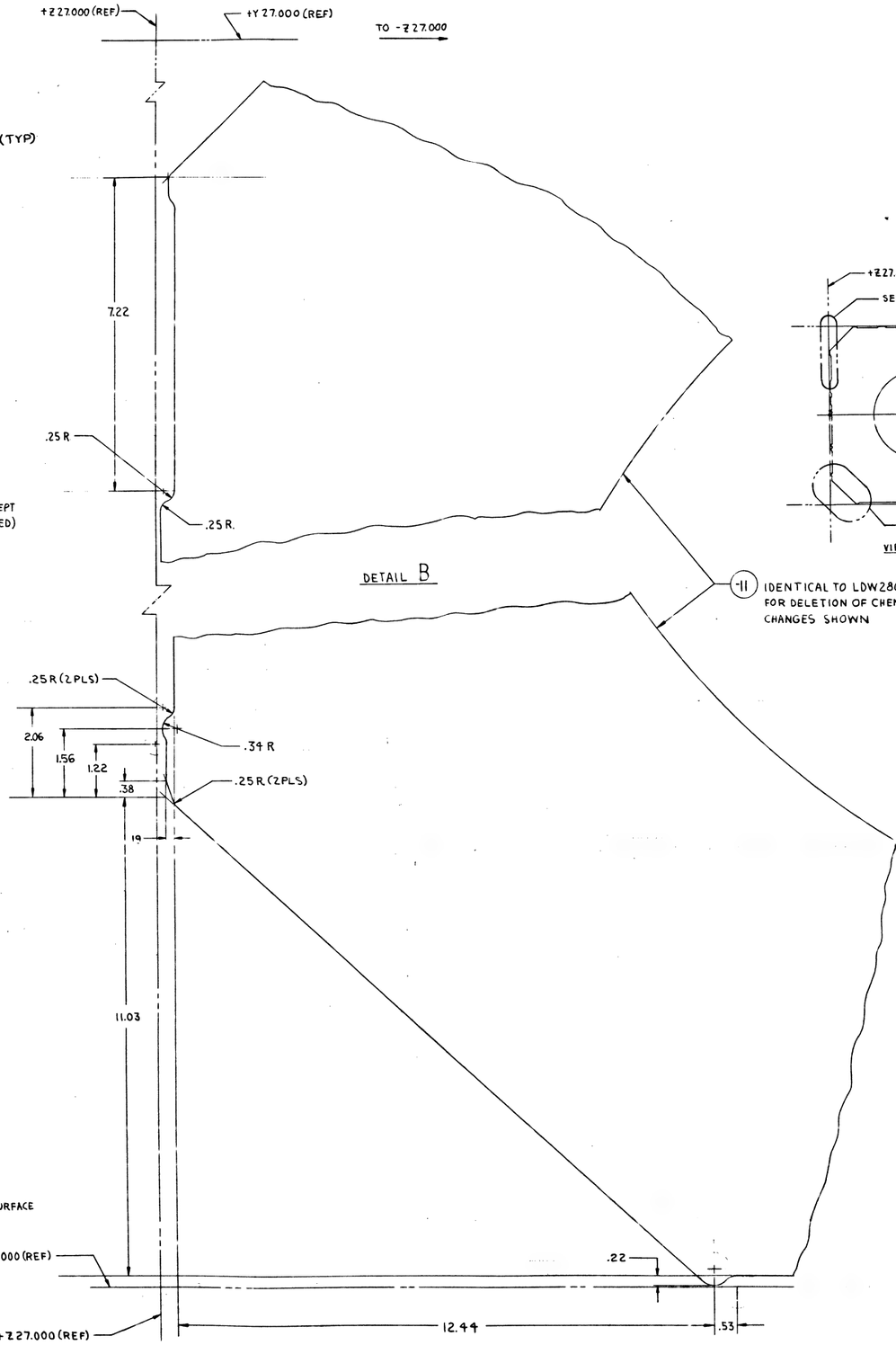




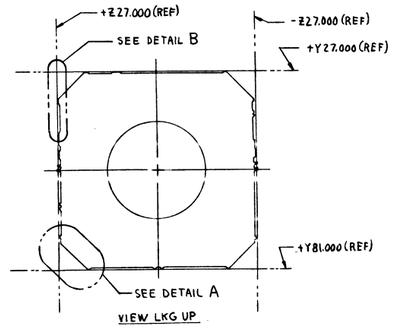
(-19) BEND R. .16



(-13) MAY BE MADE BY REWORKING LDW280-17906-13 AS SHOWN



DETAIL B



VIEW LKG UP

(-11) IDENTICAL TO LDW280-18741-11 EXCEPT FOR DELETION OF CHEM MILL AND TRIM CHANGES SHOWN

DETAIL A

02402 NAS 9-1100

FOR PARTS LIST, USAGE DATA, AND DWG SH STATUS, SEE DOCUMENT SAME NUMBER PREFIXED PL

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES
LINEAR TOL: XX ± .05, XXX ± .010
ANGULAR ±1° TOL ON LOFTED DIMENSIONS IS ± 0°30'

CONTRACT NO.

DRAWN BY
LAYOUT BY
CHECKED BY
GR LEADER
REL GROUP
PROJ ENGR
GOVT APPD

GRUMMAN AIRCRAFT ENGINEERING CORPORATION
BETHPAGE, NEW YORK 11714

SIZE J | CODE IDENT NO. 26512 | LDW200-55518
SCALE | SHEET 5 OF 8

DISTR. LIST #

LDW200-55518 REV SHEET

FRAME

LDW200-55518
B
LDW200-55518
A

DWG SIZE 24 X 36
FULL SIZE PLOTS ARE 0.98in - 24.5 SQ FT
½ SIZE SHEET AREA IS 6 SQ FT ALL = 4.5 SQ FT

PRINTING INFO ONLY

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LEO 280		EO NO. 1840
CONTROL INFO NO. LDW280B9913		

ADD NOTE * (* USE NEXT AVAILABLE NOTE NUMBER) ON DWGS LISTED BELOW

NOTE * ON -1 INSTL. ALL PARTS MAY BE TRIMMED .25 INCH MAXIMUM ON ALL DIMENSIONS WITH A MIN OF 1½ DIA. EDGE DISTANCE MAINTAINED ON ALL FASTENERS UNLESS OTHERWISE NOTED.

DRAWING NO.	DASH NO.	EFFECTIVITY	TITLE	E.O. NO.
✓LDW200-55518	-1	LTA5/R (159)	SEE DWG.	A1
-55519	-1			A1
-55520	-1			A1
-55521	-1			A1
-55522	-1			A1
-55523	-1			A1
LDW200-55532	-1	LTA5/R(159)	SEE DWG.	A1

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LID 3890 PKG 95	(5)

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
LM-10 TANK EXPANSION FOR LTA-5	ADDED NOTE *	2-11-70

MODEL	EFFECTIVITY	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	DATE	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
	E.I. [redacted]			✓		✓		PBT	2-9-70			2/9/70			2-10-70	2/11/70
LM	LEM507	LTA5/R(159)						YDI								

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	NOTED	LEO 280	1840

CDR 2-12-70
ISSUED BY ED COLEMAN/G. HANSMANN X87222 SECTION VDI GROUP NO. 335 PL 25

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENG 32.1 REV 3-65
ENGINEERING ORDER

DWG. NO. LDW200-55518 | EO NO. 42
CONTROL INFO NO. LDW280C0148

ON -1:
ADD LDW280-18067-13 REPLACING LDW280-18067-21 } IN F/D & B/M
ADD LDW280-18067-11 REPLACING LDW280-18067-23 }
REVISE NOTE 8 "REMOVE LDW280-25541-1 DECK..... EXCEPT FOR THESE PARTS: LDW280-17453-17 & -19, LDW280M17188-3 & LDW280-18067-11 & 13" WAS "REMOVE.....EXCEPT FOR THESE PARTS: LDW280-17453-17 & -19 AND LDW280M17188-3"

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	V	LCD 3890 PKG 95

REASON FOR EO: LM-10(40) PARTS NOT REQUIRED FOR LTA-5/R(159) REWORK

DESCRIPTION OF EO: ON-1 ADDED LDW280-18067-11 & 13
REMOVED LDW280-18067-21 & -23
ADDED LDW280-18067-11 & -13 TO NOTE 8

GAEC EO RELEASE

MODEL	EFFECTIVITY: PREVIOUS ASSEMBLY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM	LFM 507	LTA5/R(159)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO | DISPOSITION OF PARTS: REWORK ✓ | SCRAP

APPROVED BY						
DATE	3-27-70			3/30/70	3/24/70	3/24/70
	VDI	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG

PRIORITY: C
DRAWING TITLE: DECK INSTALLATION ~ D/S RIGHT HAND LOWER
DRAWING NO.: LDW200-55518
EO NO.: A2

3/27/70
ISSUED BY J. PEDERSEN/G. HANSMANN X87222 SECTION VDI GROUP NO. 335 PL 25

01

NAS 9-1100

LFM

LDW200-55519

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW200-55519-1	LFM-507 LDW200-55520	GAEC SCH NO. GTA5/R(159)	1

WORK PACKAGE FUNCTION No. 110 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00		2.00	2.01	2.02	2.03			
REV									
SHEET	3.00		4.00						
REV									
SHEET									
REV									

LAST SECT LTR USED	L-L
LAST DASH NO. USED	-18

GRUMMAN REL' INFO

PRIM NO.	W(6-N)	
207	ME-16 12/2/69	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
~~FRACTIONS~~ – DECIMALS – ANGLES
XX±.06 XX.X±.020 ±0°30'

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCO 3890 PKG #95	

CONTRACT NO. NAS 9-1100 LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	Bonelli 11-20-69		
LAYOUT BY	Bonelli 11-20-69		
CHECKED BY	[signature] 12-1-69		
GR. LEADER	[signature] 12/1/69		
VEH. DES. INT	Thorgrimson 12-1-69		
STRUCTURES		PROJ ENGR Thorgrimson 12-1-69	
STRUCTURES	WWH 12-1-69	REL GROUP [signature]	

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

DECK INSTALLATION
DESCENT STAGE-L.H. LOWER
REWORK OF LOW280-25508 LFM No 507

SIZE	CODE IDENT NO.	
B	26512	LDW200-55519

SCALE NONE SHEET 1.00 OF 7

ENG 77.1 12-65

12-5-69

0-1 NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
				1				LDW280-18760-20	E	ANGLE	SEE DWG						10D
				1				-19	E	ANGLE							4D
				1				-15	E	ANGLE							4E
				1				-14	E	ANGLE							4F
				1				-12	E	ANGLE							8G
				1				LDW280-18760-11	E	ANGLE							6G
					2			LDW280-17906-13	E	DOUBLER							3D 10D
				1				LDW280-18767-13	E	RING	SEE DWG						7B
				1				LDW200-55519-18	E	ANGLE	MAKE FROM	LDW280-18760-18					4G
				1				LDW200-55519-17	E	ANGLE	MAKE FROM	LDW280-18760-17					10G
				1				LDW200-55519-15	E	FILLER	AL.ALLOY SH.	QQ-A-250/12	7075-T6	.125 x 2 x 2	NONE	76	10E
				1				LDW200-55519-13	E	FILLER	AL.ALLOY SH.	QQ-A-250/12	7075-T6	.125 x 4 x 5	NONE	76	10G
				1				LDW200-55519-11	E	WEB	AL.ALLOY SH.	QQ-A-250/12	7075-T6	.040 x 55 x 56	NONE	76	3B
					1			LDW200-55519-3	E	DECK ASST					NONE	NONE	
								LDW200-55519-1	E	DECK INSTL.					NONE	NONE	
				-3	-1												

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
76	ALODINE	LSP-14-9010

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55519

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

QTY PER ASSEMBLY			CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
1				LDW280-18716-17	E	STIFFENER	SEE DWG						9E
1				-15									9G
1				-13									9F
1				LDW280-18716-11		STIFFENER							10G
2				LDW280-18766-13		TEE							4B 12B
1				LDW280-18766-11		TEE							7B
1				LDW280-18763-16		STIFFENER							5B
1				LDW280-18763-15		STIFFENER							9B
1				LDW280-18762-14		STIFFENER							5B
1				LDW280-18762-13		STIFFENER							10B
1				LDW280-18762-12		STIFFENER							4G
1				LDW280-18761-18		ANGLE							8B
1				-17									6B
2				-15									6B 8B
1				-14									9D
1				-13									4B
1				-12									10C
1				LDW280-18761-11	E	ANGLE	SEE DWG						4C
-3	-1												

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55519

SCALE NONE SHEET 2.01

ENG 77.2 7-65

NAS 9-1100

QTY PER ASSEMBLY			CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
1	1			GSIZE-090A0-5B11	E	SHIM	GRUM. STD						
3				GSIZE-075A12B05									
2				GSIZE-070A12B04									
1				GSIZE-080A0-5B12									
2				GSIZE-050A04B10									
4				GSIZE-045A04B10									
2				GSIZE-040A04B10		SHIM	GRUM. STD.						
	1			GR500A-5N		RIVET	GRUM. STD.						
	5			GR500A-5J									
	7			GR500A-5H									
1	35			GR500A-5G									
6	58			GR500A-5F									
	17			GR500A-5E									
12	37			GR500A-5D		RIVET	GRUM. STD						
	1			LDW280M 18115-11		TEE	SEE DWG						7G
	1			LDW280M 17485-1		FITTING	SEE NOTE 2						10C
	1			LDW280M 17492-1		FITTING	SEE NOTE 2						6A
	1			LDW280M17307-1	E	FITTING	SEE NOTE 2						3C
-3	-1												

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55519

SCALE NONE SHEET 2.02

ENG 77.2 7-65

NAS 9-1100

QTY PER ASSEMBLY						CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
				-3	-1											
					2		GR500A-4H	E	RIVET	GRUM. STD.						
					2		GR500A-4G									
				1			GR500A-4F									
				4			GR500A-4E									
					116		GR500A-4C		RIVET							
					24		GN512H 08		NUT-COLLAR	GRUM. STD.						
					12		GB511K08-5		BOLT	GRUM. STD.						
					12		GB511K08-4		BOLT							
					4		GB511J08-4		BOLT							
					20		GB511J08-3		BOLT	GRUM. STD.						
							NAS1097DD5		RIVET	IND. STD						
							NAS1097DD4		RIVET							
					2		NAS680-C4		NUT-PLATE							
					2		NAS674V4		BOLT	IND. STD						
					4		MS90354-0505		FASTENER	GOVT STD.						
					24		MS21043-08		NUT							
							NS20470DD5		RIVET							
							MS20470DD4									
							MS20426AD3		RIVET							
					24		AN960D8L		WASHER							
					2		AN960D416L	E	WASHER	GOVT STD.						

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55519

SCALE NONE SHEET 2.03

ENG 77.2 7-65

NAS 9-1100

NAS 9-1100

10170103

12 11 10 9

D C B A

GS12E-070A12B04
MS20470DD5
GS12E-075A12B05
GR500A-5D (ON-1) ▲SEE NOTE 7
MS20470DD5(8)
MS20470DD4(5)
LDW280-25509(REF)
LDW280-18766-13
MS20470DD5 (ON-1)
GR500A-5E(ON-1)
GR500A-4C(7) (ON-1)
LDW280-1793613 (ON-1)
LDW280-18760-20
GR500A-5H(3)(ON-1) ▲SEE NOTE 7
GR500A-5F(4)(ON-1) ▲SEE NOTE 7
MS20470DD4(6)
LDW280-25530(REF)
GR500A-5J (ON-1) ▲SEE NOTE 7
GR500A-5E (ON-1)
MS20470DD5(2)
GR500A-5F(2)(ON-1) ▲SEE NOTE 7
MS20470DD5(2)
GR500A-4C (8) (ON-1)
LDW280M17485-1 (ON-1) (SEE NOTE 2)
LDW280-60901 (REF)
LDW280-18761-12
(ZONE 11A) F
F
MS90354-0505(2)(ON-1) ▲SEE NOTE 7
GR500A-5E(4)(ON-1) ▲SEE NOTE 7
MS20470DD5(7)
GB511J-08-3(3)NS AN960D8L(3)NS M3210-43-38(3)FS (ON-1)
MS20470DD5(6)
MS20470DD4(6)
GR500A-5E (ON-1)
MS20470DD4(8) (ON-1)
MS20470DD5(2)
MS20470DD5(9)(ON-1) ▲SEE NOTE 7
MS20470DD5 (ON-1)
MS20470DD4(6)
MS20470DD5(3)
NAS1097DD4 CSK FS IN LDW200-55519-11
MS20470DD4(6)
MS20470DD4(8) (ON-1)
GS12E-045A04B10
MS20470DD5(9)
NAS1097DD4 CSK FS IN LDW200-55519-11
MS20470DD5(16)
MS20470DD4(8) (ON-1)
GB511K-08-5(3) GN512H-08(3) (ON-1) ▲SEE NOTE 7
LDW280-18761-14
MS20470DD4(13)
LDW200-55519-11 (REF)
LDW280-60901(REF)
LDW280-18761-15
E
GS12E-040A04B10 NAS1097DD4 CSK FS IN LDW200-55519-11
LDW280-18762-13(REF)
LDW280-18763-15(REF)
X131.140(REF)
LDW280M17114 (REF) LDW280-25537 (REF)
SECTION E-E ZONE 10B
E (ZONE 11B)
MS20470DD5(9)
MS20470DD4(7) (ON-1)
MS20470DD5 (ON-1)
LDW280-18763-15
LDW280-18762-13
-Y27.000 LH BEAM PANEL REFERENCE PLANE
LDW280M17101 (REF)
MS20470DD5(9) (ON-1) ▲SEE NOTE 7
GB511K-08-4(3) GN512H-08(3) (ON-1) ▲SEE NOTE 7
LIQUID SHIM (SEE NOTE 8)
LDW280M17485-1 (REF)
LDW200-55519-11 (REF)
X131.140(REF)
LDW280M17114 (REF) LDW280-25537 (REF)
+Z27.00(REF)
+Z27.000 FWD BEAM PANEL REFERENCE PLANE
SECTION F-F (ZONE 10C)

CODE IDENT NO	DWG NO.	SHEET
26512	LDW200-55519	3

12 11 10 9

1 FRAME FRAME 2

CODE IDENT NO	DWG NO	SHEET
26512	LDW200-55519	3

8	7	6	5

LDW200-55519-1 INSTL
-3 ASSY
VIEW LOOKING UP

SECTION B-B

LDW280-25533 (REF)

LDW200-55519 -11(REF)

Z

GBS11K 06-4(3)
GNS12H 06(3)
(ON-1) ▲SEE NOTE 7

MS204700D5(9)
(ON-1) ▲ SEE NOTE 7

GR500A-5F(4)
(ON-1) ▲ SEE NOTE 7

GBS11J-08-3 NS
AN960D8L(2) NS
MS21043-08(2) FS
(ON-1)

GR500A-4F
(ON-1)
▲SEE NOTE 7

GR500A-5G
(ON-1)
▲SEE NOTE 7

LDW280M1740-1
(ON-1)
(See NOTE 2)

LDW280M1740
(REF)
LDW280-25585 (REF)

GR500A-5F(G)
(ON-1)
▲SEE NOTE 7

GR500A-5G(2)
(ON-1)
▲SEE NOTE 7

GR500A-5G
(ON-1)
▲SEE NOTE 7

GR500A-5F(7)
(ON-1)
▲SEE NOTE 7

MS204700D5(3)

LDW280M1740
(REF)

MS204700D5(2)

MS204700D5(3)

GR5CJA-5G (2)
(ON-1)
▲ NOTE 7

GR500A-4C(7)(ON-1)

MS204700D5(2)
(GR500A-4C(7)(ON-1)

GR500A-4C(7)
(ON-1)

GBS11J-08-3 NS
AN960DBL(3) NS
MS21043-08(3) FS
(ON-1)

MS204700D5
(ON-1)

MS204700D5

LDW280-18763-16

MS204700D4(3)
(ON-1)

MS204700D5(3)

GR500A-5E(2)(ON-1)

GR500A-5E
(ON-1)

GR500A-5E
(ON-1)

GR5 XA-4(3)
(ON-1)

MS204700D5(6)

LDW280-18762-14

LDW280-18766-11

LDW280-18761-18

LDW280-18761-15

LDW280-18761-17

LDW280-18761-15

LDW280-18760-17

GR500A-5E
(ON-1)

MS204700D5(6)

MS204700D4(3)

MS204700D5(2)

MS204700D5(6)

MS204700D4(3)

MS204700D4(3)

MS204700D5(2)

MS204700D5(2)

MS204700D4(6)

MS204700D4(5)

MS204700D4(5)

MS204700D5(2)

MS204700D5(2)

MS204700D4(6)

MS204700D4(5)

MS204700D5(7)

MS204700D5(7)

MS204700D4(6)

MS204700D4(6)

MS204700D5(2)

MS204700D5(2

THIS IS AN ORIGINAL DWG.

SIZE	CODE IDENT NO	DWG NO	REV
K	26512	LDW200-55519	

SCALE FULL | SHEET 3 OF 3

CHRYSLER AEROSPACE CORP. BETHPAGE L. I. NEW YORK

NAS 9-1100

LDW200-55519 B

LDW200-55519 A

NOTES:

1. FOR BASIC DIG DATA SEE LDW280-23511.
2. LDW 27M1307-1, LOW 28OM17432-1 AND LDW 28OM1749S-1 FITTING S ARE TO BE SALVAGED FROM LTA'S VEHICLE AND UTILIZED ON LOW 200-55519 -1 INSTALLATION.
3. MFD HD OF FASTENERS(OTHER THAN CSK ATTACHMENTS) TO BE ON WEB SIDE UNLESS OTHERWISE SPECIFIED.
4. FULL SIZE DWG MAY BE SCALED FOR DIMENSIONS NOT SHOWN.

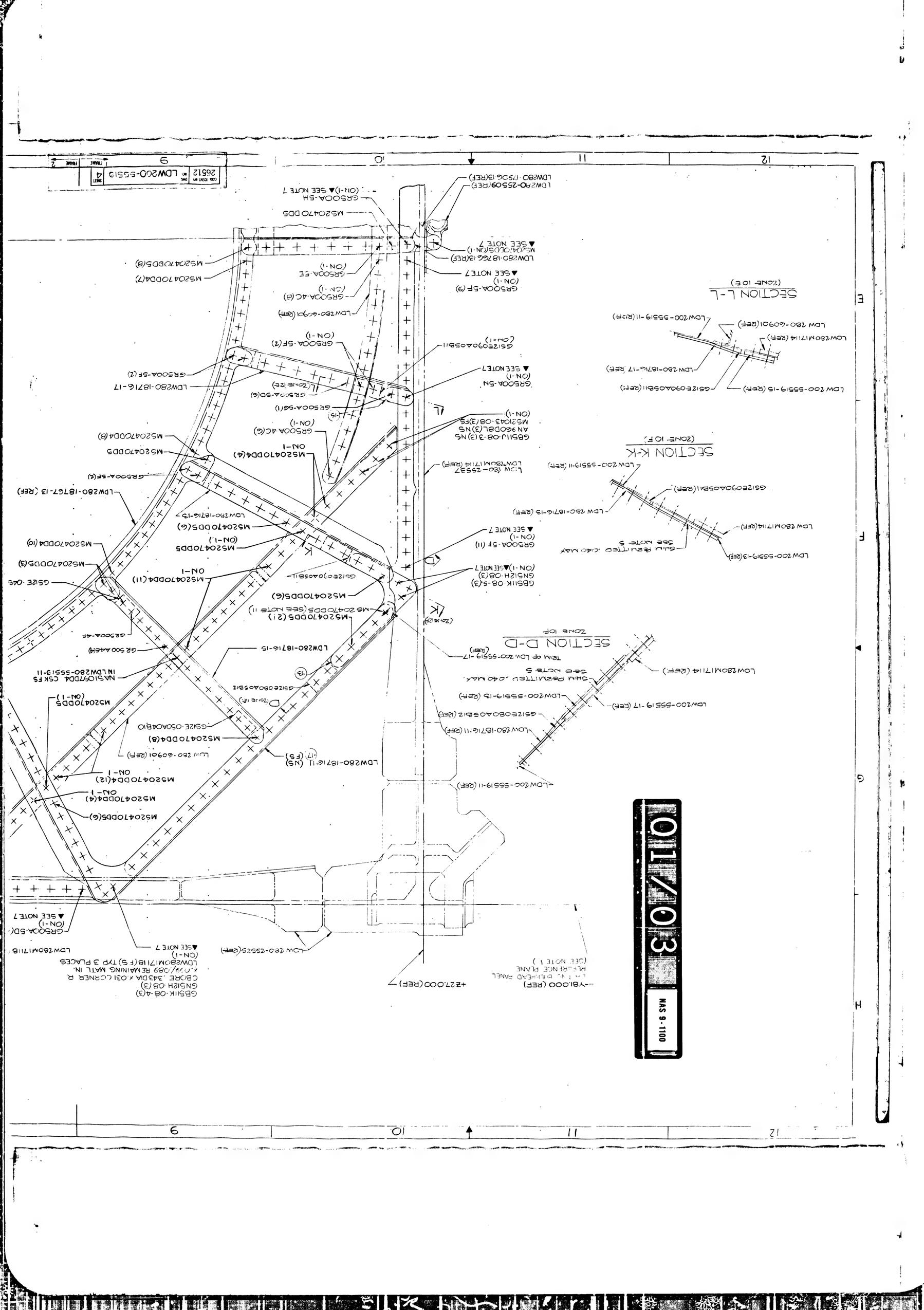
SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG	
MARK PART NUMBER IN ACCORDANCE WITH MIL STD 130	
PLUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN RECESS MARKS EXCEPT	
LENGTHS OF MAS & NAS & MS & MY PARTS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL PARTS IN ACCORDANCE WITH LSPM-1502,LSPM-1503	
INSPECTION INFORMATION MIN PERMISSIBLE EDGE DISTANCE IS 1½ FASTENER DIA FROM FASTENER CENTER LINE	
ACCEPTABLE WITH NSTALL FASTENERS N LSP-14-1524 AND LSP-14-1526.	

SECTION B-B (ZONE 3B)

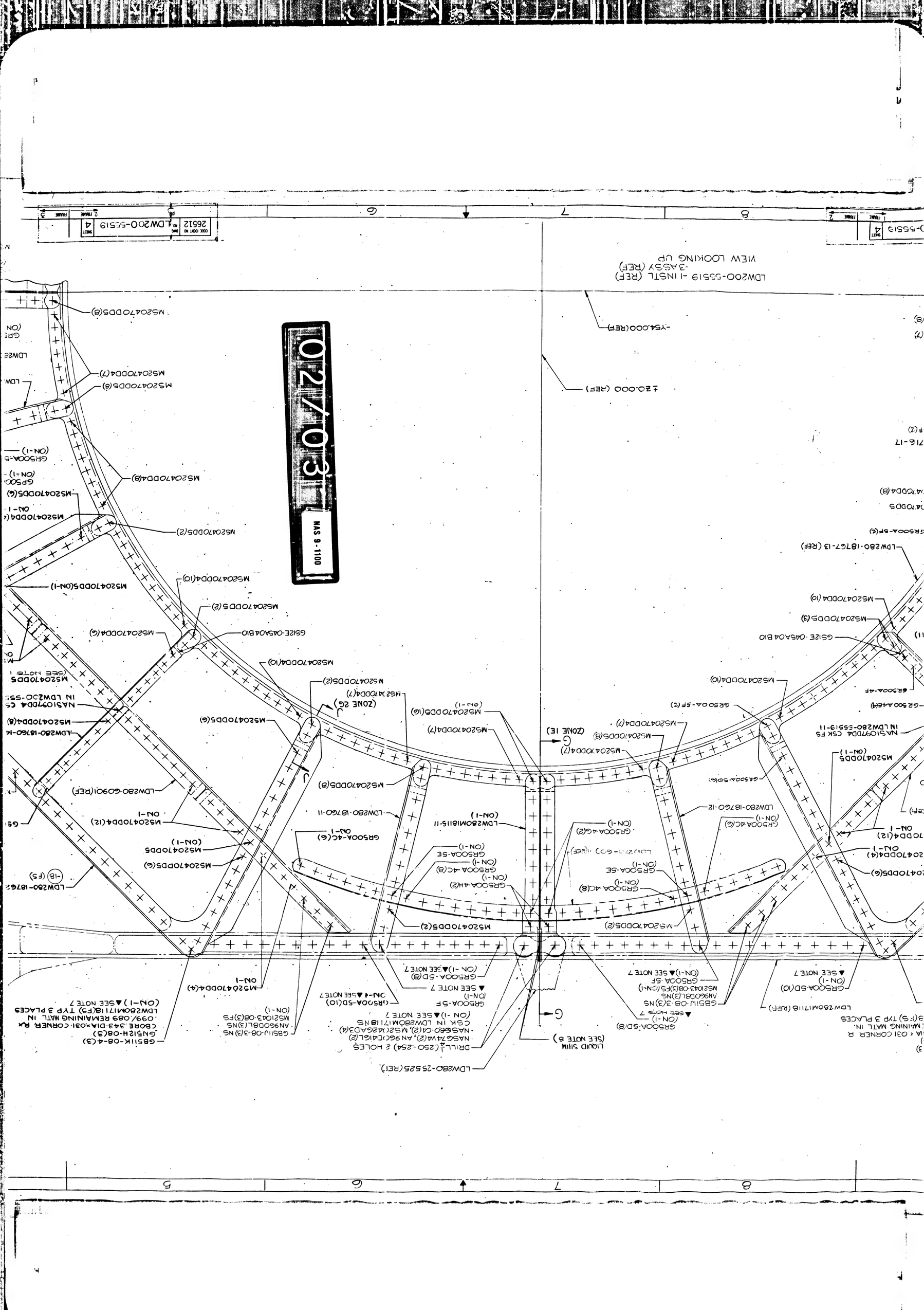
SECTION A-A (ZONE 3C)

FOR ENGINEERING REF ONLY
VIEW LOOKING UP
SCALE: NONE

SECTION C-C (ZONE 4B)


CAGE IDENT NO 26512
DWG NO LDW200-55519
SHEET 4
FRAME 2
FRAME 9
12
11
10
9
C
E
F
G
H
L
K
SECTION L-L
(ZONE 10 E)
SECTION K-K
(ZONE 10 F)
SECTION D-D
ZONE 10F
LDW200-55519-15 (REF)
GS12E09OA05B11 (REF)
LDW280-18716-17 (REF)
LDW280M1714 (REF)
LDW 280-60901(REF)
LDW200-55519-11(REF)
LDW200-55519-11 (REF)
GS12E09OA05B11(REF)
LDW 280-18716-13 (REF)
LDW280M1714(REF)
LDW200-55519-13(REF)
SHIM PERMITTED .040 MAX
SEE NOTE 5
LDW280M1714 (REF)
TRIM OF LDW200-55519-17 (REF)
LDW200-55519-13 (REF)
LDW200-55519-17 (REF)
GS12E080A05B12 (REF)
LDW280-18716-11 (REF)
LDW200-55519-11 (REF)
LDW280-25509(REF)
LDW280-17506.13(REF)
GR500A-5H
(ON-1) ▲ SEE NOTE 7
MS2047ODD5
LDW280-18766.13(REF)
MS204/ODD5(ON-1)
▲SEE NOTE 7
GR500A-5F(9)
(ON-1)
MS2047ODD4(7)
MS2047ODD5(8)
GR500A-5E
(ON-1)
GR500A-4C(8)
(ON-1)
LDW280-60901 (REF)
GR500A-5F(2)
(ON-1)
GS12E090A05B11
(ON-1)
GR500A-5F(2)
LDW280-18716-17
GR500A-5D(6)
(ZONE 12E)
GR500A-5G(1)
GR500A-5N
(ON-1)
▲ SEE NOTE 7
GR500A-4C(6)
(ON-1)
GB511J-08-3(3)NS
AN 960DBL(3)NS
MS2104-08(3)FS
(ON-1)
MS2047ODD4(4)
ON-1
MS2047ODD5
GR500A-5F(2)
LDW280-18767-13 (REF)
LDW280-18716-13
MS2047ODD5(6)
MS2047ODD5
(ON-1)
MS2047ODD4(10)
MS2047ODD5(3)
GS12E-04E
MS2047ODD4(11)
ON-1
GS12E090A05B11
MS2047ODD5(6)
GB511K-08-5(3)
GN512H-08(3)
(ON-1)▲SEE NOTE 7
GR500A-4F
GR500A4E(4)
LDW280-18716-15
MS2047ODD5(2)
MS 2047ODD5 (SEE NOTE 11)
(ZONE 12E)
NAS10/7DD4 CSK FS
IN LDW280-55519-11
MS2047ODD5
(ON-1)
GS12E-050A04B10
MS2047ODD4(8)
LDW 280-60901 (REF)
LDW280-18716-11 (NS)
(F5)
MS2047ODD4(12)
ON-1
MS2047ODD4(4)
ON-1
MS2047ODD5(6)
GR500A-5D(
(ON-1)
▲SEE NOTE 7
LDW280M1718
▲SEE NOTE 7
GB511K-08-4(3)
GN512H-08(3)
CB/0RE .343DIA x .031 CRNER R
x.099/.089 REMAINING MATL IN.
LDW280M1718(F5) TYP 3 PLACES
(ON-1)
LDW 280-25525(REF)
+227.000(REF)
-Y81.000 (REF)
PLY 1 NS BULKHEAD PANEL
REFERENCE PLANE
(SEE NOTE 1)
Q11/03
NAS 9-1100

0 27 03
NAS 9-1100



THIS IS AN ORIGINAL DWG

SIZE	CODE IDENT NO.	LDW200-55519
K	26512	

SCALE FULL SHEET 4 OF 4

LDW200-55519 REV

10870103

NAS 9-1100

SECTION G-G (ZONE 7G)

SECTION H-H (ZONE 4G)

SECTION J-J (ZONE GG)

PANEL REFERENCE PLANE

-Y81.000 LH END BULKHEAD

-227.000 (REF)

H (ZONE 2F)

IN LDW200-55519-11

LDW280-18762-12 (U5)

LDW280-18760-14

LDW280-18760-15

LDW280-18762-12(REF)

LDW280-25525

LDW280-18767-13(REF)

LDW280-18767-13(REF)

LDW280-18762-12 (REF)

LDW280-18762-12 (REF)

LDW280-25599 (REF)

LDW280-25509 (REF)

LDW280-17913-13 (REF)

LDW280-18767-13(REF)

LDW280-18767-13 (REF)

LDW280-18767-13 (REF)

LDW280-18767-13 (

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LEO 280		EO NO. 1840
CONTROL INFO NO. LDW280B9913		

ADD NOTE * (* USE NEXT AVAILABLE NOTE NUMBER) ON DWGS LISTED BELOW

NOTE * ON -1 INSTL. ALL PARTS MAY BE TRIMMED .25 INCH MAXIMUM ON ALL DIMENSIONS WITH A MIN OF 1½ DIA. EDGE DISTANCE MAINTAINED ON ALL FASTENERS UNLESS OTHERWISE NOTED.

DRAWING NO.	DASH NO.	EFFECTIVITY	TITLE	E.O. NO.
LDW200-55518	-1	LTA5/R (159)	SEE DWG.	A1
-55519	-1			A1
-55520	-1			A1
-55521	-1			A1
-55522	-1			A1
-55523	-1			A1
LDW200-55532	-1	LTA5/R(159)	SEE DWG.	A1

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	LCD 3870 PAG 95	(5)

REASON FOR EO: LM-10 TANK EXPANSION FOR LTA-5

DESCRIPTION OF EO: ADDED NOTE *

GAEC EO RELEASE: Initial 2-10-70; 2-11-70

MODEL	EFFECTIVITY	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
	E.I [redacted]			✓		✓		PBT						PBT & Coleman	
								DATE 2-9-70			2-11-70			2-10-70	2/11/70
LM	LEM507	LTA5/R(159)						YDI							

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	NOTED	LEO 280	1840

CDR 2-12-70
ISSUED BY ED COLEMAN/G. HANSMANN X87222 SECTION VDI GROUP NO. 335 PL 25

01

NAS 9-1100

LDW200-55520

LM

LEM # 507	LDW200-55522	LTA-5/R(159)	6	LEM # 507	LDW200-55522	LTA-5/R(159)	6				
LEM # 507	LDW200-55523	LTA-5/R(159)	5	LEM # 507	LDW200-55523	LTA-5/R(159)	8				
LEM # 507	LDW200-55521	LTA-5/R(159)	8	LEM # 507	LDW200-55521	LTA-5/R(159)	6	LEM # 507	LDW200-55530	LTA-5/R(159)	1
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO	REQD PER MODULE OR END ITEM
PART NO. LDW200-55520-13		GAEC SCH NO.		PART NO. LDW200-55520-11		GAEC SCH NO.		PART NO. LDW200-55520-1		GAEC SCH NO.	

WORK PACKAGE FUNCTION NO. 110 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH								
SHEET	1.00			2.00	3.00	4.00	5.00	
REV								
SHEET								
REV								
SHEET								
REV								

LAST SECT LTR USED	H
LAST DASH NO. USED	24

GRUMMAN REL INFO
PRIM NO. LK624
507 LME-16 12/1/69

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
~~FRACTIONS~~ - DECIMALS – ANGLES
.XXX=±.010 .XX=±.03 ±.03½

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
	LCD3890 PKG95

CONTRACT NO. NAS9-1100 LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	N. MARK 11-19-69		
LAYOUT BY	N. MARK		
CHECKED BY	11-21-69		
GR. LEADER	11/19/69		
VEH. DES INT	11/26/69		
STRUCTURE	N.M 12-1-69	PROJ ENGR	12-1-69
STRUCTURE		REL GROUP	12/1/69

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

DECK INSTALLATION
DESCENT STAGE - UPPER RH
(REWORK OF LDW280-25508)

SIZE	CODE IDENT NO.	
B	26512	LDW200-55520

SCALE NONE SHEET 100 OF 5

ENG 77.1 12-65

CDR 12-05-69

OL

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
AR	MS20470AD4	E	RIVET	STD. PART							
1		LDW200-55520-29		ZEE	AL ALY SH	QQ-A-250/4	2024-T3	.063x4x31	NONE	76	
1		-23		ZEE				.063x4x31			
1		-21		DOUBLER				.125x2.1x32			
2		-19		FILLER				.032x1x10			
2		-17		FILLER				.032x1x10			
2		-15		FILLER				.033x1x11			
8		-13		CLIP				.063x1x4			
8	LDW200-55520-11			STRAP	AL ALY SH	QQ-A-250/4	2024-T3	.063x3x3	NONE	76	
-1		LDW200-55520-1	E	DECK INSTL							

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						76	ALODINE	LSP14-9010

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55520

SCALE NONE SHEET 2.C.

ENG 77.2 7-65

01

NAS 9-1100

9 8 7 6 5

C B

+Z 27.000 (REF) +Z 22.727 (REF) +Z 0.000 (REF)

+Y 54.000 (REF)

+Y 48.594 (REF)

+Y 38.483 (REF)

+Y 27.000 RH BEAM PANEL REF PLANE

+Z 27.000 FWD BEAM PANEL REF PLANE

LDW280-25570 (REF)

LDW28025528 (REF)

LDW280-17406-15 (REF)

LDW280-17236-11 (REF)

LDW280-17120-11 (REF)

MS20470AD4(17)

MS20470AD4(13)

MS20470AD4(3)

MS20470AD4(2)

MS20470AD4(6)

MS20470DD4(16) (REF)

MS20470DD4(18) (REF)

MS20470DD4(13) (REF)

MS20470DD4(12) (REF)

MS20470DD4(4) (REF)

MS20470DD4(5) (REF)

MS20470DD4(31) (REF)

LDW280-17233-31 (REF)

LDW280-17233-33 (REF)

LDW280-17233-35 (REF)

LDW280-17233-37 (REF)

LDW280-17233-30 (REF)

LDW280-17437-15 (REF)

LDW280-17330-42 (REF)

LDW280-17406-13(2) (REF)

GB5111K-3-7 (12) (REF)

GN5121H-3(12) (REF)

.219 MIN (REF)

LDW280M17100 (REF)

LDW280-55520-1 (INSTL)

12 EQUAL SPACES

16 EQUAL SPACES

12.13 +.13 -.00 TO SKIN TRIM (REF)

12.75 TO STIFFENER (REF)

15.31 +.13 -.00 TO SKIN TRIM (REF)

(ZONE 1D) B

(ZONE 1E) H

ASSY

PICK UP EXISTING FASTENER LOCATIONS MS20470AD4(33)

-Z 5.150 (REF)

+Z 21.334 (REF) +Z 16.444 (REF) +Z 11.050 (REF) +Z 5.150 (REF) +Z .250 (REF)

VIEW LOOKING DOWN R H SIDE

CODE IDENT NO 26512 LDW280-55[illegible] 0 SH 3

01703 NAS 9-1100

5 4 3 2 1

-13

MS20470DD4(14)

+Y45.594 (REF)

-15

ASSY

-11

-13

MS20470DD4(17)

+Y38.483 (REF)

MS20470DD4(16)

MS20470DD4(16)

MS20470DD4(15)

MS20470DD4(13)

LDW280-25531(REF)

LDW280-17330-34

MS20470DD4(27)

LDW280-17437-15

LDW280-17437-13

LDW280-17233-34

LDW280-17309-11

LDW280-17437-11

MS20470BD4(5)

GBS11K-3-5 (12)
GNS12H-3(12)

MS20470DD4(75)

+Y27.000
R.H. BEAM
PANEL REF PLANE

-Z5.150(REF)

-Z11.050(REF)

-Z16.444 (REF)

-Z21.334 (REF)

-Z27.000
AFT BEAM
PANEL REF PLANE

-Z FWD

LDW200-55520 (REF)

Y -Y

-Z

ENGRG REF ONLY
NO SCALE

02/03

NAS 9-1100

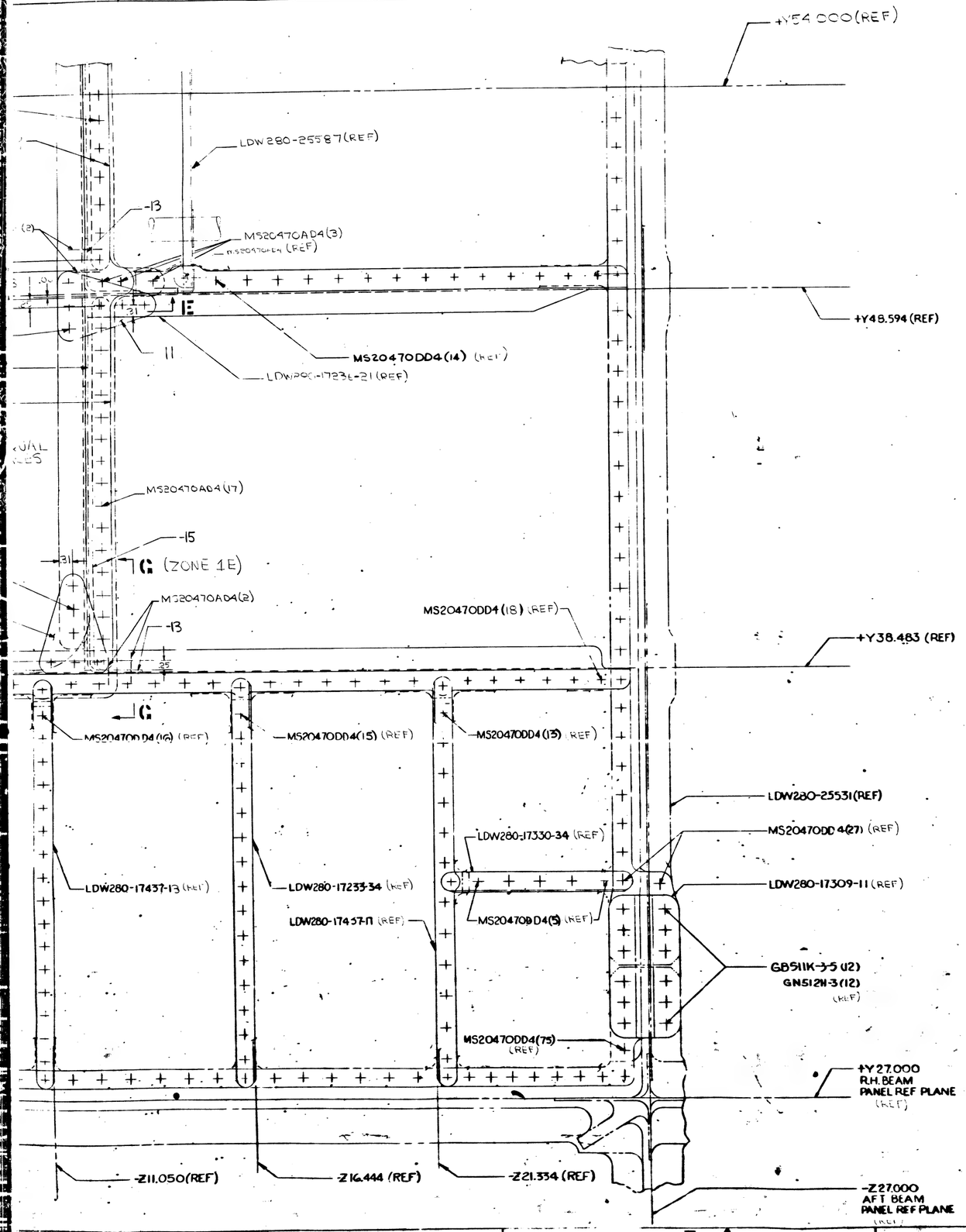
CODE IDENT NO 26512
LDW2 0-55 0 SH 3

CODE IDENT NO 26512
LDW2 0- 0 SH 3

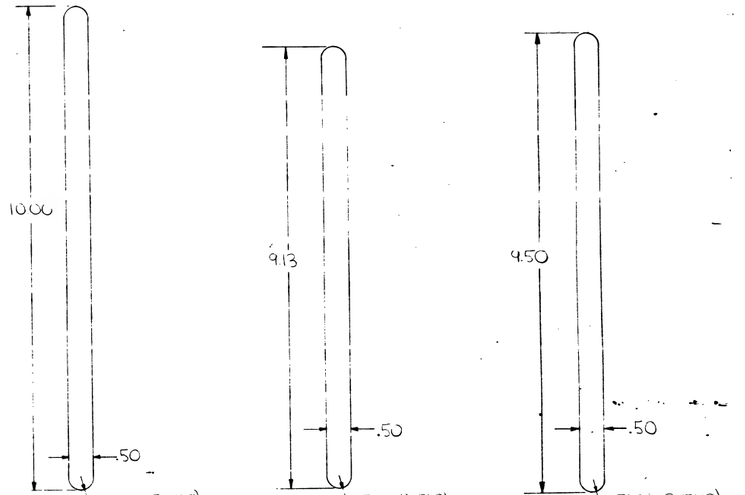
SIZE J | CODE IDENT NO. 26512 | LDW2

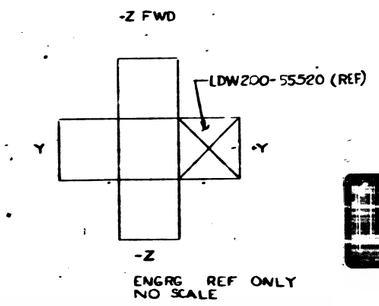
SCALE FULL

THIS IS AN ORIGIN



NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.
2. FOR BASIC JIG DATA SEE LDW280-25587.
3. SEAM AS REQD USING AL ALLOY 2024-A (AMS) 2024-T3 FINISH #76
4. FASTENER MANUFACTURED HEADS OTHER THAN CSK ATTATCHMENTS) TO BE ON WEB SIDE UNLESS OTHERWISE SPECIFIED.





MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010; .063R TO .250R ± .015; OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS 2.3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED * WITH DOUBLE ASTERISK	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES	
DIAMETERS MARKED * MUST BE CONCENTRIC WITHIN FULL INDICATOR READING.	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING THICKNESS OF PLATE .0003 MIN TO .0005 MAX MIN THICKNESS TO BE .0002 ON THREADED AREAS NO ALLOWANCES FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
250 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE EDGE DISTANCE IS 1½ FASTENER DIA FROM FASTENER ℄	✓
SYMBOL ✗ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DIMENSIONS IS ±1/16	

DWG SIZE 34 x 24

103/103 NAS 9-1100

CODE IDENT NO 26512
LDW200-55520 0
SH 3

LEM
M.O.C. R-90 ITEM
GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK
SIZE J | CODE IDENT NO. 26512 | LDW200-55520 | A
SCALE FULL | SHEET 3.00

K2

THIS IS AN ORIGINAL DRAWING

LDW200-55520

9 8 7 6 5

+Z27.000(REF) FWD BEAM PANEL REFERENCE PLANE

+Y81.000(REF) R.H. END BULKHEAD PANEL REFERENCE PLANE

C'BORE 7/16 DIA x FILLET R.F.S. (MAINTAIN .170 THK OF LDW 280M17104) MS20470DD4 (REF)

LDW280-17405-17 (REF)

LDW280-17405-13 (2) (REF)

GB511K-3-6 (12) GN512H-3 (12) (REF)

MS20470DD4(34) (REF)

LDW280-25528 (REF)

+Y68.745 (REF)

LDW280-25570(REF)

.370±.010 (REF)

.321±.010 (REF)

.273±.010 (TYP) (2 PL) (REF)

.390±.010 (REF)

.321±.010 (REF)

-Z15.294 (REF)

-Z20.234 (REF)

-Z10.557 (REF)

-Z5.525 (REF)

-Z5.575 (REF)

LDW280-25524 (REF)

+Z0.250 (REF)

GB511K-3-6 (4) GB51HK-3-4 (4) (REF)

GN512H 3(8) (REF)

MS20470DD4(14) (REF)

MS20470DD4(15) (REF)

MS20470DD4(17) (REF)

MS20470DD4(17) (REF)

MS20470DD4(16) (REF)

MS20470DD4(16) (REF)

MS20470DD4(15) (REF)

LDW280-17614-11 (2) (REF)

LDW280-17330-36 (REF)

LDW280-17440-13 (REF)

MS20470DD4(16) (REF)

LDW280-17310-14 (REF)

LDW280-17440-15

LDW280-17310-19

LDW280-17310-17 (REF)

LDW280-17440-11 (REF)

LDW280-17310-15 (REF)

LDW

PICK UP EXISTING FASTENER LOCATIONS

MS20470AD4(2)

MS20470AD4(2)

.38

LDW280-17234-17(REF)

-13

(ZONE 2E)

-11

MS20470AD4(6)

.31

-11

T85 R (TYP)

TK

-13

MS20470AD4(6)

-17

15 EQUAL SPACES

14.62 +.13 -.00 TO TRIM (REF)

15 EQUAL SPACES

-17

MS20470AD4(16)

-21(REF)

-21(REF)

-23

MS20470AD4(6)

LDW280-25570(REF)

MS20470DD4(13) (REF)

LDW280-17236-15 (REF)

-11

+Y59.485 (REF)

(ZONE 1D)

C

.06

.25

C

.31

.25

MS20470AD4(3)

MS20470AD4(2)

MS20470AD4(2)

(ZONE 2D)

MS20470DD4(9)(REF)

-13

12 EQUAL SPACES (REF)

12 EQUAL SPACES (REF)

-21 (REF)

-21

12.13 +.13 -.00 TO SKIN TRIM (REF)

12.13 +.13 -.00 TO SKIN TRIM (REF)

LDW280-17444-11 (REF)

MS20470DD4(4) (REF)

MS20470AD4(13) (REF)

-23(REF)

12.75 TO STIFFENER (REF)

12.75 TO STIFFENER (REF)

MS20470AD4(13) (REF)

LDW280-17444-13 (REF)

-19

-19

-Y54.000(REF)

LDW200-55520-1 INSTL (REF)

±Z0.000

+Z27.000(REF)

+Z22.727 (REF)

01/03 NAS 9-1100

CODE IDENT NO.26512

LDW200-55520 SHT 4

9 8 7 6 5

5 4 3 2 1

-Z 15.294 (REF)
C'BORE ⅛ DIA ⅛ R FILLET R
FIN 76 (MAINTAIN .089 MIN THK OF LDW280M1T113) (REF)
GB511K-3-5 (4) (REF)
GB511K-3-8 (4) (REF)
GN5124-3 (REF)
-Z 27.000 (REF) AFT BEAM PANEL REFERENCE PLANE
LDW280-17617-11 (2) (REF)
-Z 10.563 (REF)
-Z 20.234 (REF)
300±.010 (REF)
340±.010 (REF)
-Y 81.000 (REF) R.H. END BULKHEAD PANEL REFERENCE PLANE
250±.010 (REF)
340±.010 (REF)
300±.010 (REF)
MS20470DD4 (16) (REF)
MS20470DD4-16 (REF)
MS20470DD4-15 (REF)
MS20470DD4 (12) (REF)
MS20470DD4 (13) (REF)
LDW280-17288-13 (REF)
MS20470DD4 (4) (REF)
GB511K-08-4 (8)
GN512H-08 (8) (REF)
MS20470DD4 (6) (REF)
LDW280-17288-11 (REF)
LDW280-17330-32 (REF)
MS20470DD4 (29) (REF)
LDW280-17310-5 (REF)
LDW280-17310-13 (REF)
LDW280-17310-11 (REF)
LDW280 25531 (REF)
21 5/8 (REF)
.219 MIN (REF)
(ZONE 2E)
MS20470DD4 (17)
-Y 68.745 (REF)
MS20470AD4 (2)
MS20426-DD5 (2) CSK IN LDW280-25531 (REF)
LDW280M17259-1 (REF)
-Y 65.000 (REF)
MS20470AD4 (6)
15 EQUAL SPACES
MS20470AD4 (16)
MS20426-DD5 (2) CSK IN LDW280-25531 (REF)
MS20470DD5 MFD HD FS. LOCATE FROM LDW280-17449-17 SHIM AS REQD (.080 MAX) BETWEEN CLIP & CAPSTRIP (REF)
MS20470DD4 (14)
MS20470AD4 (6)
(ZONE 1D)
-Y 59.485 (REF)
MS20470AD4 (3)
MS20470AD4 (2)
(ZONE 2D)
LDW280-17449-17 (REF)
15 EQUAL SPACES (REF)
LDW280-25587 (REF)
LDW280-17120-11 (REF)
TO SKIN THK (REF)
TO STIFFENER (REF)
MS20470AD4 (3) (REF)
-Y 54.000 (REF)
-Z 27.000 (REF)

.125
.63
1.18
2.56
.097-.102 DIA. HOLE (4 REQ'D)
-11

1.18
.56
.25
1.18
.147-.152 DIA. HOLE (4 REQ'D)
-13

LDW280-17236-17 (REF. FOR A-A & F-F)
LDW280-17236-11 (REF. FOR C-C & H-H)
LDW280-17120-11 (REF)
-13 (REF)
-21 (REF)
-17 (REF FOR A-A & F-F)
-15 (REF FOR C-C & H-H)
MS20470AD4 (2)
-11 (REF)
-24 (REF)

SECTION A-A SHOWN (ZONE 7E)
SECTION F-F OPP (ZONE 5F)
SECTION G-G SHOWN (ZONE 5B)
SECTION H-H OPP (ZONE 7B)

TRIM LDW280-17236-15 AS SHOWN (FOR C-C & D-D)
TRIM LDW280-17236-21 AS SHOWN (FOR B-B & E-E)
MS20470AD4 (2)
LDW280-17120-11 (REF)
-21 (REF)
-13 (REF)
-11 (REF)
-24 (REF)
.42
1.38
.19 R

SECTION C-C SHOWN (ZONE 7D)
SECTION D-D OPP (ZONE 5D)
SECTION B-B SHOWN (ZONE 7C)
SECTION E-E OPP (ZONE 5C)

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L.I.

SIZE	CODE IDENT NO.	
J	26512	LDW280-5520

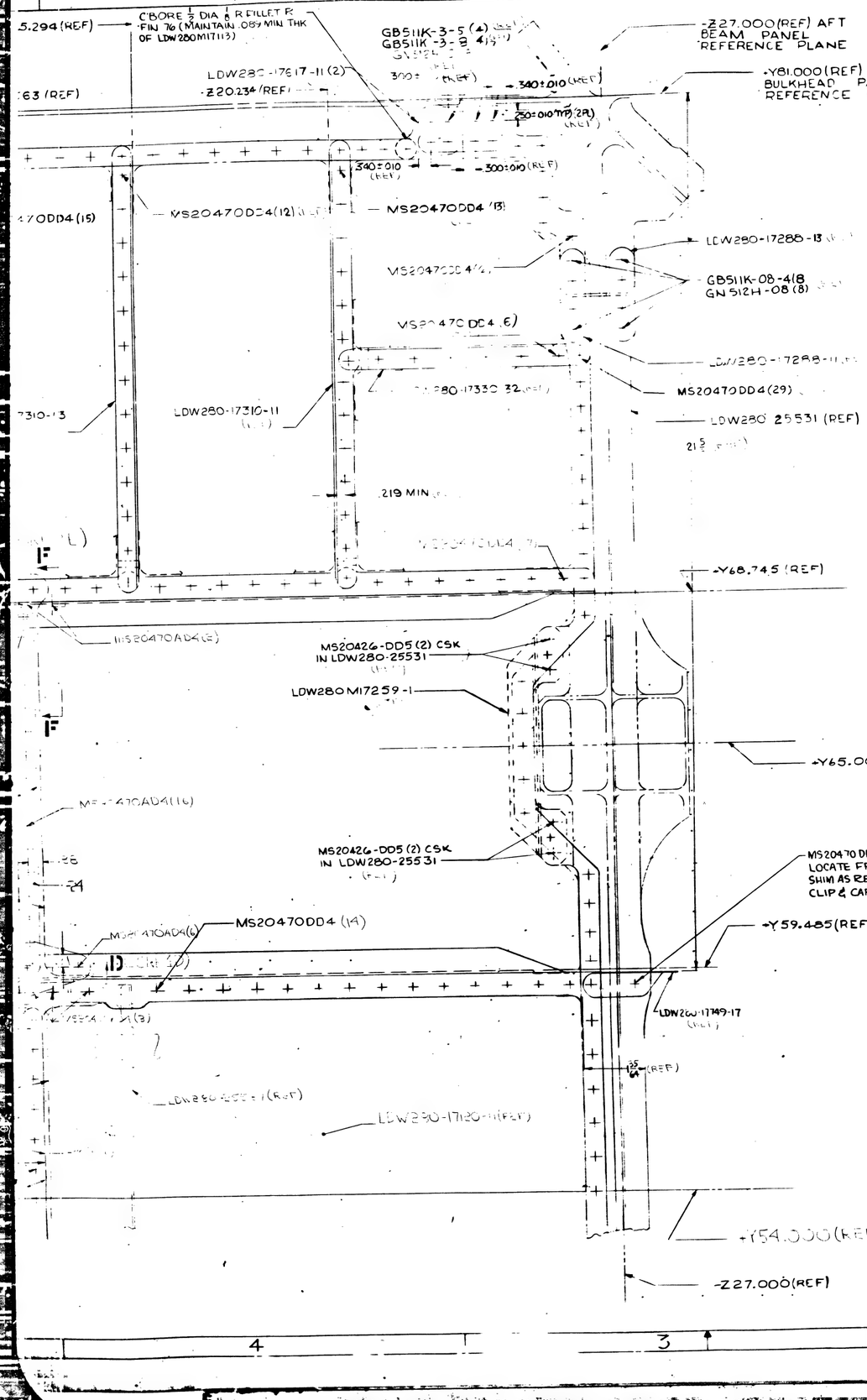
SCALE | SHEET

02/03 NAS 9-1100

CODE IDENT NO. 26512
LDW280-5520 SH 4

CODE IDENT NO. 26512
LDW280-5520 SH 4

THIS IS AN ORIGINAL DRAWING



MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG

PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED IN USE BOTH SIDES IF NECESSARY

FILLET AND INSIDE CORNER RADII TOLERANCES
0 TO .062R - .010
.063R TO .250R - .015
OVER .250R - .030

DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS 2 3 IMP. THDS BEYOND PERMISSIBLE

EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX

DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK

MISMATCH STEP OF .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES

DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING.

HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION

ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING THICKNESS OF PLATE .0003 MIN TO .0005 MAX MIN THICKNESS TO BE .0002 ON THREADED AREAS NO ALLOWANCES FOR PLATING IN HOLES

125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL STD-10

200 FOR ALL DRILLED HOLES

REMOVE ALL BURRS BREAK ALL EDGES .015 031

INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARGIN IS

SYMBOL X DENOTES SURFACE TO BE MACHINED

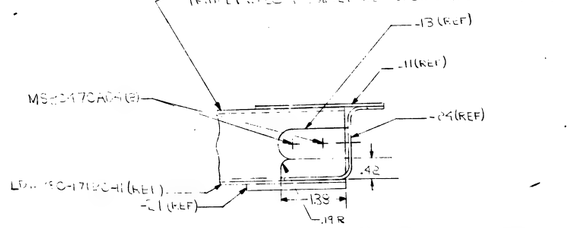
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32

LENGTHS OF AN NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED

TOLERANCE ON LOFTED DELINEATIONS IS

DWG SIZE A4

SECTION A-A
SECTION F-F
SECTION G-G SHOWN (ZONE 5E)
SECTION H-H OPP (ZONE 7E)



SECTION C-C SHOWN (ZONE 7D)
SECTION D-D OPP (ZONE 5D)
SECTION B-B SHOWN (ZONE 7C)
SECTION E-E OPP (ZONE 5C)

03/03 NAS 9-1100

CODE IDENT NO. 26512
LDW280-55520 SH 4

LEM MODEL AND ITEM
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK
SIZE J | CODE IDENT NO. 26512 | LDW280-55520
SCALE | SHEET 760

THIS IS AN ORIGINAL DRAWIN

REVISIONS						
ZONE	LTR	DESCRIPTION	BY CODE	MODEL	DATE	APPROVED

.38(TYP)

.38R(TYP)

.09(TYP)

.75

200 / 1.50 R. (TYP)

.38 R(TYP)

1.38 (TYP)

31.76

21.38

FULL R (TYP)

.38(TYP)

.75 (TYP)

25.75

25.00

11.19(TYP)

.75

.75

.375R (TYP)

(21)

.50

.59

.38R (TYP)

30.19

.66

20.63

10.44

.59

.19 R (TYP)

.50

.25R(4)

.75 (TYP)

1.50

.22R(TYP)

(23) SHOWN

(24) OPPOSITE

NAS 9-1100

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES

LINEAR TOL	XX	± .03
	XXX	± .010
ANGULAR TOL		± 0°30'

TOL ON LOFTED DELINEATIONS IS

CONTRACT NO.

DRAWN BY
LAYOUT BY
CHECKED BY
GR LEADER
REL GROUP
PROJ MGR
GOVT APP'D

GRUMMAN AIRCRAFT ENGINEERING CORPORATION
BETHPAGE, NEW YORK 11714

FOR PARTS LIST, USAGE DATA, AND DWG SH STATUS, SEE DOCUMENT SAME NUMBER PREFIXED PL

SIZE E | CODE IDENT NO. 26512 | LDW200-55520

SCALE FULL | SHEET 500 OF

1 DISTR LIST #

LDW200-55520

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LEO 280		EO NO. 1840
CONTROL INFO NO. LOW280B9913		

ADD NOTE * (* USE NEXT AVAILABLE NOTE NUMBER) ON DWGS LISTED BELOW

NOTE * ON -1 INSTL. ALL PARTS MAY BE TRIMMED .25 INCH MAXIMUM ON ALL DIMENSIONS WITH A MIN OF 1½ DIA. EDGE DISTANCE MAINTAINED ON ALL FASTENERS UNLESS OTHERWISE NOTED.

DRAWING NO.	DASH NO.	EFFECTIVITY	TITLE	E.O. NO.
LOW200-55518	-1	LTA5/R (159)	SEE DWG.	A1
-55519	-1			A1
-55520	-1			A1
-55521	-1			A1
-55522	-1			A1
-55523	-1			A1
LOW200-55532	-1	LTA5/R(159)	SEE DWG.	A1

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	LCD 3870 PKG 95

REASON FOR EO: LM-10 TANK EXPANSION FOR LTA-5

DESCRIPTION OF EO: ADDED NOTE *

GAEC EO RELEASE: 3-10-70; 2-11-70

MODEL	EFFECTIVITY	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	DATE	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
	E.I. [redacted]			✓		✓		RJT	2-9-70			4/9/70			2-10-70	3/11/70
LM	LFM507	LTA5/R(159)		PRIORITY C		DRAWING TITLE: NOTED			YDI			DRAWING NO.: LEO 280				EO NO. 1840

CDR 2-12-70
ISSUED BY ED COLEMAN/G. HANSMANN X87222 SECTION VDI GROUP NO. 335 PL 25

01

NAS 9-1100

LDW200-55521

LFM

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LFM 507	LDW 200-55530	LTA-5/R(1ST)	1
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW 200-55521-1		GAEC SCH NO.	

WORK PACKAGE FUNCTION NO 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	100			200	300	400			
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	H
LAST DASH NO. USED	27

GRUMMAN REC INFO
PRIM NO. LK(024)
207 ME-16-12/3/9

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
XX±.03 .XXX±.010 ±0°30'

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 3890 PKG05	

CONTRACT NO. NAS 9-1100 LINE ITEM DOCUMENTATION TYPE II (5)

DRAWN BY	COTTER.			
LAYOUT BY	COTTER			
CHECKED BY	[signature] 12/6/69			
GP LEADER	[signature] 12/6/69			
VEH DES INT	[signature] 12-7-69			
STRUCTURES		PROJ ENGR	[signature] 12-1-69	
STRUCTURES	N.M. 12-1-69	REL GROUP	[signature] MAM	

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

DECK INSTALLATION
DESCENT STAGE L.H UPPER DECK
(REWORK OF LDW280-25508 LFM507)

SIZE	CODE IDENT NO.	
B	26512	LDW200-55521

SCALE NONE SHEET 1.00 OF 1

12-5-69

ENG 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
A/R		MS20470AD4	E	RIVET							
8		LDW 200-55520-13	E	ANGLE							
6		LDW 200-55520-11		FITTING							
1		LDW 200-55521-27		PLATE	AL ALLOY SH	QQ-A-250/4	2024-T3	.032 x 2 x 3	NONE	76	8D
1		-25		SHIM	AL ALLOY SH	QQ-A-250/4	2024-T3	.25 x 3/8 x 3			8D
2		-23		SHIM	AL ALLOY SH	QQ-A-250/4	2024-T3	.032 x 1/2 x 9 3/4			5B
2		-21		SHIM	AL ALLOY SH	QQ-A-250/4	2024-T3	.032 x 1/2 x 9 1/2			5C
2		-19		SHIM	AL ALLOY SH	QQ-A-250/4	2024-T3	.032 x 1/2 x 9 1/2			6E
2		-17		ZEE	AL ALLOY	QQ-A-250/4	2024-T3	.063 x 3 x 32			5B
1		-15		DOUBLER	AL ALLOY SH	QQ-A-250/4	2024-T3	.125 x 35 x 36			5B
1		-13		PLATE	AL ALLOY SH	QQ-A-250/4	2024-T3	.063 x 2 x 2 1/4			6D
1		LDW 200-55521-11		SHIM	AL ALLOY SH	QQ-A-250/4	2024-T3	.25 x 1/2 x 2 1/2	NONE	76	6D
		LDW 200-55521-1	E	DECK INSTL					NONE	NONE	
-/									PROCESS SYM	FINISH NO.	ZONE

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						76	ALODINE	LSP-14-9010

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55521

SCALE NONE SHEET 2.00

ENG 77.2 7-65

NAS 9-1100

01703 NAS 9-1100

-Y54.000(REF)

+-Z0.000(REF)

4.88

MS20470AD4(12)

LDW200-55521-21

11 EQUAL SPACES

MS20470DD4(21)(REF)

SHIM AS REQ'D .032 MAX-SEE NOTE 3

LDW200-55520-13

.59R (TYP)

MS20470AD4(2)

MS20470AD4(3)

.44

.72

.25

.25

(ZONE 12) F

45°

F

MS20470AD4(6)

LDW200-55520-11

1.56

LDW200-55521-17

12.44

12.44

15.000

12 EQUAL SPACES

LDW200-55521-15

LDW200-55521-23

MS20470AD4(13)

LDW200-55520-11

G

.21

LDW280-25530(REF)

MS20470DD4(17)(REF)

MS20470AD4(6)

LDW200-55520-13

.25

MS20470AD4(3)

.31R

.06 .25

(ZONE 3F)

G

MS20470DD4(12)(REF)

MS20470DD4(15) (REF)

MS20470DD4(16) (REF)

MS20470DD4(16)(REF)

MS20470AD4(3) PICK UP EXISTING FASTENER LOCATIONS

MS20470DD4(27) (REF)

MS20470DD4(6)(REF)

LDW280-17330-35 (REF)

LDW280-17438-15(REF)

LDW280-17234-14 (REF)

LDW280-17438-13 (REF)

LDW280-17234-17(REF)

LDW280-17431-15(REF)

LDW280-17234-19 (REF)

LDW280-17438-11 (REF)

-Y 74.57 (REF)

LDW280-17405-13(2) (REF)

MS20470DD4(16)(REF)

LDW280-17405-17 (REF)

MS20470DD4(55) (REF)

GBS1K-3-4 (4) (REF)

GBS1K-3-6 (4) (REF)

GN512H-3 (8) (REF)

CSK 100°x.191 DIA MS20426DD4(1) FLUSH NEAR SIDE (REF)

GBS1K-3-6 (12) (REF)

GN512H-3 (12) (REF)

SHIM AS REQ'D .032 MAX (REF) SEE NOTE 3

(REF) .321±.010

.390±.010(REF)

MS20470DD4(5) C'BORE 437 DIA, .125 CUTTER CORNER RAD, FAR SIDE (MAINTAIN .170 THICKNESS OF LDW280M17104) MS20470DD4(REF)

.275±.010(TYP)(2PL) (REF)

.370±.010 (REF)

.321±.010 (REF)

(+Z 27.00) FWD BEAM PANEL REFERENCE PLANE SEE NOTE 1

-Z 20.234(REF)

LDW280-17614 -11(1)NS(1)F5(REF)

LDW280-25525 (REF)

+Z 15.294 (REF)

+Z 10.557 (REF)

LDW280-25525(REF)

+Z 0.25 (REF)

-Z 5.575(REF)

LDW200-55521-1 INSTL (SHOWN)

VIEW LKG DOWN L.H. SIDE

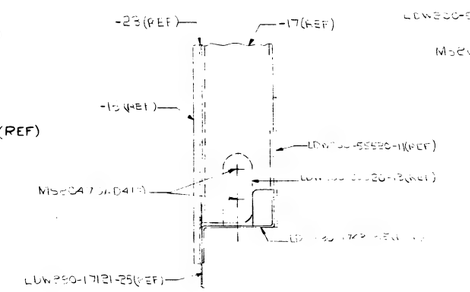
CODE IDENT NO 26512

LDW200-55521 SH 3

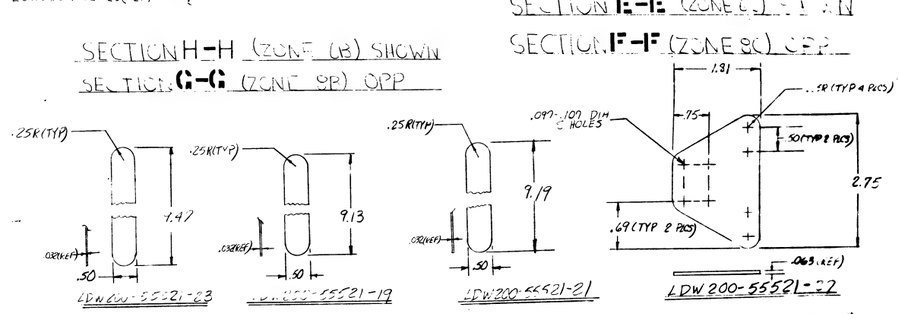
NOTES
1. FOR BASIC DIM'S DATA SEE LDW280-23511.
2. NO TOOLING HOLES PERMITTED IN PARTS.
3. SHIMS AS REQ'D ALLOWED IN A-286/A-286 TO FINISH ±.005
4. FASTENER INSTALLATION: PROTRUDING HEAD TO BE FLUSH OR BELOW SURFACE UNLESS OTHERWISE SPECIFIED.

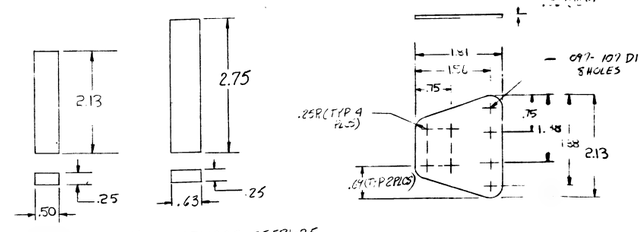
11 EQUAL SPACES
12 EQUAL SPACES
LDW280-55520-13
MS20470AD4(12)
MS20470AD4(2)
SHIM AS REQ'D .050 MAX SEE NOTE 3
MS20470AD4(3)
MS20470AD4(6)
LDW280-17231-21 (REF)
LDW280-17431-13
MS20470DD4(20) (REF)
LDW280-55520-11
LDW280-17348-19(REF)
MS20426-DD5(2) CSK (REF)
LDW280-25533 (REF)
LDW280M17259-1 (REF)
MS20470AD4(3)
LDW280-55520-11
MS20470AD4(6)
MS20426-DD5(2) CSK IN LDW280-25533 (REF)
MS20470AD4(17)
MS20470DD4(16) (REF)
MS20470DD4(14) (REF)
MS20470DD4(12) (REF)
MS20470DD4(13) (REF)
MS20470DD4(6) (REF)
LDW280-17234-23 (REF)
LDW280-17330-31(REF)
LDW280-17234-13 (REF)
LDW280-17234-21 (REF)
MS20470DD4(2) (REF)
GB511K-3-5 (4) (REF)
GB511K-3-8 (4) (REF)
GN512H-3 (8) (REF)
.219 MIN (REF)
GB511K-08-4(8) (REF)
GN512H-08 (8) (REF)
MS20470DD4(30) (REF)
LDW280-17288-11 (REF)
LDW280-17288-13 (REF)
-Y 74.987 (REF)
MS20470DD4(6) (REF)
(-Y 81.00) LH END BULKHEAD PANEL REFERENCE PLANE SEE NOTE 1
LDW280-25525(REF)
(-Z 27.00) AFT BEAM PANEL REFERENCE PLANE SEE NOTE 1
LDW280-17617-11(1) NS (1) FS (REF)
-Y 54.000(REF)
LDW280-17189-13(REF)
MS20470DD4(7) (REF)
GB511K084 (REF)
GN512H-08 (REF)
-Y 59.371(REF)
LDW280-25533(REF)
-Y 65.00 (REF)
-Y 69.188 (REF)
-Z 10.563 (REF)
-Z 15.294(REF)
-Z 20.234 (REF)
.72
.28
1.94
.50
.38
.31
.25R (TYP)
.06
.25
.300±.010 (REF)
.250±.010(TYP)2PLS (REF)
.340±.010 (REF)
.300±.010(REF)

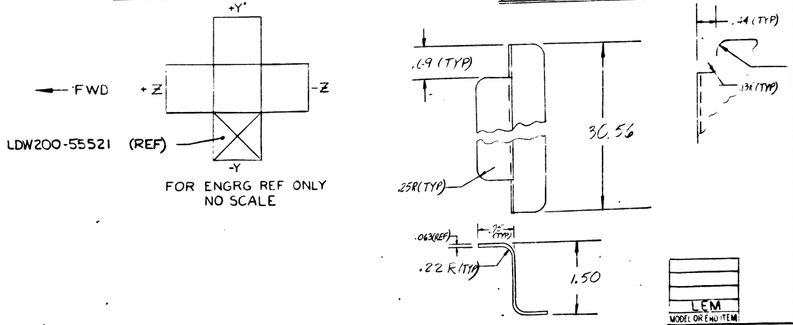
SECTION E-E (ZONE 6) SHOWN
SECTION F-F (ZONE 8C) OPP



SECTION H-H (ZONE 8B) SHOWN
SECTION G-G (ZONE 9B) OPP







CODE IDENT NO 26512 | LDW200-55521 | SH 3

02 X 03 | NAS 9-1100

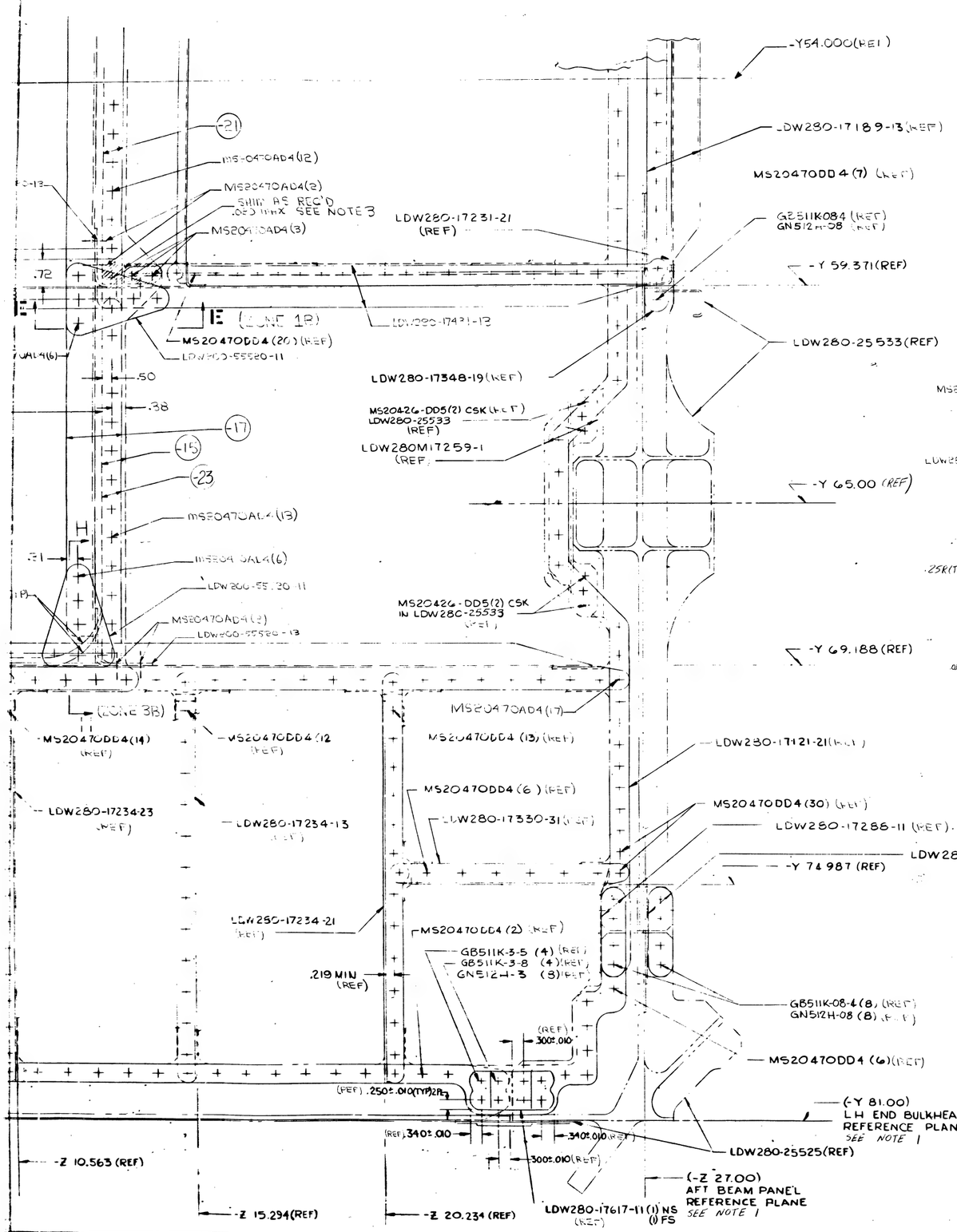
CODE IDENT NO 26512 | LDW200-55521 | SH 3

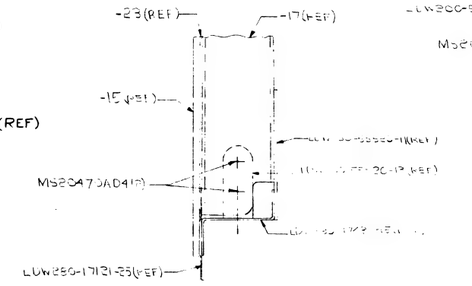
LSM MODEL OR END ITEM
CHRYSLER AIRCRAFT ENGRG CORP
SIZE J | CODE IDENT NO. 26512 | LDW200-55521
SCALE FULL

THIS IS AN ORIGINAL

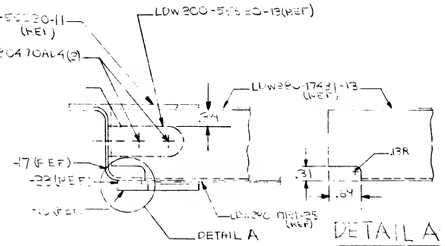
10370-3 NAS 9-1100

NOTES
1. FOR BASIC DIMENSIONS DATA SEE LDW280-23511.
2. NO TOOLING HOLES PERMITTED IN PARTS.
3. SHIMMING PADS USING AL ALLOY QQ-A-250/4 2024-T3 FINISH #76
4. FASTENER INSTALLED HEAD/OTHER THAN CSK AT (A) (B) (C) TO BE ON WEB SIDE UNLESS OTHERWISE SPECIFIED.



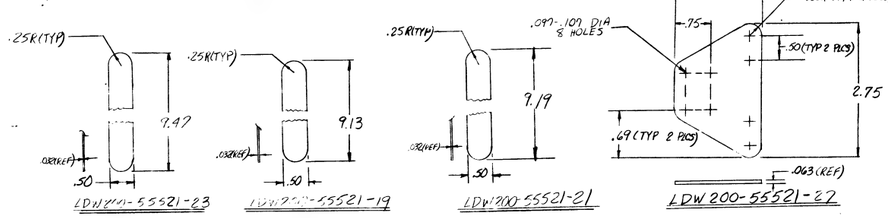


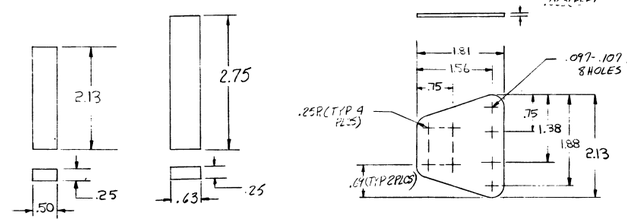
SECTION H-H (ZONE 6B) SHOWN
SECTION G-G (ZONE 9B) OPP

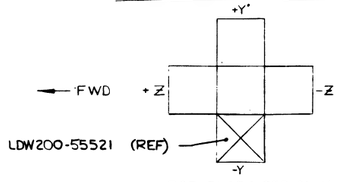


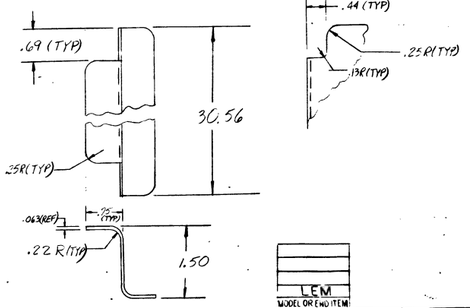
DETAIL A

SECTION E-E (ZONE 6C) SHOWN
SECTION F-F (ZONE 8C) OPP









LDW200-55521-17

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN AREAS NEARLY [ ] USE BOTH SIDES IF NECESSARY. /

FILLET AND SIDE CORNER RADII TOLERANCES
016R TO 062R ± 010
063R TO 250R ± 015
OVER 250R ± 030

DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS 2-3 MIN THDS BEYOND PERMISSIBLE

EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX

DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK

MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES

DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING.

HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION

ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX MIN THICKNESS TO BE .0007 ON THREADED AREAS NO ALLOWANCES FOR PLATING IN HOLES

125 SURFACE ROUGHNESS (EXCLUDING FLANGE HOLES PER MIL STD 10

200 FOR ALL DRILLED HOLES

REMOVE ALL BURRS BREAK ALL EDGES .015-.031

INSPECTION INFORMATION MAX IN PERMISSIBLE EDF DISTANCE IS 1 1/2 FASTENER DIA FROM FASTENER ✓

SYMBOL ✗ DENOTES SURFACE TO BE MACHINED

UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32

LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED

TOLERANCE ON LOFTED DELINEATIONS IS

CODE IDENT NO 26512	SH 3
LDW200-55521	

LEM
MODEL OR END ITEM
GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE L I NEW YORK

SIZE	CODE IDENT NO.	LDW200-55521	
J	26512		
SCALE FULL		SHEET 3.00	

THIS IS AN ORIGINAL DRAWING

ENG 737

LDW200-55521 A

10 | 9 | 8 | 7 | 6

(-Z 27.00, FWD BEAM PANEL REFERENCE PLANE SEE NOTE 1

-Z 2.334 (REF) -Z 6.444 (REF) -Z 11.050 (REF) +Z 5.150 (REF) +Z 0.250 (REF) -Z 5.150 (REF)

LDW280M1T100 (REF)

SHIM AS REQD

MS20470DD4 (75)

MS20470DD4 (13)

MS20470DD4 (12) (REF)

MS20470DD4 (4) (REF)

MS20470DD4 (16) (REF)

MS20470DD4 (16) (REF)

MS20470DD4 (16) (REF)

LDW280-17406-13

LDW280-17406-13

LDW280-17233-32

LDW280-17233-34

LDW280-17233-36

LDW280-17233-38 (REF)

LDW280-17233-29 (REF)

LDW280-17437-16 (REF)

LDW280-17406-15

LDW280-17330-41

-Y32.530 (REF)

GR511K-3-7 (12)
GN512H-3 (12)

MS20470DD4 (5)

MS20470DD4 (29)

.219 MIN.

MS20470 AD4 (35) PICK UP EXISTING FASTENER LOCATIONS

-Y 38.483 (REF)

.25

B

.38

.38

MS20470DD4 (17)

LDW200-55520-13

LDW200-55520-11

MS20470 AD4 (6)

.750 (REF)

MS20470AD4 (2)

CUTOUT IN WEB

.31

MS20470AD4 (20)

10.28

B

LDW280-17431-11 (REF)

LDW200-55521-15 (REF)

MS20470AD4 (2)

MS20470AD4 (6)

LDW200-55521-17 (REF)

LDW200-55521-19 (SHIM)

.25

.25

.50R

.25R

MS20470DD4 (61) (REF)

-Y 48.533 (REF)

25

27

12.94

12.94

LDW200-55521-25

3.00

MS20470AD4 (10)

LDW200-55520-13

.88

60°

.100

.100

D

D

MS20470DD4 (15) (REF)

LDW200-55521-21 (SHIM) (REF)

1.56

11 EQUAL SPACES (REF)

LDW200-55521-27 (REF)

.06

LDW200-55521-29 (REF)

.91

.13R

.19

MS20470AD4 (2)

.25R

LDW200-55520-13 (REF)

DRILL OUT EXISTING RIVET

.69

SECTION A-A (ZONE 6E) SHOWN
SECTION B-B (ZONE 8E) OPP.

15.31

.06

LDW200-55520-13 (REF)

LDW200-55521-19 (REF)

MS20470AD4 (2)

LDW200-55520-11 (REF)

.75

SECTION D-D (ZONE 8D)

Z 0.000 (REF)

MS20470AD4 (8)

-11

LDW200-55520-13

LDW200-55521-13 (REF)

LDW200-55521-11 (REF)

.91

MS20470AD4 (2)

LDW200-55520-13 (REF)

SECTION C-C (ZONE SIMILAR TO SECTION

-19 (SHIM)

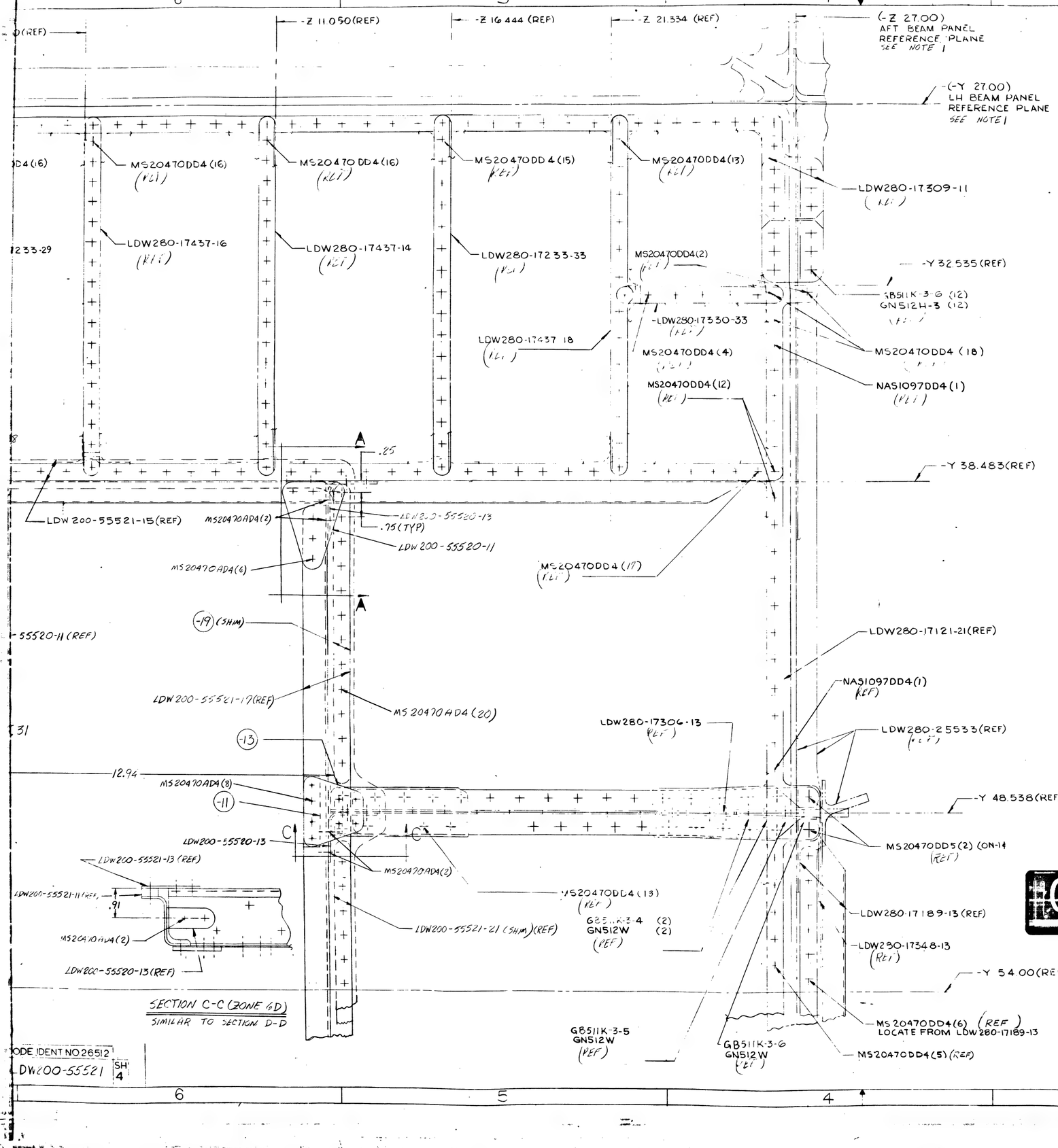
LDW200-55521-17 (REF)

-13

01/03 NAS 9-1100

CODE IDENT NO 26512
LDW200-55521 SH 4

10 | 9 | 8 | 7 | 6



02403 NAS 9-1100

CODE IDENT NO 26512
LDW200-55521 SH 4

CODE IDENT NO 26512
LDW200-55521 SH 4

L.E.M
GRUMMAN AIRCRAFT ENGRG CORP.
SIZE J | CODE IDENT NO. 26512 | LDW2(
SCALE FULL

THIS IS AN ORIGINAL

-Z 11.050(REF)

-Z 16.444 (REF)

-Z 21.334 (REF)

(-Z 27.00)
AFT BEAM PANEL
REFERENCE PLANE
SEE NOTE 1

(-Y 27.00)
LH BEAM PANEL
REFERENCE PLANE
SEE NOTE 1

MS20470DD4(16)
(REF)

MS20470DD4(15)
(REF)

MS20470DD4(13)
(REF)

LDW280-17309-11
(REF)

LDW280-17437-14
(REF)

LDW280-17233-33
(REF)

MS20470DD4(2)
(REF)

-Y 32.535(REF)

GB511K-3-6 (12)
GN512H-3 (12)
(REF)

LDW280-17330-33
(REF)

LDW280-17437-18
(REF)

MS20470DD4(4)
(REF)

MS20470DD4(18)
(REF)

MS20470DD4(12)
(REF)

NAS1097DD4(1)
(REF)

.85

-Y 38.483(REF)

LDW200-55520-13

.75(TYP)

LDW200-55520-11

MS20470DD4(17)
(REF)

LDW280-17121-21(REF)

NAS1097DD4(1)
(REF)

LDW280-17306-13
(REF)

LDW280-25533(REF)
(REF)

-Y 48.538(REF)

MS20470DD5(2) (ON-14
(REF)

MS20470AD4(20)

MS20470AD4(7)

MS20470DD4(13)
(REF)

GB511K-3-4 (2)
GN512W (2)
(REF)

LDW200-55521-21 (SHIM)(REF)

LDW280-17189-13(REF)

LDW280-17348-13
(REF)

-Y 54.00(REF)

GB511K-3-5
GN512W
(REF)

GB511K-3-6
GN512W
(REF)

MS20470DD4(6) (REF)
LOCATE FROM LDW280-17189-13

MS20470DD4(5)(REF)

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG

PART NUMBER
AND ALL OTHER MARKINGS
IN REGION MARKED
USE BOTH SIDES IF NECESSARY

FILLET AND INSIDE CORNER
RADII TOLERANCES
.06R TO .62R - .010
.63R TO .250R - .015
OVER .250R - .030

DEPTH SHOWN FOR TAPPED
HOLES IS FULL THDS 2.3 IMP. THDS
BEYOND PERMISSIBLE

EXTERNAL THREAD LENGTH
SHOWN INCLUDES
2 IMPERFECT THREADS MAX

DO NOT CADMIUM PLATE & PAINT
HOLES OR SURFACES MARKED
WITH DOUBLE ASTERISK

MISMATCH STEP OF .005
PERMISSIBLE DUE TO CHANGE
OF CUTTERS AT INSIDE
INTERSECTING SURFACES

DIAMETERS MARKED
MUST BE CONCENTRIC WITHIN
FULL INDICATOR
READING.

HOLES MUST BE KEPT FREE OF
CHROME PLATING SOLUTION

ALL DIMENSIONS SHOWN TO BE MET
AFTER CADMIUM PLATING
THICKNESS OF PLATE .0003 MIN
TO .0005 MAX NOR THICKNESS TO
BE .0002 ON THREADED AREAS
NO ALLOWANCES FOR PLATING IN
HOLES

SURFACE ROUGHNESS
(including reamed holes
PER MIL STD 10

200 FOR ALL DRILLED HOLES

REMOVE ALL BURRS
BREAK ALL EDGES .015-.031

INSPECTION INFORMATION
MINIMUM PERMISSIBLE
AVERAGE EDGE DISTANCE
MARKED IS

SYMBOL X DENOTES SURFACE
TO BE MACHINED

UNLESS OTHERWISE SPECIFIED
TOLERANCE ON FLANGES IS ± 1/32

LENGTHS OF AN, NAS & MS AL ALY
RIVETS SHORTER THAN 1 INCH ARE
NOT SPECIFIED

TOLERANCE ON LOFTED
DELINEATIONS IS

DRG SIZE 34 - 94

LDW200-55521

LDW200-55521

NAS 9-1100

LEM
MODEL OR IND ITEM

GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE L I NEW YORK

SIZE	CODE IDENT NO.	
J	26512	LDW200-55521

SCALE FULL SHEET 4.00

CODE IDENT NO 26512

LDW200-55521 SH 4

THIS IS AN ORIGINAL DRAWING

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LEO 280		EO NO. 1840
CONTROL INFO NO. LDW280 B7713		

ADD NOTE * (* USE NEXT AVAILABLE NOTE NUMBER) ON DWGS LISTED BELOW

NOTE * ON -/ INSTL. ALL PARTS MAY BE TRIMMED .25 INCH MAXIMUM ON ALL DIMENSIONS WITH A MIN OF 1/2 DIA. EDGE DISTANCE MAINTAINED ON ALL FASTENERS UNLESS OTHERWISE NOTED.

DRAWING NO.	DASH NO.	EFFECTIVITY	TITLE	E.O. NO.
LDW200-55518	-1	LTA5/R (159)	SEE DWG.	A1
-55519	-1			A1
-55520	-1			A1
-55521	-1			A1
-55522	-1			A1
-55523	-1			A1
LDW200-55532	-1	LTA5/R(159)	SEE DWG.	A1

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	X	LCD 3890 PKG 95	(5)

REASON FOR EO: LM-10 TANK EXPANSION FOR LTA-5

DESCRIPTION OF EO: ADDED NOTE *

GAEC EO RELEASE: 2-10-70 / 2-11-70

MODEL	EFFECTIVITY	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	DATE	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ. ENGRG	GOVT
	E.I. [redacted]			✓		✓		RBT	2-9-70			4/1/70			2-10-70	4/11/70
LM	LEM507	LTA5/R(159)		PRIORITY C		DRAWING TITLE: NOTED			YDI			DRAWING NO.: LEO 280				EO NO. 1840

CDR 2-12-70
ISSUED BY ED COLEMAN/G. HANSMANN X87222 SECTION VDI GROUP NO. 335 PL 25

01

NAS 9-1100

LDW200-55522

LEM

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LFM #507	LDW200-55530	LTA-5/R(159)	1
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW200-55522-1		GAEC SCH NO.	

WORK PACKAGE FUNCTION NO. 110 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00			2.00	3.00	4.00	5.00		
REV									
SHEET									
REV									
SHEET									
REV									

		GRUMMAN REL INFO	
LAST SECT LTR USED	L	PRIM NO.	VC(024)
LAST DASH NO. USED	-37	207	ME-16-12-1-69

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
~~FRACTIONS~~ - DECIMALS – ANGLES
.XXX=±.010 .XX=±.03 ~ ± 0°-30'

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 3890 PKG 95	

CONTRACT NO. NAS 9-1100 LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	R. BEHAN		
LAYOUT BY	R. BEHAN		
CHECKED BY	L Crafton 11/25/69		
GR LEADER	[illegible] 11/26/69		
VEH. DES. INT	[illegible] 11/26/69		
STRUCTURE	N.M. 12-1-69	PROJ ENGR	12-1-69
STRUCTURE		REL GROUP	12/1/69

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

DECK INSTALLATION
DESCENT STAGE - FWD UPPER
(REWORK OF LDW280-25508 LFM 507)

SIZE	CODE IDENT NO.	
B	26512	LDW200-55522

SCALE NONE SHEET 1.00 OF 5

12-05-69

ENG 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		MS20470AD4	E	RIVET	GOVT STD						
		NAS1097AD5		RIVET	IND STD						
6		LDW200-55520-13		CLIP	SEE DWG						
6		LDW200-55520-11		STRAP	SEE DWG						
		LDW200-55522-37		ZEE	AL. ALY SH	QQ-A-250/4	2024-T3	.063 x 4 x 28	NONE	T6	1C
1		-36		ZEE				063 x 4 x 15			2E
1		-35		ZEE				.063 x 4 x 15			2E
1		-34		ZEE				.050 x 4 x 15			1E
1		-33		ZEE				.050 x 4 x 15			1E
2		-31		PLATE				.040 x 2 x 3			2A
1		-29		DOUBLER				.125 x 26 x 30			5G
1		-28		ANGLE				.063 x 2 x 3			1C
1		-27		ANGLE				.063 x 2 x 3			1C
2		-25		FILLER				.032 x 1 x 10			2B
2		-23		FILLER				.032 x 1 x 10			2C
2		-21		FILLER				.032 x 1 x 6			2C
1		-20		ANGLE				.063 x 2 x 4			1B
1		-19		ANGLE				.063 x 2 x 4			1B
2		-17		ANGLE				.063 x 2 x 4			1A
1		-15		ZEE				.063 x 4 x 29			2A
1		-14		ANGLE				.063 x 3 x 3			1A
1		-13		ANGLE				063 x 3 x 3			1A
1		LDW200-55522-11		FILLER	AL. ALY. SH	QQ-A-250/4	2024-T3	.080 x 1 x 2	NONE	T6	1B
		LDW200-55522-1	E	DECK INSTL					NONE	NONE	GA

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
76	ALODINE	LSP14-9010

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

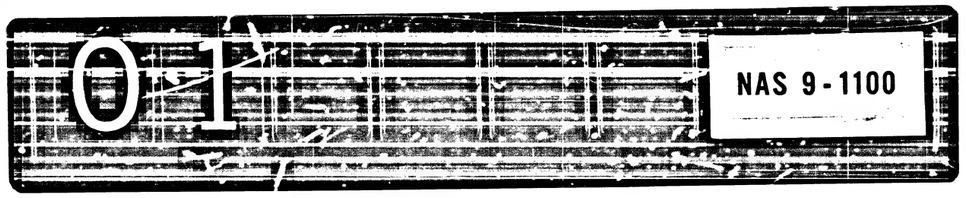
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55522

SCALE NONE SHEET 2.00

ENG 77.2 7-65



10 9 8 7 6

C B A

LDW280-17223-31 (REF)
MS20470AD4 (23) (REF)
MS20470DD4 (REF)
MS20470AD4 (32) (REF)
G120-090-4-10A (REF)
1.50 / 1.25 R.
MS20470DD4 (REF)
.093 / .062
+Z54.00 (REF)
27.62 / 27.50
12.13 / 12.00
12.13 / 12.00
12.625

MS20470AD4 (25) (REF)
MS20470DD4 (REF)
-Y5.371 (REF)
LDW280-17223-31 (REF)
MS20470DD4 (REF)
G120-090-4-10A (REF)
TRIM FLANGE OF TEE AS SHOWN LDW280-25540 (REF)

A (ZONE 3A)
-13 (REF)
MS20470DD4 (REF)
MS20470AD4 (24) (REF)
-Y10.606 (REF)
LDW280-17223-33 (REF)
MS20470DD4 (REF)
G120-090-4-10A (REF)
SEE DETAIL G (ZONE 1B) FOR TRIM OF LDW280-25540
MS20470AD4(2)

G (ZONE 3C)
MS20470AD4(6)
LDW200-55520-11
LDW200-55520-13
LDW 300-55522-15
MS20470AD4(2)

F (ZONE 3C)
MS20470AD4(2)
LDW200-55520-13
MS20470AD4(6)
LDW200-55520-11
LDW200-55522-17
.27 (REF)
LDW200-55522-19
LDW280-17144(REF)
.25
MS20470AD4(9)
LDW200-55522-21
.25
.25
.06
8 EQUAL SPACES
.25
MS20470AD4
.38
LDW 300-55522-23
MS20470AD4(15)
.25
.06
MS20470AD4
14 EQUAL SPACES
.25
MS20470AD4(15)
LDW...
14 EQUAL S...
.25
LDW280-25587 (REF)

MS20470AD4 (24) (REF)
-Y15.334 (REF)
LDW 280-17223-39 (REF)
LDW280-25526 (REF)
MS20470DD4(2) (REF)
G120-090-4-10A (REF)
MS20470DD4 (REF)

LDW280M17111 (REF)
MS20470DD4 (REF)
MS20470AD4 (19) (REF)
LDW280-17223-37 (REF)
-Y20.208 (REF)
MS20470DD4 (REF)
G120-090-4-10A (REF)
MS20470AD4 (6) (REF)
LDW280-17226-27 (REF)
MS20470AD4 (63)
SPOTFACE $\frac{5}{8}$ DIA $\frac{1}{8}$ FILLET R FIN 76 (MAINTAIN .062 MIN THICKNESS OF LDW280M17106) (REF)
MS20470DD5(6) (REF)
LDW280M17106 (REF)
LDW280-17122-19 (REF)
(REMOVE) LDW280-17224-26
(ADD) LDW200-55522-34
(REMOVE) LDW280-17224-25
(ADD) LDW200-55522-33
PICK UP EXISTING FASTENER LOCATIONS MS20470AD4 (24)
PICK UP EXISTING FASTENER LOCATIONS MS20470AD4 (24)
MS20470AD4 (58)
LDW280-25537 (REF)
PICK UP EXISTING LOCATION MS20470AD4
PICK UP EXISTING LOCATION MS20470AD4
+Z59.331 (REF)
+Z48.669 (REF)
LDW200-55522-...

.273±.010 TYP(2)
LDW280-17614-11(2) NSFS (REF)
GB511K-3-7(4) (REF) GN 512H-3 (4)
GB511K-3-6(4) (REF) GN 512H-3 (4)
.321±.010 (REF)
.390±.010 (REF)
.370±.010 (REF)
GB511K-4-6 (4) (REF) GN 512H-4 (4)
.321±.010 (REF)
LDW280M17102 (REF)
MS20470DD4 (5) (REF)
MS20470DD5(2) (REF)
LDW280-17163-15 (REF)
GB511K-4-5 (4) (REF) GN 512H-4 (4)
-Y27.000 (REF) L.H. BEAM PANEL REFERENCE PLANE
+Z81.000 (REF) FWD END BULKHEAD PANEL REFERENCE PLANE
+Z73.550 (REF)
+Z65.906 (REF)

CODE IDENT NO. 26512	SH
LDW200-55522	3

VIEW LOOKING D...

01/03 NAS 9-1100

± Y0.000 (REF)

LDW280-17225-23 (REF)

MS20470AD4(19) (REF)

MS20470 DD4 (REF)

MS20470AD4(36) (REF)

LDW280-17225-23 (REF)

-Y5093 (REF)

MS20470AD4(19) (REF)

MS20470 DD4 (REF)

PICK UP EXISTING FASTENER LOCATIONS MS20470AD4(24)

LDW280-17225-21 (REF)

-Y10.980(REF)

MS20470AD4(19) (REF)

MS20470 DD4 (REF)

LDW280-25529 (REF)

LDW280-17226-21 (REF)

-Y16.368 REF

MS20470AD4(15) (REF)

MS20470 DD4 (REF)

LDW280-17224 27 (REF)

(REMOVE) LDW280-17224-25
(ADD) LDW280-55522-33

MS20470 DD4 (REF)

LDW280-17226-23 (REF)

-Y21.077 (REF)

MS20470AD4(20) (REF)

MS20470AD4(12) (REF)

MS20470AD4(2) (REF)

LDW280-17226-25 (REF)

MS20470AD4(5) (REF)

MS20470AD4(3) (REF)

GB511K-3-6 (12)
GN512H-3 (12)
(REF)

LDW280M17100 (REF)

MS20470AD4(58) (REF)

MS20470DD4 (REF)

MS20470 DD4 (REF)

MS20470DD5(2) (REF)

LDW280-17226-17 (REF)

-Y27.000(REF) FWD BEAM PANEL REFERENCE PLANE

+Z48.669 (REF)

+Z38.443(REF)

+Z35.265 (REF)

+Z27.000(REF) FWD BEAM PANEL REFERENCE PLANE

F (ZONE 3C)

D

E (ZONE 2B)

D (ZONE 3B)

F

B (ZONE 1A)

B

MS20470AD4(4)

MS20470AD4(2)

LDW200-55520-13

LDW200-55520-11

200/50 R SKIN TRIM TYP

.31

.25

.06

14 EQUAL SPACES

MS20470AD4(15)

LDW200-55528-25

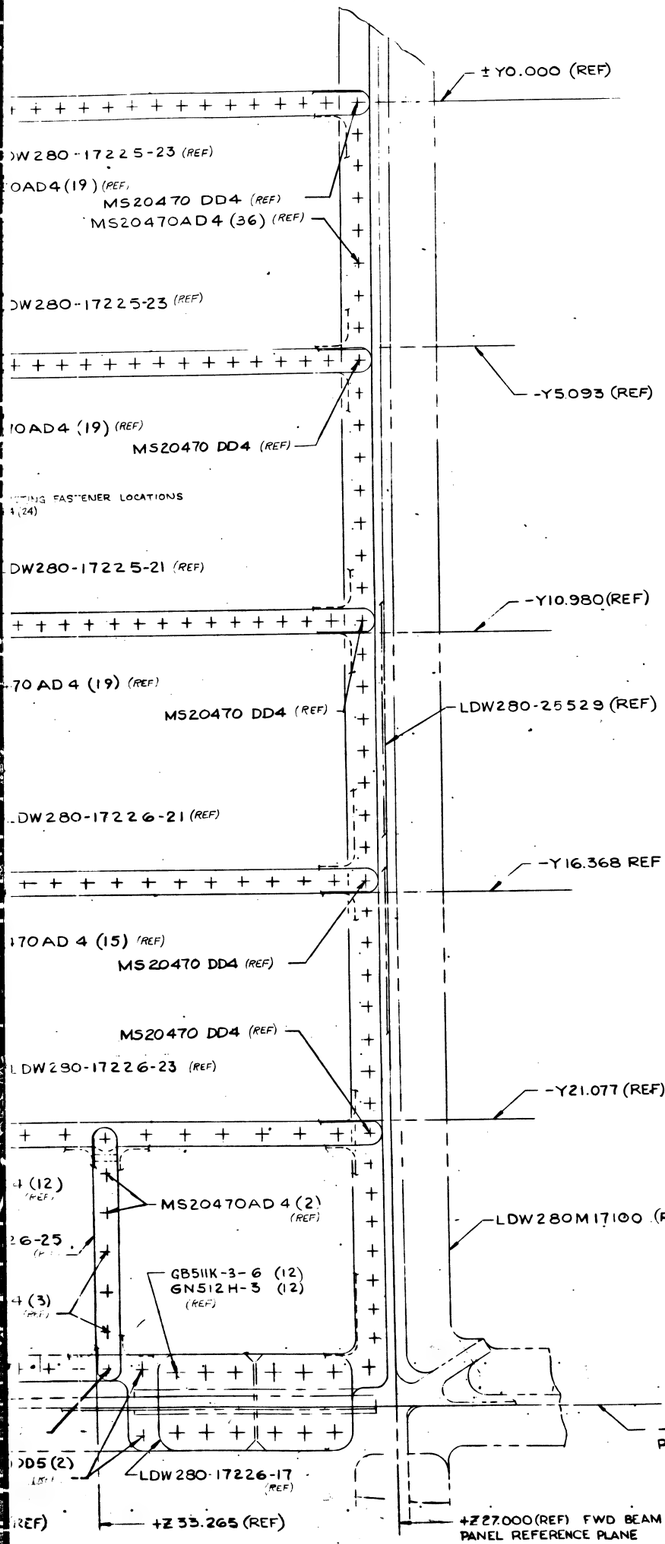
LDW200-55520-13

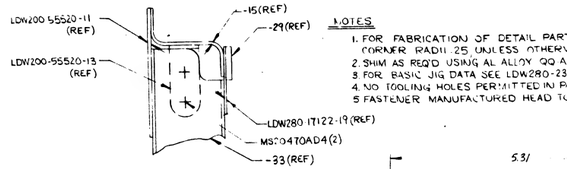
.06

.25

.25

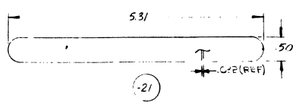
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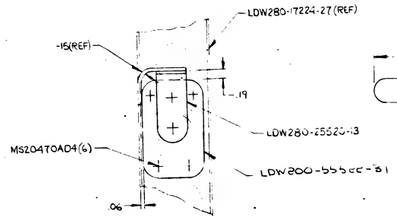




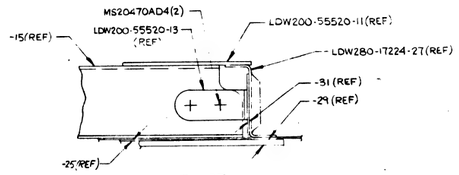
SECTION F-F (SHN) (ZONE 6B)
SECTION G-G (OPP) (ZONE 7B)

NOTES
1. FOR FABRICATION OF DETAIL PARTS- ALL EXTERNAL AND INTERNAL CORNER RADII .25 UNLESS OTHERWISE SPECIFIED.
2. SHIM AS REQ'D USING AL ALLOY QQ A-250/4 2024-T3 FINISH #76
3. FOR BASIC JIG DATA SEE LDW280-23511
4. NO TOOLING HOLES PERMITTED IN PARTS
5. FASTENER MANUFACTURED HEAD TO BE WEB SIDE UNLESS OTHERWISE SPECIFIED.

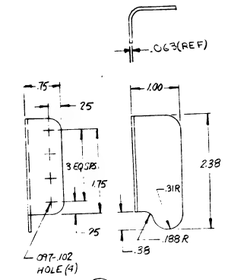




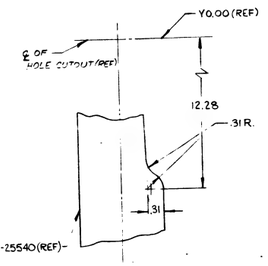
VIEW D-D SHN (ZONE 5B)
VIEW J-J OPP (ZONE 5E SH 9)



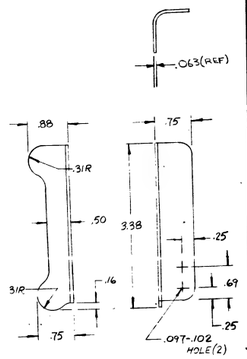
VIEW E-E SHN (ZONE 6B)
VIEW K-K OPP (ZONE 5E SH 9)



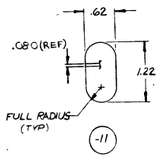
B.R. 7/32 (-27) SHN
(-28) OPP



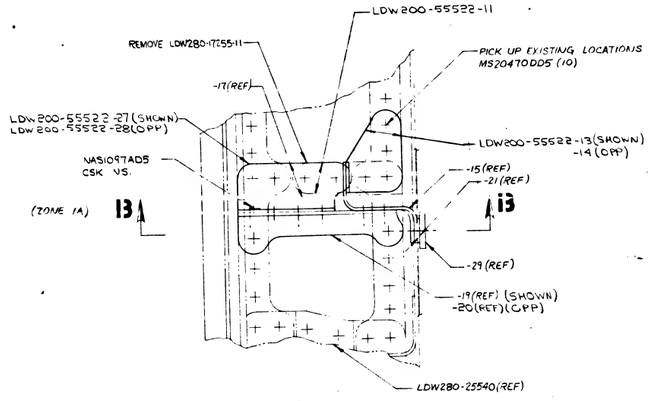
DETAIL C (ZONE 7B) SHN
DETAIL L (ZONE 8E) OPP
SH 9



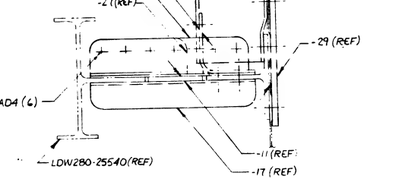
B.R. 7/32 (-19) SHN
(-20) OPP



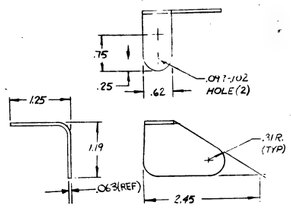
(-11)



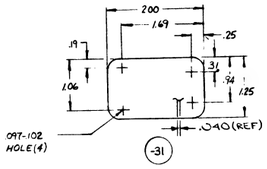
VIEW A-A SHN (ZONE 8B)
VIEW H-H OPP (ZONE 8E SH 9)



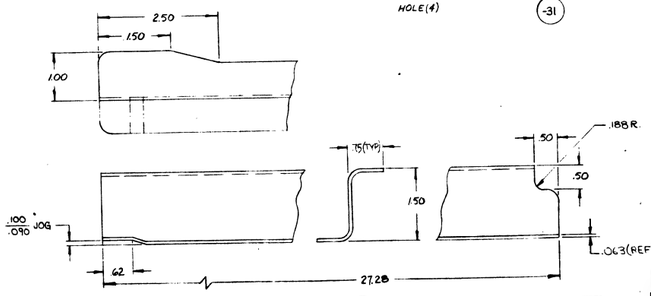
SECTION 13-13 (ZONE 9B)



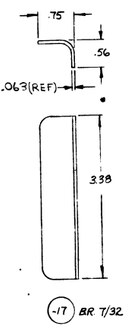
B.R. 7/32 (-13) SHN.
(-14) OPP



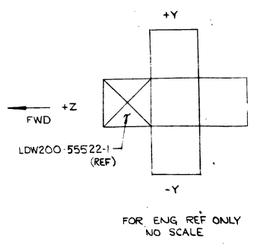
(-31)



(-15) B.R. 7/32



(-17) B.R. 7/32



FOR ENG REF ONLY NO SCALE

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN RECESS MARKED ☐ USE BOX IDES IF NECESSARY ✓

FILLET AND INSIDE CORNER RADII TOLERANCES
RAD TO .062R ± .010
RAD TO .250R ± .015
DIA FOR ± .030

DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2.3 IMP. THDS. BEYOND PERMISSIBLE

EXTERNAL HEAD LENGTH SHOWN IN INDEX
2 IMPERFECT THREADS MAX

DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK

MISMATCH TYP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES

DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING

HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION

ALL DIMENSIONS SHOWN TO BE WET AFTER CADMIUM PLATING
THICKNESS OF PLATE .0003 MIN TO .0005 MAX MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES

125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL STD-10

250 FOR ALL DRILLED HOLES

REMOVE ALL BURRS BREAK ALL EDGES .015 031

INSPECTION INFORMATION MIN VALUE PERMISSIBLE EDGE DISTANCE IS 1.5 FASTENER DIA FROM FASTENER ℄ ✓

SYMBOL ✓ DENOTES SURFACE TO BE MACHINED

UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32

LENGTHS OF AN, NAS & MS AL ALY BOLTS SHORTER THAN 1 INCH ARE NOT SPECIFIED ✓

TOLERANCE ON LOFTED DELINEATIONS IS ~~SEE ASSY NOTE~~

CODE IDENT NO. 26512	
LDW200-55522	SH 3

03/03 NAS 9-1100

GRUMMAN AIRCRAFT ENGNG CORP. BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	LDW200-55522
J	26512	

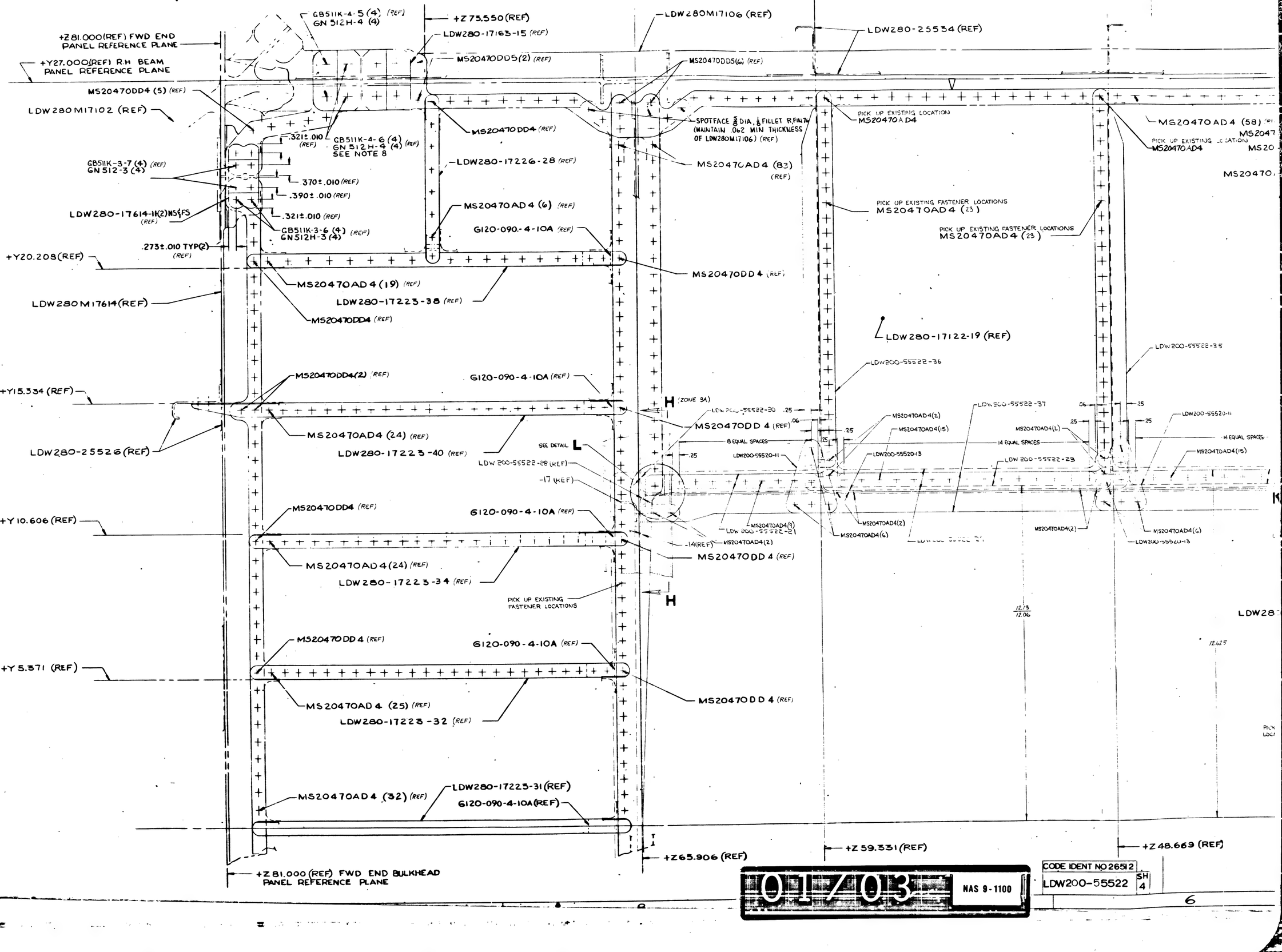
LEM | MODEL OR END ITEM | SCALE FULL | SHEET 3.0

K2

THIS IS AN ORIGINAL DRAWING

LDW200-55522

LDW200-55522



017403	NAS 9-1100	CODE IDENT NO 26512	
		LDW200-55522	SH 4

+Z 33.265 (REF)

+Z 27.000 (REF) FWD BEAM PANEL REFERENCE PLANE

LDW280-17226-17 (REF)

+Y 27.000 (REF) P.H. BEAM PANEL REFERENCE PLANE

MS20470AD4 (58) (REF)

MS20470DD4 (REF)

PICK UP EXISTING LOCATION MS20470AD4

MS20470AD4(6) (REF)

MS20470 DD4 (REF)

MS20470AD4 (3)

GB5MK-3-6 (12) (REF)
GNS12H-3 (12)

MS20470AD4 (2) (REF)

LDW280-17226-26 (REF)

MS20470AD4 (19)

MS20470AD4 (12) (REF)

LOCATIONS

+Y 21.077 (REF)

LDW280-17226-24 (REF)

MS20470 DD4 (REF)

LDW280-17226-22 (REF)

+Y 16.368 (REF)

LDW200-55522-35

(ZONE 38)

MS20470 DD4 (REF)

MS20470AD4 (15) (REF)

LDW200-55520-11

LDW200-55522-25

14 EQUAL SPACES

MS20470AD4(15)

LDW200-55522-23

LDW200-55520-13

MS20470AD4(6)

K

(ZONE 28)

LDW280-17225-22 (REF)

LDW200-55520-13

+Y 10.980 (REF)

LDW200-55520-11

MS20470AD4(6)

MS20470 DD4 (REF)

J

MS20470AD4 (19) (REF)

LDW280M17100 (REF)

LDW280-17224-27 (REF)

LDW280-17225-24 (REF)

MS20470 DD4 (REF)

+Y 5.093 (REF)

12.625

MS20470AD4 (19) (REF)

PICK UP EXISTING FASTENER LOCATIONS - MS20470AD4(23)

MS20470AD4 (36) (REF)

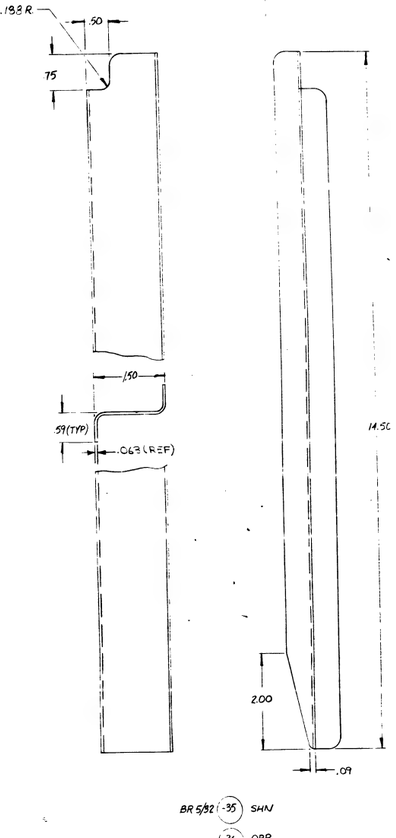
LDW280-17225-23 (REF)

± Y0.000 (REF)

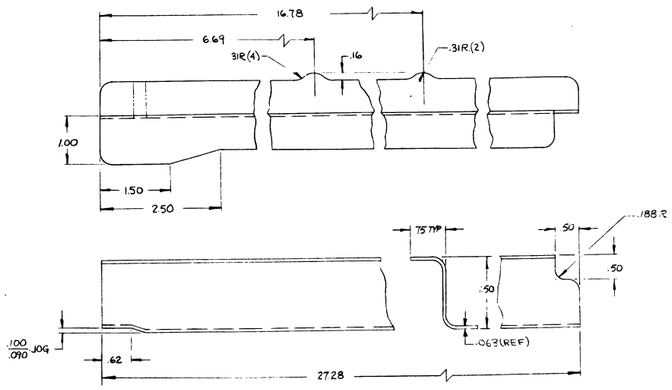
+Z 48.669 (REF)

+Z 38.443 (REF)

+Z 27.000 (REF) FWD BEAM PANEL REFERENCE PLANE



BR 5/32 (-35) SHN
(-36) OPP

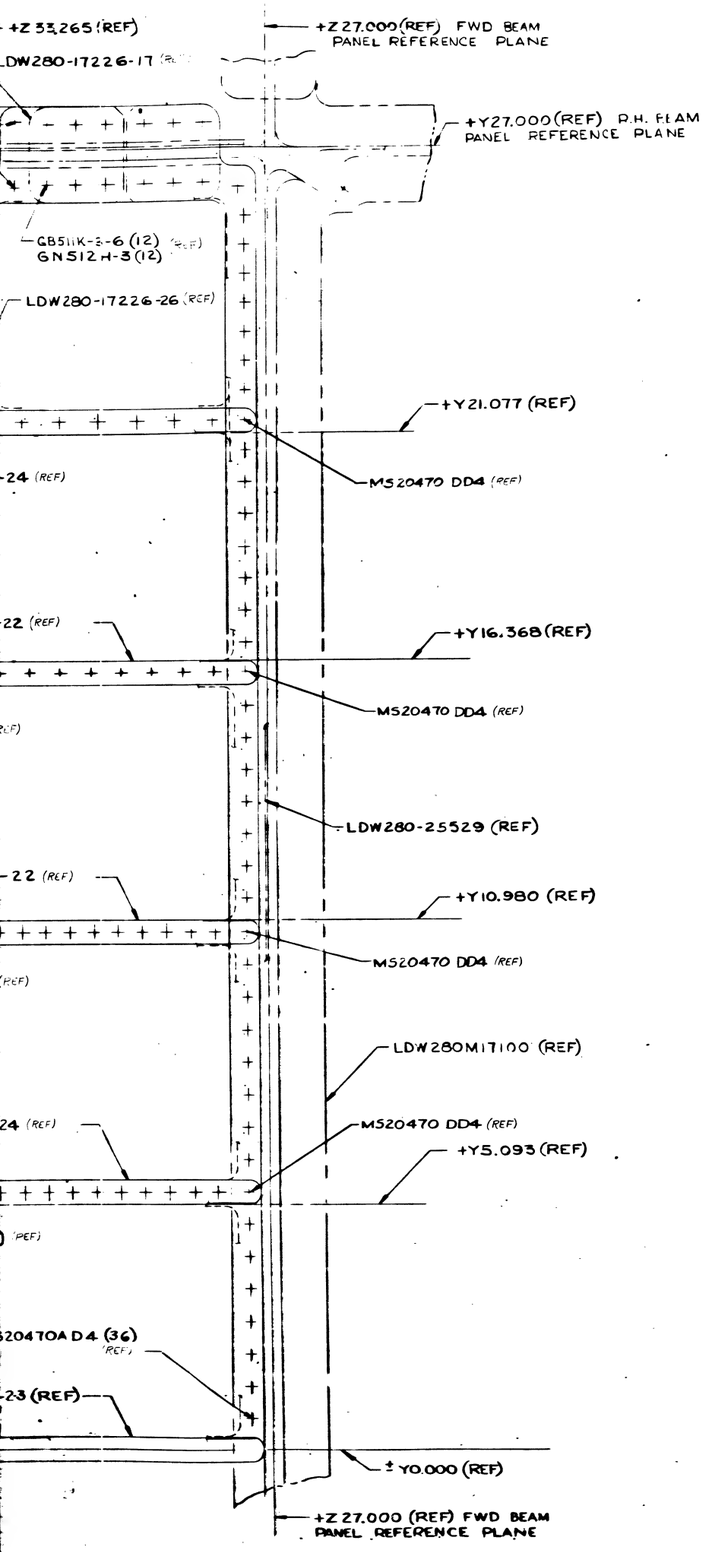


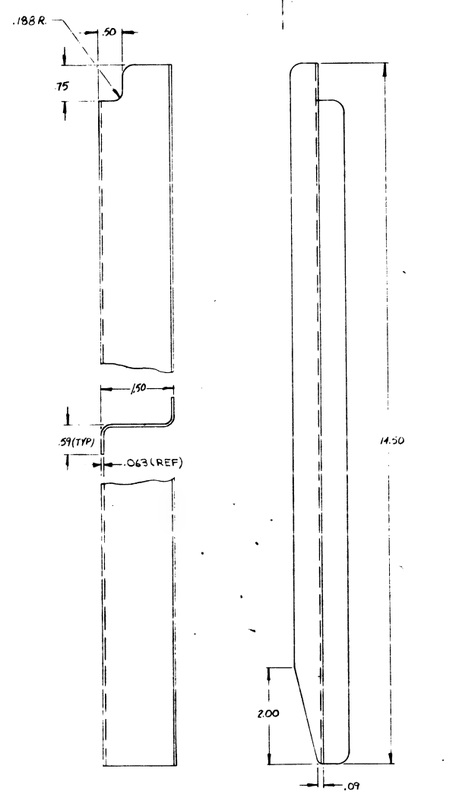
(-37) BR 7/32

02/03 NAS 9-1100

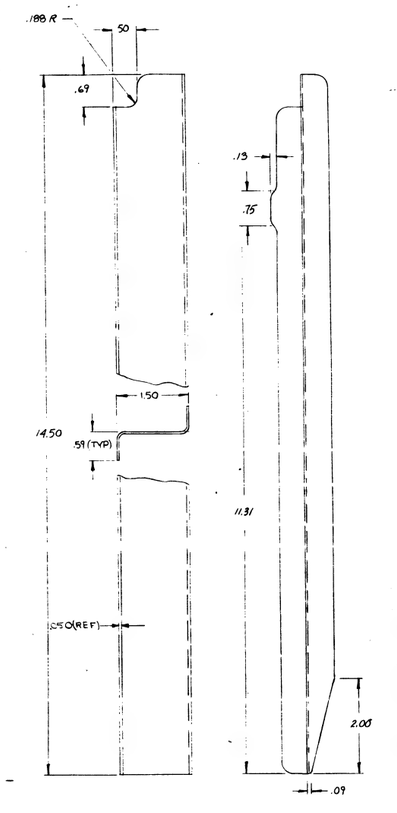
CODE IDENT NO 26512
LDW200-55522 SH 4

CODE IDENT NO 26512
LDW200-55522 SH 4

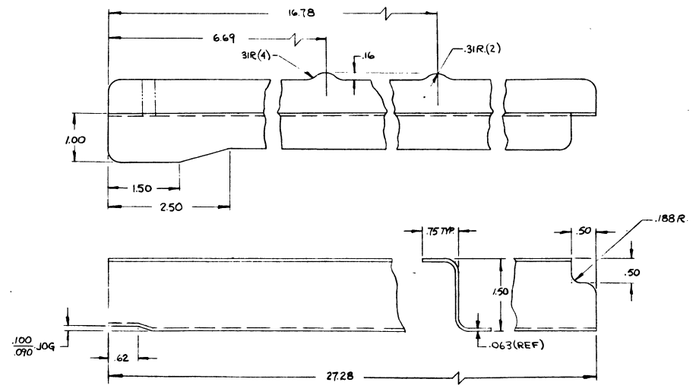




BR 5/32 (-35) SHN
(-36) OPP



BR 5/32 (-33) SHN
(-34) OPP



(-37) BR 7/32

GENERAL MACHINING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☐ ARE BOTH SIDES IF NECESSARY	
FILLET AND BREAK CORNER SHARP TOLERANCES SPACE TO .0620 = .010 .0620 TO .2500 = .015 OVER .2500 = .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2.3 DEP THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 INCOMPLETE THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE VEGETOR.	
MISMATCH STEP OF = .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN .010 FULL INDICATOR READING.	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. NOT THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS MICRO INCHES REAMED HOLES PER MIL STD-10	
250 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS BREAK ALL EDGES .015-.035	
WELDING INFORMATION NORMALIZE PERMISSIBLE MINIMUM EDGE DISTANCE MINIMUM .05	
SYMBOL ▽ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LISTED DIMENSIONS IS	

03/03 NAS 9-1100

CODE IDENT NO 26512	SH
LDW200-55522	4

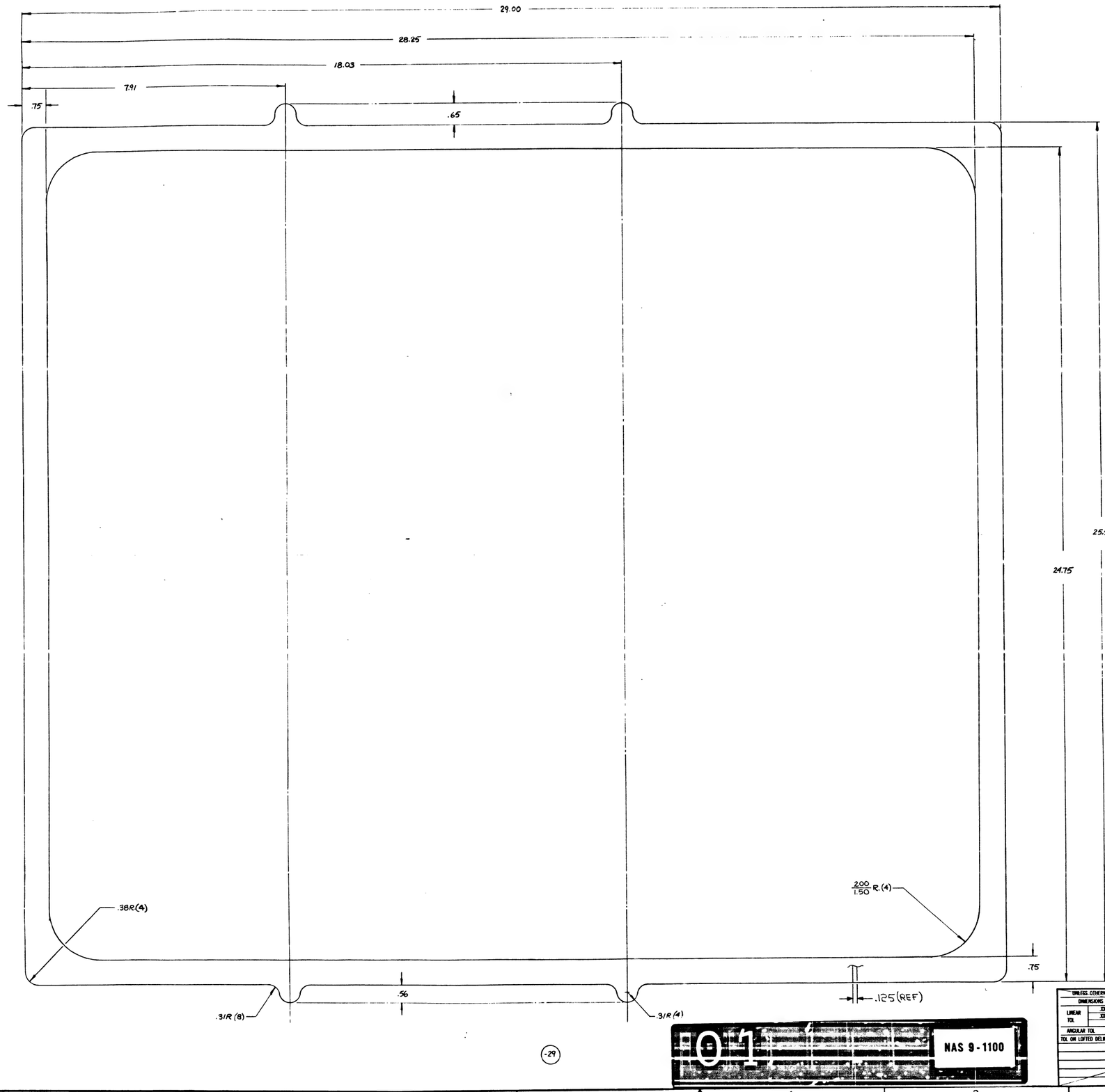
GRUMMAN AIRCRAFT ENGINEERING CORP. BETHPAGE, L.I., NEW YORK

SIZE	CODE IDENT NO.	DWG NO.
	J 26512	LDW200-55522
LEM	SCALE FULL	SHEET 4.00

LDW200-55522

THIS IS AN ORIGINAL DRAWING

REVISIONS						
ZONE	LTR	DESCRIPTION	ECP CODE	MODEL	DATE	APPROVED



-29

01

NAS 9-1100

FOR PARTS LIST, USAGE DATA, AND DWG SH STATUS, SEE DOCUMENT SAME NUMBER PREFIXED PL

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES		
LINEAR TOL	XX	± .03
	XXX	± .010
ANGULAR TOL		± 0°30'
TOL ON LOFTED DELINEATIONS IS		

CONTRACT NO.

DRAWN BY
LAYOUT BY
CHECKED BY
GR LEADER
REL GROUP
PROJ ENGR
GOVT APPD

GRUMMAN AIRCRAFT ENGINEERING CORPORATION
BETHPAGE, NEW YORK 11714

SIZE	CODE IDENT NO.	
E	26512	LDW200-55522

SCALE FULL SHEET 5 OF X

1 DISTR LIST #

LDW200-55522

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LEO 280		EO NO. 1840
CONTROL INFO NO. LDW280 D9913		

ADD NOTE * (* USE NEXT AVAILABLE NOTE NUMBER) ON DWGS LISTED BELOW

NOTE * ON -1 INSTL. ALL PARTS MAY BE TRIMMED .25 INCH MAXIMUM ON ALL DIMENSIONS WITH A MIN OF 1½ DIA. EDGE DISTANCE MAINTAINED ON ALL FASTENERS UNLESS OTHERWISE NOTED.

DRAWING NO.	DASH NO.	EFFECTIVITY	TITLE	E.O. NO.
LDW200-55518	-1	LTA5/R (159)	SEE DWG.	A1
-55519	-1			A1
-55520	-1			A1
-55521	-1			A1
-55522	-1			A1
-55523	-1			A1
LDW200-55532	-1	LTA5/R(159)	SEE DWG.	A1

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG ✓ LCD 3890 PMG 95 (5)

REASON FOR EO: LM-10 TANK EXPANSION FOR LTA-5

DESCRIPTION OF EO: ADDED NOTE *

GAEC EO RELEASE: 2-11-70

MODEL	EFFECTIVITY: E.I [redacted]	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG ✓ / RECORD EO	DISPOSITION OF PARTS: REWORK ✓ / SCRAP	APPROVED BY	DATE	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
LM	LEM507	LTA5/R(159)		PRIORITY C	DRAWING TITLE: NOTED	PST / 2-9-70 / YDI	SUPPORT / RELIAB GROUP	4/1/70	DRAWING NO.: LEO 280	2-10-70	PST / 2-11-70	Bauman 2/11/70

EO NO. 1840

CDR 2-12-70
ISSUED BY ED COLEMAN/G. HANSMANN X 87222 SECTION VDI GROUP NO. 335 PL 25

01

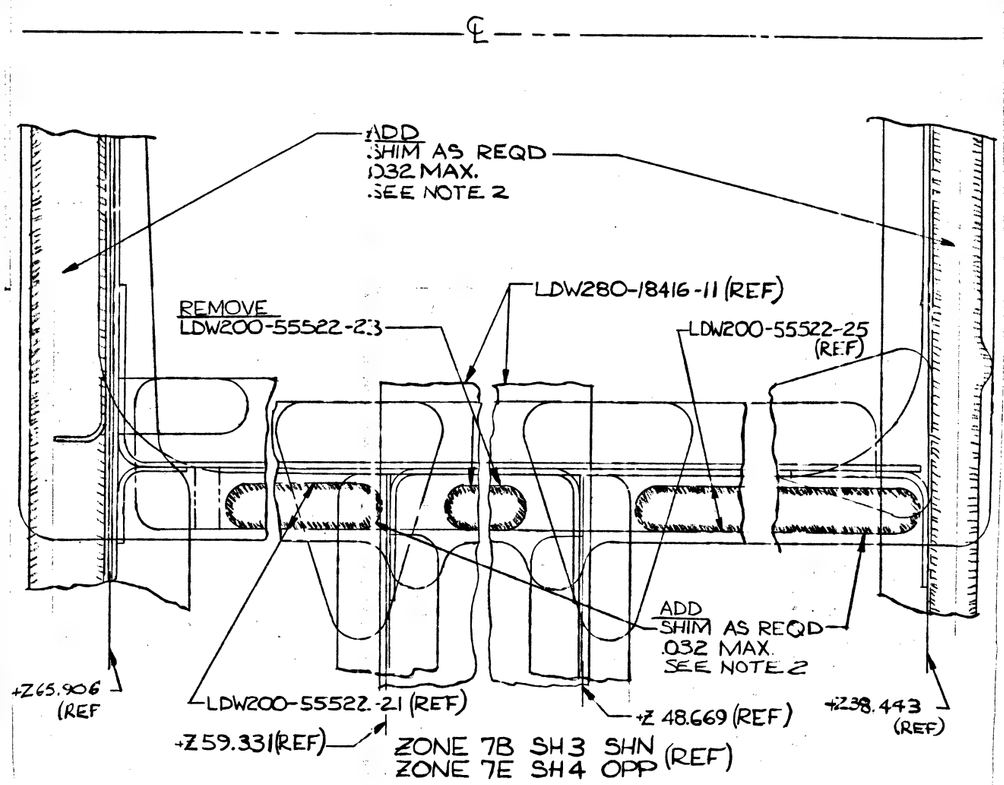
NAS 9-1100

GRUMMAN AEROSPACE CORPORATION
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW200-55522 | EO NO. A2
CONTROL INFO NO. LDW280C0160

DMG 32.2 REV 3-65

ON -1:
IN B/M & F/D REMOVE -23 (2)
IN F/D ADD CALLOUTS SHIM AS REQ'D .032 MAX AS SHOWN
IN B/M -11 QTY/ASSY (2) WAS (1)



DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ☑ LCD 3890 PKG 95

REASON FOR EO
TO PROVIDE FOR PROPER FIT OF -29 DOUBLER

DESCRIPTION OF EO
ON -1:
REMOVED -23(2); ADDED .032 SHIMS
QTY -11 (2) WAS (1)

GAEC EO RELEASE

MODEL	EFFECTIVITY	GAEC UNIT NO.	SU CONTR UNIT NO.
LM	LFM 507	LTA-5/R(159)	

DRAWING CHANGE RQD: REVISE DWG ✓ | RECORD EO | DISPOSITION OF PARTS: REWORK ✓ -23 SCRAP

	APPROVED BY	DATE		SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGR	PROJ ENGRG
	[illegible]	3-27-70	VDI			4/3/70	3/24/70		3/24/70

PRIORITY C | DRAWING TITLE: DECK INSTL ~ D/S ~ FWD UPPER (REWORK OF LDW280-25598 LFM 507) | DRAWING NO. LDW200-55522 | EO NO. A2

3/27/70 ISSUED BY J. PEDERSEN/G. HANSMANN X87222 SECTION VDI GROUP NO. 335 PL 25

NAS 9-1100

LDW200-55523

LFM

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM 507	LDW200-55530	LTA9/2(59)	1
PART NO. LDW200-55523-1		GAEC SCH NO.	

WORK PKG FUNCTION NO. 110 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00		3.00		4.00		
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	J
LAST DASH NO. USED	-27

GRUMMAN REL INFO
PRIM NO. LJC(020)
207 WE-16 12/2/69

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
XX±.03 XXX±.020 10°30'

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	J
LCD 3890 PKG 95	

CONTRACT NO. NAS 9-1100 | LINE ITEM | DOCUMENTATION TYPE II

DRAWN BY	G.CHAN 11/20/69		
LAYOUT BY	G.CHAN		
CHECKED BY	11/25/69		
GP LEADER	12/1/69		
VEH. DES. INT			
STRUCTURE		PROJ ENGR	12-1-69
STRUCTURE	N.M. 12-1-69	REL GROUP	12-1-69

(3) GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

DECK INSTALLATION
DESCENT STAGE -
AFT UPPER-RWK OF LDW280-25523

SIZE	CODE IDENT NO.	
B	26512	LDW200-55523

SCALE FULL NONE | SHEET 1.0C OF 4 (6)

ENG 77.1 12-65

CDR 12-5-69

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		MS20470AD4	E	RIVET	GOVT STD						
		SEE NOTE 1	E	SHIM							
5		LDW200-55520-13	E	ANGLE	SEE DWG						
8		LDW200-55520-11	E	DOUBLER	SEE DWG						
1		LDW200-55523-27	E	ANGLE	AL ALY 6H	QQ-A-250/4	2024-T3	.040 x 2 x 4	NONE	76	1B
2		-25		STRAP				.020 x 1 x 11			8E
4		-23		STRAP				.020 x 1 x 10			7E
2		-21		DOUBLER				.063 x 2 x 6			6D
2		-19		ANGLE				.063 x 2 x 3			6D
1		-17		ZEE				.032 x 3 x 15			5F
1		-15		STRAP				.020 x 1 x 27			1E
1		-14		ZEE				.063 x 4 x 31			1A
1		-13		ZEE				.063 x 4 x 31			1A
1		LDW200-55523-11	E	DOUBLER	AL ALY SH	QQ-A-250/4	2024-T3	.125 x 29 x 33	NONE	76	2B
		LDW200-55523-1	E	DECK INSTL					NONE	NONE	3A
-1											

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
76	ALODINE	LSP14-9010

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55523

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

0172-03 NAS 9-1100

LDW280-17229-17(REF)

MS2047CDD4(15)(REF)

LDW280-17229-17(REF)

-Y5.238(REF)

MS2047CDD4(16)(REF)

LDW280-17230-13(REF)

-Y10.987 (REF)

LDW280-17229-15(REF)

MS20470DD4(18)(REF)

LDW280M17100(REF)

-Y16.469 (REF)

LDW280-17229-13(REF)

MS20470DD4(18)(REF)

-Y21.337 (REF)

LDW280-17229-11(REF)

MS20470DD4(18)(REF)

LDW280-17231-29(REF)

MS20470DD4(50)(REF)

MS20470DD4(5)(REF)

LDW280-17407-11(REF)

-Y27.000 L.H. BEAM PANEL REF. PLANE SEE NOTE 2

GB11K-3-G (16)(2EA) GN5124-3 (16)(REF)

LDW280-17407-13(2)(REF)

-Z27.000 AFT BEAM PANEL REF. PLANE (SEE NOTE 2)

-Y0.000(REF)

-Z54.000(REF)

11.94±.06(CUTOUT ON LDW280-17123-15)

15.52±.06(2EA) (CUTOUT ON LDW280-17123-15)(2EA)

LDW280-25523-15(REF)

MS20470AD4(6) LOCATE FROM LDW200-55520-11

LDW200-55520-11

LDW200-55523-23

MS20470AD4(7) LOCATE FROM LDW200-55520-11

MS20470AD4(7) APPROX.59 PITCH

LDW200-55520-11

LDW200-55520-13

LDW200-55523-13

A (ZONE 8-A)

B (ZONE 3-A)

LDW200-55523-27

LDW200-55523-25

SHIM AS REQ'D SEE NOTE 1

LDW200-55520-11(REF)

-13(REF)

14.31

MS20470AD4(4) LOCATE FROM LDW200-55520-13

LDW280-17123-19 (REF)

44

-11(REF) LDW200-55520-13(2EF)

LDW200-55523-25 (REF)

VIEW A-A (ZONE 8B)

LDW280-17123-15(REF)

LDW280-17230-15(REF)

LDW280-17230-13 (REF)

14.31 ON LDW280-17230-13(REF)

MS20470DD4(79)

LDW280M17110(REF)

.162(2)

.81(REF)

.31

-11(REF)

VIEW C (ZONE 6)

LDW200-55520-13

MS20470AD4(16) APPROX .60 PITCH

MS20470AD4(6) LOCATE FROM LDW200-55520

LDW200-55520-11

LDW200-55523-1(INSTL)

VIEW LOOKING DOWN

-Z38.483(REF)

-Z48.629(REF)

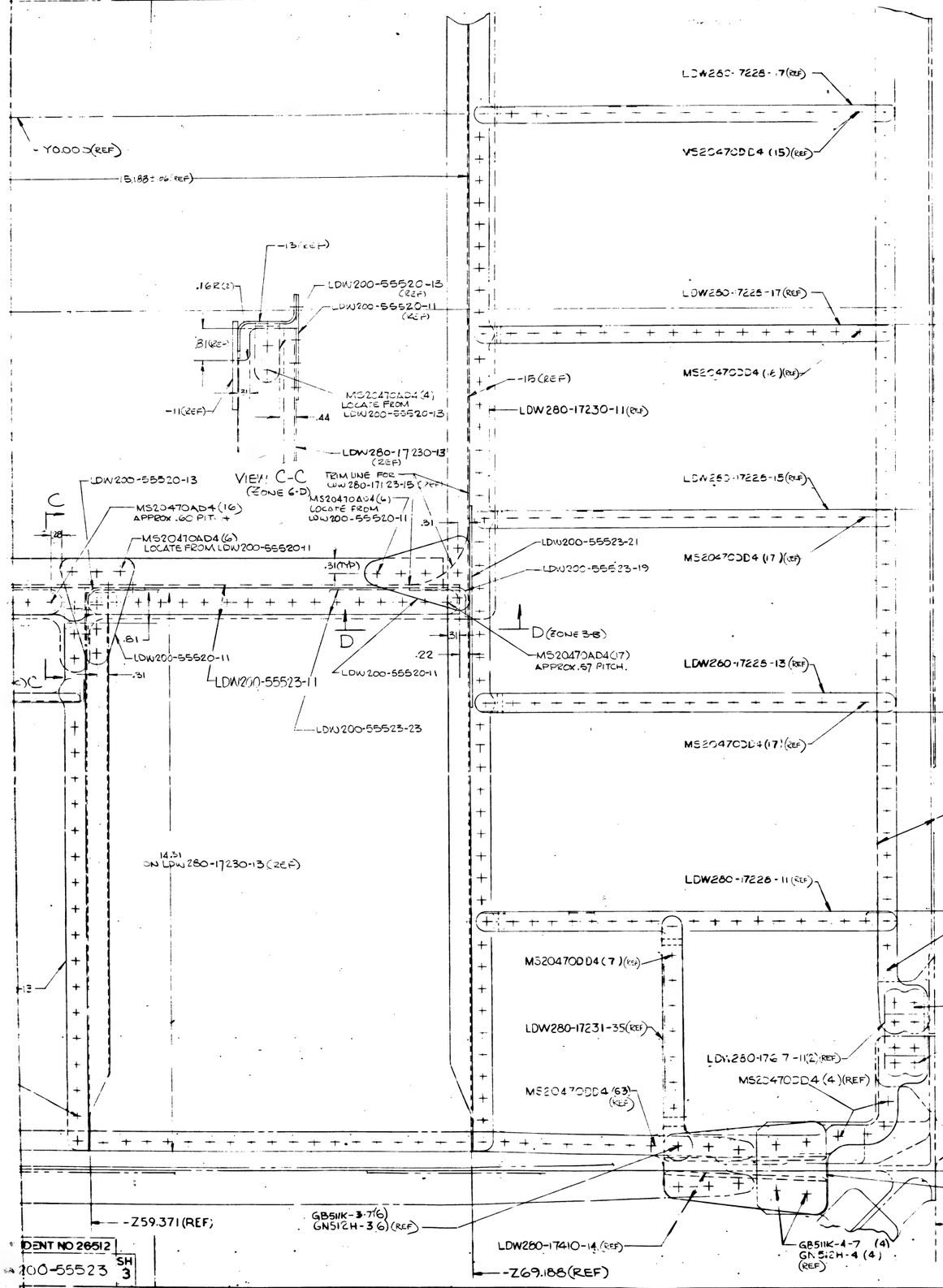
-Z59.371(REF)

CODE IDENT NO 26512

LDW200-55523 SH 3

NOTES:

1. SHIM AS REQ'D USING AL ALLOY, QQ-A-250/4 2024-T3, FINISH 76 PER LSP14-3010.
2. FULL SCALE DRAWING MAY BE SCALED FOR DIMENSIONS NOT SHOWN.
3. EXISTING LDW280-55523 TABS MAY BE TRIMMED TO FIT LDW200-55523 ASSEMBLY.



02/03

NAS 9-1100

CODE IDENT NO 26512

LDW200-55523 SH 3

CODE IDENT NO 26512

LDW200-55523 SH 3

03 / 03

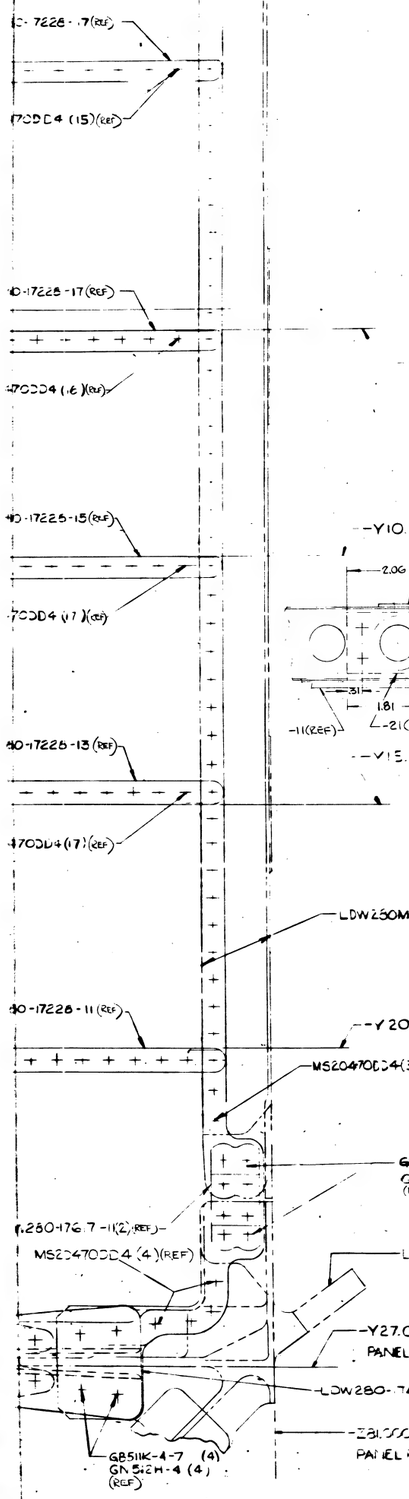
NAS 9-1100

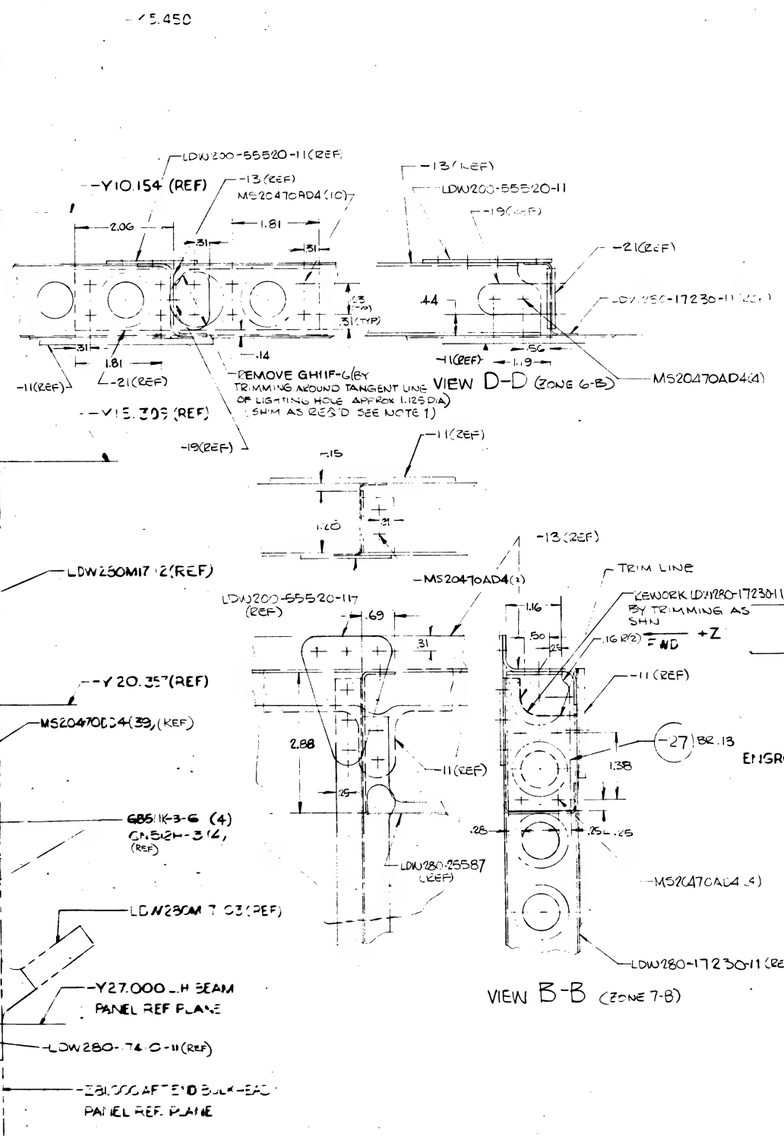
NOTES:

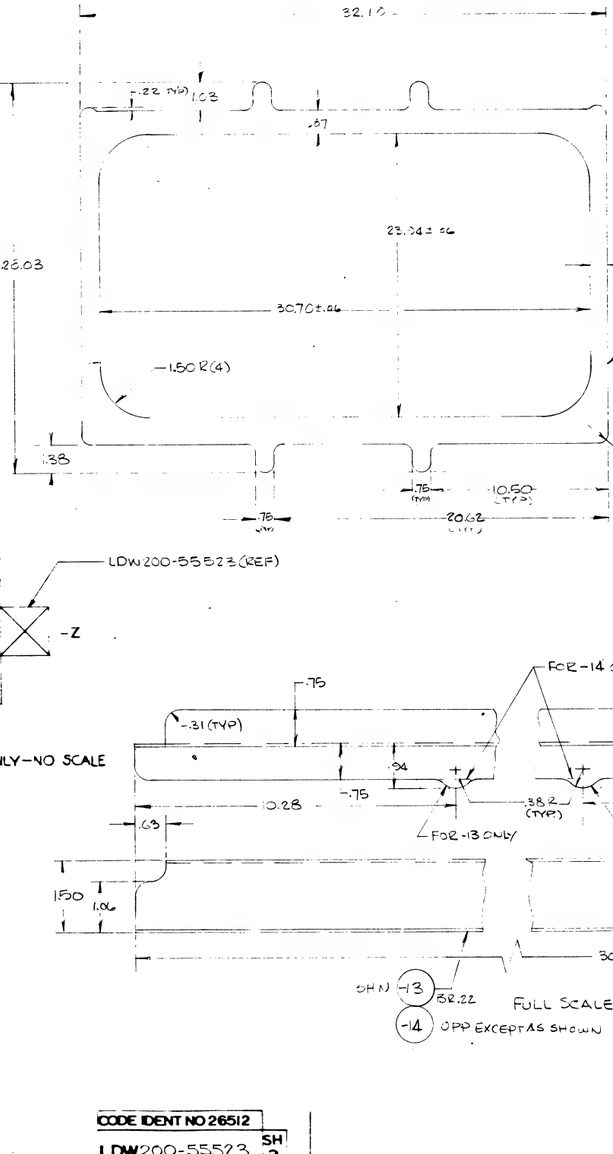
1. SHIM AS REQ'D USING AL ALLOY, QQ-A-250/4 2024-T3, FINISH 7G PER LSP14-2010.
2. FULL SCALE DRAWING MAY BE SCALED FOR DIMENSIONS NOT SHOWN.
3. EXISTING [illegible] TACTS MAY BE [illegible] TO FIT LDW200-55523 ASSEMBLY.

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN HIGH CONTRAST INK	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .010R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS 2.3 IMP THDS BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING.	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING THICKNESS OF PLATE .0003 MIN TO .0015 MAX. MM THICKNESS TO BE ONLY ON THREADED AREAS NO ALLOWANCES FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS FOLLOWING REAMED HOLES PER MIL STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE EDGE DISTANCE IS 1 1/2 FASTENER DIA FROM FASTENER ✓	
SYMBOL ▲ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	✓
LENGTHS OF MR, MAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS ±1/32	







CODE IDENT NO 26512

LDW200-55523 SH 3

GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE L.I. NEW YORK

SIZE	CODE IDENT NO.	
J	26512	LDW200-55523

E.M. MODIF. # FIND ITEM | SCALE FULL IF NOTED | SHEET 3.00

THIS IS AN ORIGINAL DRAWING

LDW200-55523

LDW200-5523

10 9 8 7 6

F E D

-Z 27.000 (REF)
LDW280-17407-11 (REF)
GB511K-3-6 (16) (REF)
GN512H-3 (16)
-Z 38.483 (REF)
-Z 48.629 (REF)
-Z 59.371 (REF)
MS20470DD4(9) (REF)
LDW280M1175C3-1 (REF)
LDW280-17407-13(2) (REF)
(ZONE 3E)
+Y 27.00 (REF)
LDW280M17100 (REF)
MS20470DD4(99) (REF)
MS20470DD4(45) (REF)
LDW280-17231-30 (REF)
MS20470DD4(5) (REF)
MS20470DD4(118) (REF)
LDW280M17176-3 (REF)
MS20470DD4(30) (REF)
LDW280M17110 (REF)
MS20470DD4(97) (REF)
MS20470DD4(5)
MS20470DD4(27
MS20470DD
(REF)
+Y 21.337 (REF)
LDW280-17229-12 (REF)
LDW200-55523-17
LDW280-17230-13 (REF)
14.40
ON LDW280-17230-13 (RE
.56
.50
LDW280-17123-15 (REF)
MS20470DD4(18) (REF)
+Y 16.469 (REF)
LDW280-17229-14 (REF)
10.00 (-25)
9.65 (-23)
.31
LDW200-55520-13
MS20470AD4(17) APPROX .59 HITCH
LDW280M17100 (REF)
MS20470AD4(4) LOCATE FROM LDW200-55520-13
FULL 2(2) (-25)
.25
.63 (-25)
11 (REF)
LDW200-55520-13
31 (TYP)
FULL 2(2) (-23)
(ZONE 3D)
LDW200-55523-23
LDW200-55520-13
MS20470DD4(18) (REF)
E (ZONE 8-D)
E
+Y 10.957 (REF)
LDW280-17229-16 (REF)
MS20470AD4(6) LOCATE FROM LDW200-55520-11
(-25)
(ZONE 3E)
MS20470AD4(6) LOCATE FROM LDW200-55520-11
MS20470AD4(6) MID ADJUSTABLE HOLE APPROX. .50 PITCH
G (ZONE 3D)
MS20470AD4(6) LOCATE FROM LDW200-55520-11
TRIM LDW
LDW200-55520-11
LDW200-55520-11 (REF)
LDW200-55520-11
TRIM LINE FOR LDW280-17123-15 (REF)
-14 (REF)
LDW280-17230-19 (REF)
LDW280-17230-19(REF)
SHIM AS REQ'D (SEE NOTE *1)
LDW200-55523-14
-14 (REF)
-21
-19
1.80
BR.22
.44
VIEW E-E (ZONE 8E)
LDW200-55520-13(REF)
-11(TYP)
11.94±.06 (CUTOUT ON LDW280-17123-15) (REF)
5.13
.75
1.70
1.9
REMOVE SHIM .63 TRIMMING AROUND TANGENT LINE OF LIGHTING HOLE APPROX 1/8 DIA) SHIM AS REQD SEE NOTE 1
-11(REF)
VIEW J-J (ZONE 6E)
.15
1.25
+Y 5.238 (REF)
MS20470DD4(16) (REF)
LDW280-17229-18 (REF)
-11(REF)
TRIM LINE FOR LDW280-17123-15 (REF)
LDW280-17229-17 (REF)
15.521±.06 (REF)
15.183±.06 (REF)
LDW200-5
VIEW LOO

01 / 03 NAS 9-1100

CODE IDENT NO. 26512
LDW200-55523 SH 4

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LEO 280		EO NO. 1840
CONTROL INFO NO. LDW280B9913		

ADD NOTE *(* USE NEXT AVAILABLE NOTE NUMBER) ON DWGS LISTED BELOW

NOTE * ON -1 INSTL. ALL PARTS MAY BE TRIMMED .25 INCH MAXIMUM ON ALL DIMENSIONS WITH A MIN OF 1/2 DIA. EDGE DISTANCE MAINTAINED ON ALL FASTENERS UNLESS OTHERWISE NOTED.

DRAWING NO.	DASH NO.	EFFECTIVITY	TITLE	E.O. NO.
LDW200-55518	-1	LTA5/R(159)	SEE DWG.	A1
-55519	-1			A1
-55520	-1			A1
-55521	-1			A1
-55522	-1			A1
-55523	-1			A1
LDW200-55532	-1	LTA5/R(159)	SEE DWG.	A1

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | X LCD 3870 PAG 95 (5)

REASON FOR EO: LM-10 TANK EXPANSION FOR LTA-5

DESCRIPTION OF EO: ADDED NOTE *

GAEC EO RELEASE: 2-10-70 (Mail) 2-11-70

MODEL	EFFECTIVITY E.I. [redacted]	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM507	LTA5/R(159)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: REWORK ✓ | SCRAP

	APPROVED BY	DATE								
	PST	2-9-70							PST	
	YDI		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT	
					2/9/70	2/10/70		2-10-70	2/11/70	

PRIORITY: C

DRAWING TITLE: NOTED

DRAWING NO.: LEO 280

EO NO.: 1840

CDR 2-12-70

ISSUED BY ED COLEMAN/G. HANSMANN X87222 SECTION VDI GROUP NO. 335 PL 25

01

NAS 9-1100

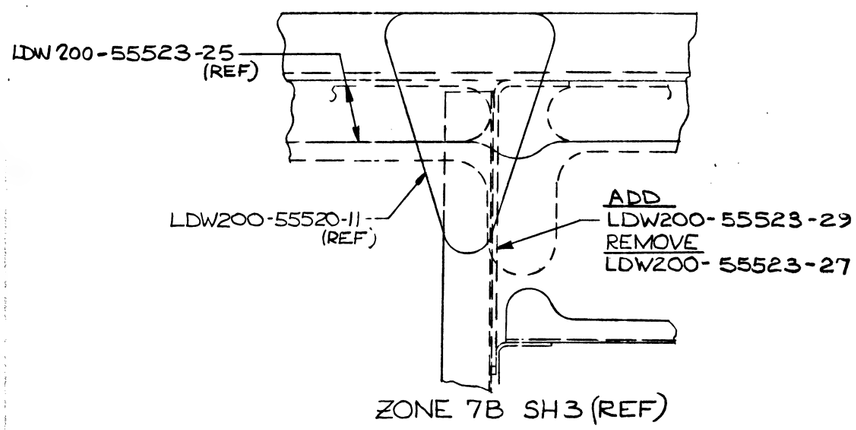
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.2 REV 3-65

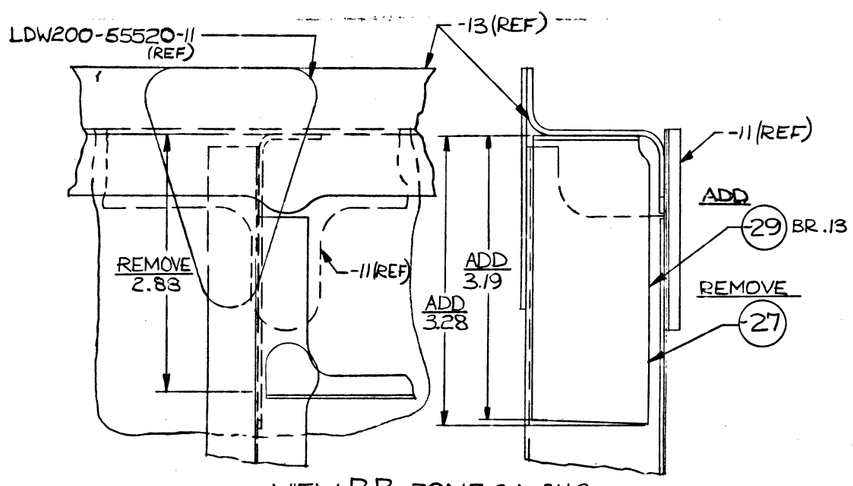
ENGINEERING ORDER

DWG. NO. LDW200-55523		EO NO. A2
CONTROL INFO NO. LDW280C0241		

ON -1:
ADD -29 IDENT TO -27 EXCEPT AS SHOWN
REMOVE -27



ZONE 7B SH3 (REF)



VIEW B-B ZONE 3A SH3 (REF)

| | | |

LDW200-55524

LFM

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
PART NO.				PART NO.				LFM 507	LDW200-55530	LTA 5/R(157)	1
								PART NO. LDW200-55524-1			

WORK PKG FUNCTION NO. 110 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH								
SHEET	1.00	2.00	2.01	2.02		3.00	4.00	5.00
REV								
SHEET								
REV								
SHEET								
REV								

LAST SECT LTR USED	F
LAST DASH NO. USED	-23

GRUMMAN REL INFO
PRIM NO. JK(624) STAGE
ME-16-12/2/69

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
.XX ±.03 .XXX ±.010 - ANGLES ±0°30'

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 3890 PKG 95	

CONTRACT NO. NAS 9-1100 LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	H. ISRAEL		
LAYOUT BY	H. ISRAEL		
CHECKED BY		11-25-69	
GR. LEADER		11-26-69	
VEH DES INT		12/1/69	
STRUCTURES			PROJ ENGR 12-1-69
STRUCTURES	MJH	12/1/69	REL GROUP 12-1-69

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

DECK INSTALLATION
DESCENT STAGE-FORWARD-LOWER
REWORK OF LDW280-25508 LFM 507

SIZE	CODE IDENT NO.	
B	26512	LDW200-55524

SCALE NONE SHEET 1.000F 7

12-5-69

NG 77.1 12-68

01

NAS 9-1100

QTY PER ASSEMBLY								CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
									LDW280-18716-19	E	STIFFENER	SEE DWG						4F
									-18									4E
									-16									4F
									LDW280-18716-12		STIFFENER							4G
									LDW280-18761-18		ANGLE							1B
									-17									6B
									-16									7B
									-15									6B
									-14									9B
									LDW280-18761-11									4C
									LDW280-18760-20									9D
									-18									4G
									-17									9G
									-13									9F
									-12									8G
									LDW280-18760-11		ANGLE							6G
							2		LDW280-17906-13		PLATE	SEE DWG						3B/10D
							1		LDW280-17795-13		ANGLE	SEE DWG						10C
						1			LDW200-55524-23		SHIM	AL ALY SH	QQ-A-250/4	2024-T3	.080x2x3	NONE	76	7H
						1			-21		SHIM	AL ALY SH	QQ-A-250/4	2024-T3	.100x2x2	NONE	76	3F
						1			-19		SHIM	AL ALY SH	QQ-A-250/4	2024-T3	.100x4x6	NONE	76	3F
						1			-17		ZEE	AL ALY SH	QQ-A-250/12	7075	.040x6x13	T6	76	9F
						1			-15		ANGLE	AL ALY SH	QQ-A-250/12	7075	.063x2x10	T6	76	9C
						1			-13		ZEE	AL ALY SH	QQ-A-250/12	7075	.063x5x13	T6	76	4C
						1			-11		WEB	AL ALY SH	QQ-A-250/12	7075-T6	.040x55x57	NONE	76	7B
							1		-3		DECK ASSY					NONE	NONE	6A
									LDW200-55524-1	E	DECK INSTL					NONE	NONE	6A
						-3	-1											

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
T6	AL HEAT TREAT	MIL-H-6088
88	ANODIZE	LSP14-9030

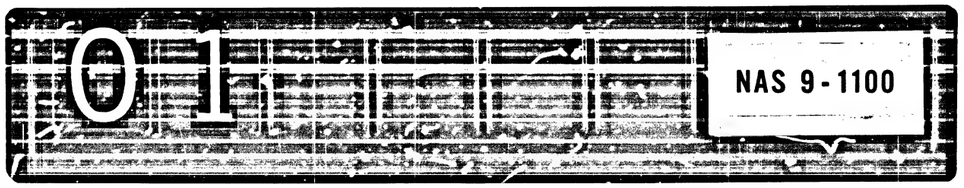
I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55524

SCALE NONE SHEET 2.00

ENG 77.2 7-65



| | | |

QTY PER ASSEMBLY			CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		3		MS90354-0507	E	FASTENER	GOVT STD						
		2		NAS674V4	E	BOLT	IND STD						
		2		NAS680C4	E	PLATE NUT	IND STD						
		4		MS20426AD3	E	RIVET	GOVT STD						
A/R	A/R			NAS1097B5	E	RIVET							
A/R	A/R			NAS1097DD5	E	RIVET							
A/R	A/R			NAS1097DD4	E	RIVET							
A/R	A/R			MS20470B5	E	RIVET							
A/R	A/R			MS20470DD5	E	RIVET							
A/R	A/R			MS20470DD4	E	RIVET							
	10			MS90354-05C5	E	FASTENER	GOVT STD						
	24			MS21043-08	E	NUT	GOVT STD						
	24			AN960D8L	E	WASHER	GOVT STD						
	2			AN960D416L	E	WASHER	GOVT STD						
	2			MS90354-0504	E	FASTENER	GOVT STD						
	29			GN512H-08	E	COLLAR	GRUMMAN STD						
	2			GB511K-08-7	E	BOLT							
	3			GB511K-08-6	E								
	8			GB511K-08-5	E								
	11			GB511K-08-4	E								
	2			GB511K-08-2	E								
	6			GB511J-08-5	E								
	2			GB511J-08-4	E								
	19			GB511J-08-3	E	BOLT	GRUMMAN STD						
	1			GR500A-5N	E	RIVET	GRUMMAN STD						
	1			GR500A-5M	E								
	1			GR500A-5L	E								
	3			GR500A-5J	E								
	20			GR500A-5H	E	RIVET	GRUMMAN STD						
-3	-1												

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55524

SCALE NONE SHEET 2.02

ENG 77.2 7-65

01

NAS 9-1100

CODE IDENT NO	DWG NO	SHEET
26512	LDW200-55524	3

FRAME 1 → 9 → FRAME 2

10 11 12

+V27.000 R.H BEAM PANEL REFERENCE PLANE (SEE NOTE 1)

GBS11K08-4(3)ON-1 (GNS12H08-(3)ON-1 ▲SEE NOTE 10)

LDW280-18762-13 NS
LDW280-18763-15 FS

LDW280-25534(REF)

MS20470DD5(9)

G512E 040A04B10

MS20470DD5(9)

LDW280-J8761-14

MS20470DD5(9) ON-1

MS20470DD4(13)

NAS1097DD5 OF LDW2

G512E 045A

MS20470DD5(9)

MS20470DD4(5)

LDW280-60901(REF)

NAS 1097DD5 CSK FS OF LDW200-55524-11

LDW200-55524-15

MS20470DD4(6)

MS20470DD5(10)

MS20470DD4(6)

MS20470DD5(9)

G512E-070A12B05

LDW280-18766-13

G512E-060A12B04

LDW280-25534(REF)

LDW200-55524(REF)

GBS11K08-7(2) (GNS12H08(2)-N-1 ▲SEE NOTE 10)

MS20470C D5(2)

MS20470DD5(4) ON-1 ▲SEE NOTE 10

LDW280-17775-13 ON-1

GBS11U08-5(3)-AN960DBL(3) NS MS21043-08(3)FS

GR500A 5H(3)ON-1 ▲SEE NOTE 10

MS90354-0504(3)ON-1 ▲SEE NOTE 10

LDW280M173(0.3) (SEE NOTE 13)

GR500A 5H(ON-1) ▲SEE NOTE 10

LDW280-25534(REF)

LIC WID SHIM SEE NOTE 11

200:010

GR500A 4C(7)ON-1

GR500A 5E(ON-1)

LDW280-18760-20

GR500A 5H(6)ON-1 ▲SEE NOTE 10

GR500A 4C(6)ON-1

GR500A 5E(ON-1)

GR500A 5J(N-1) ▲SEE NOTE 10

MS20470DD5(ON-)

LDW280-17906-13(01-)

LDW280-25509(REF)

GR500A 5F 1(ON-1) ▲SEE NOTE 10

NAS1097TJD5 CSK N/S IN LDW200-55524-11

D (ONE 12G,SH4)

(ZONE 11F,3H4) E

A B C D

NAS 9-1100

CODE IDENT NO	DWG NO	SHEET
26512	LDW200-55524	3

FRAME 1 | 2 | 5 | 6 | 7 | 8 | FRAME 1

LDW200-55524-1 INSTL
- 3 ASSY

VIEW LOOKING UP

02403

NAS 9-1100

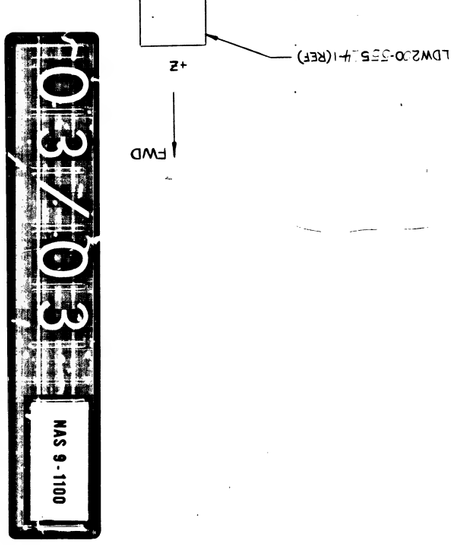
GRUMMAN AIRCRAFT ENGNG CORP BETHPAGE, L.I., NEW YORK		
SIZE K	CODE IDENT NO 26512	LDW200-55524
SCALE FULL		SHEET 3.00

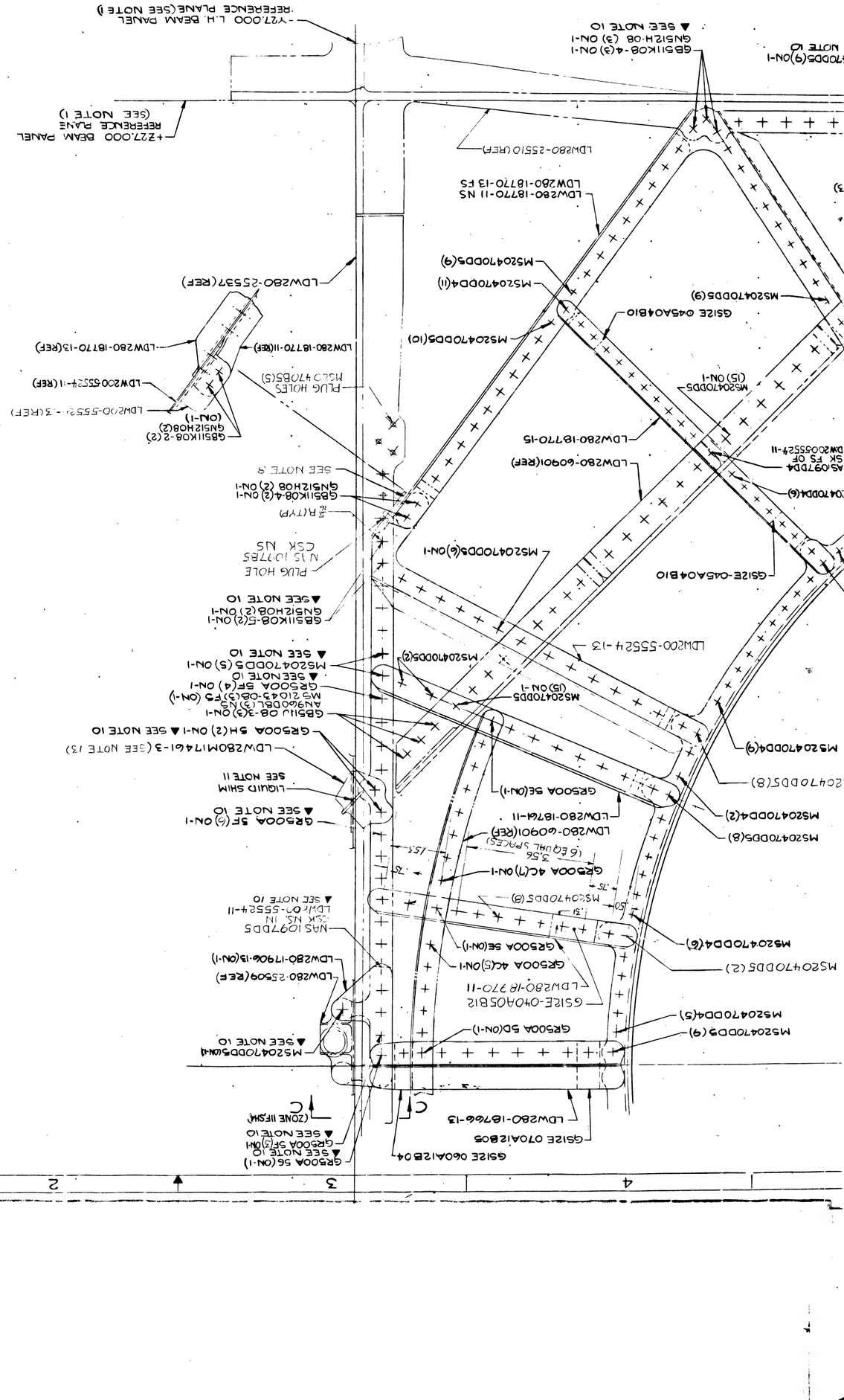
-55524 SHEET 3 FRAME 2

∀ LDW200-55524 LDW200-55524 CD

10/3/70 3

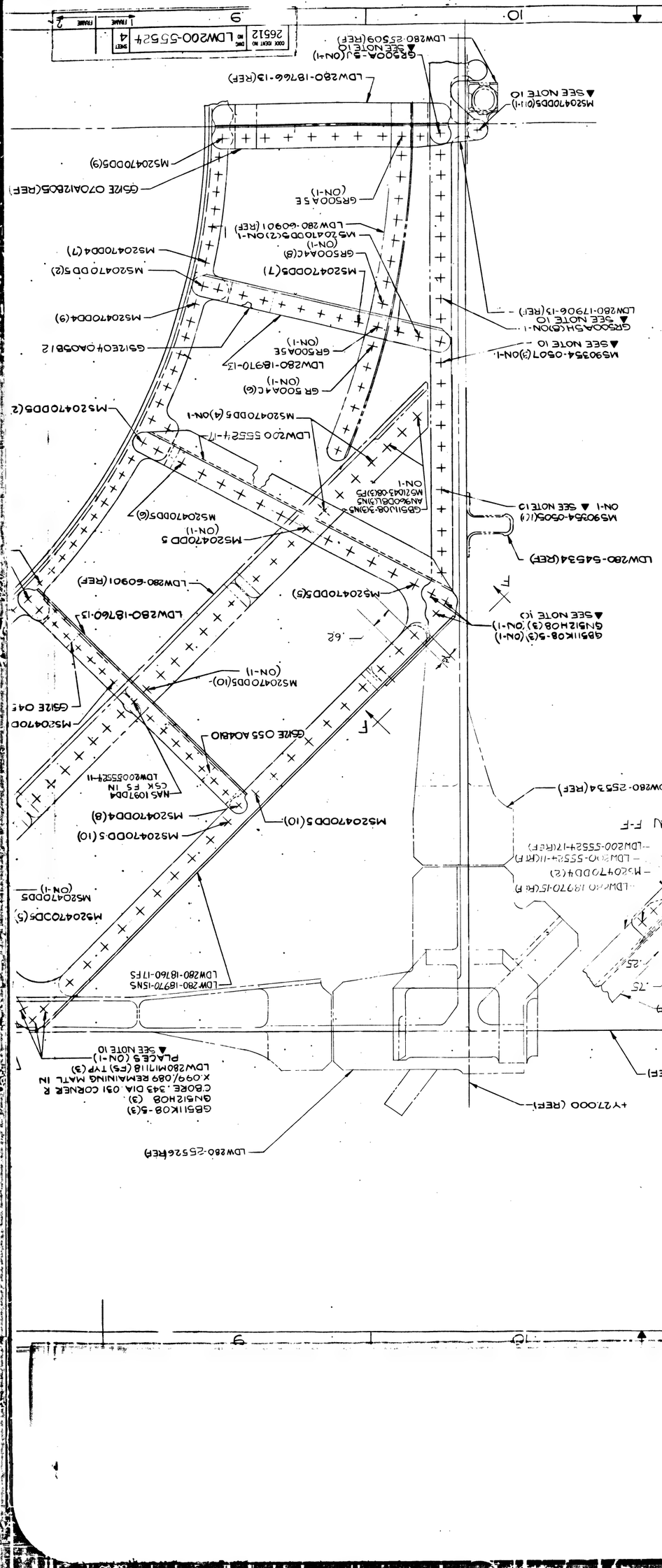
NAS 9-1100

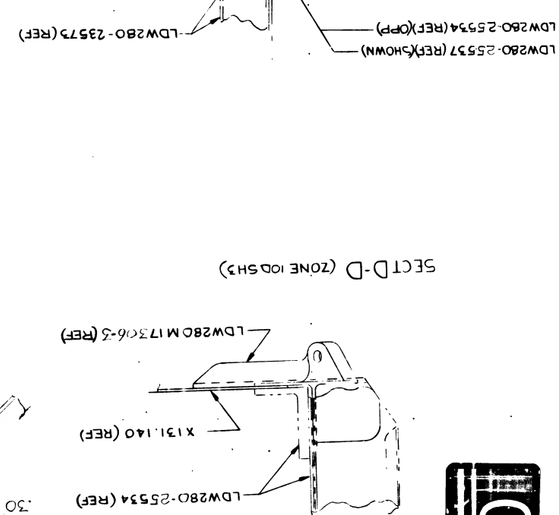



-Y27.000 L.H. BEAM PANEL REFERENCE PLANE (SEE NOTE 1)
+Z27.000 BEAM PANEL REFERENCE PLANE (SEE NOTE 1)
LDW280-25510 (REF)
LDW280-18770-11 NS
LDW280-18770-13 FS
MS20470DD5(9)ON-1
GB511K08-4(3) ON-1
GN512H-08 (3) ON-1
▲ SEE NOTE 10
MS20470DD5(9)
MS20470DD4(11)
GSI2E 045A04B10
MS20470DD5(10)
MS20470DD5
(15) ON-1
LDW280-18770-15
LDW280-60901(REF)
MS20470DD5(6)ON-1
GSI2E-045A04B10
LDW200-55524-13
MS20470DD5(2)
GB511K08-5(2) ON-1
GN512H08(2) ON-1
▲ SEE NOTE 10
MS20470DD5 (5) ON-1
▲ SEE NOTE 10
MS20470DD5
(15) ON-1
GR500A 5H(2) ON-1 ▲ SEE NOTE 10
GB511U 08-3(3) ON-1
AN960D8L(3) NS
MS 21043-08(3) FS (ON-)
GR500A 5F(4) ON-1
LDW280M17461-3 (SEE NOTE 13)
LIQUID SHIM
SEE NOTE 11
GR500A 5E(ON-1)
LDW280-18764-11
GR500A 5F(5) ON-1
▲ SEE NOTE 10
LDW280-60901(REF)
3.56
(6 EQUAL SPACES)
.75
.75
.75

CODE IDENT NO	DWG NO	SHEET
26512	LDW200-5524	4

FRAME 2 | FRAME 1





LDW200-5524-1 INSTL (REF)
-3 ASSY (REF)
Y0.000 (REF)
+254.000 (REF)
MS20470DD5(9)
GSI2E 07OAI2B05(REF)
MS20470DD4(7)
MS20470DD5(2)
MS20470DD4(9)
GS12E04 OA05B12
MS20470DD5(2)
LDW280-18760-13
MS20470DD4(10)
MS20470DD5(2)
LDW280-60901 (REF)
MS20470DD4(10)
MS20470DD5(2)
LDW280-18760-15(REF)
MS20470DD5(2)
MS20470DD4(9)
MS20470DD4(7)
MS20470DD5(2)
MS20470DD4(7)
MS20470DD5(9)
MS20470DD5(5)
MS20470DD4(6)
MS20470DD5(6)
MS20470DD4(7)
MS20470DD5(2)
MS20470DD4(10)
MS20470DD5(2)
MS20470DD4(10)
GS12BD45A04
MS20470D
(ON-1
LDW2R
GB 5IIK
GN 312H
(BOR E
REMAIN
(3)PLA
▲ SEE NO
GR500A5FJ(10)
▲SEE NOTE IO (ON-1)
MS20470DD5(4)
(ON-1)
GR500A5G
▲SEE NOTE IO (ON-1)
6851IJO8-3 (3)NS
AN960DBL (3) NS
MS2104303-08 (3) FS
ON-1
GR500A5FE(B)
▲SEE NOTE IO
(ON-1)
DRILL IA (.250-.254) (2)HOLES
NAS 6704(2)
AN 960 D4 I6L(2)
MS 20426 AD3 (4)
NAS 6806C4(2)
CSK IN LDW280M1718 (NS)
▲SIZE NOTE IO
(ON-1)
LIQUID SHIM
SEE NOTE II
LDW200-5552#-23-
(SEE NOTE II)
GR500A5E
(ON-1)
GR500A4C(6)
(ON-1)
GR500A4C(8)
(ON-1)
GR500A4C(9)
(ON-1)
GR500A5E
(ON-1)
GR500A5E(2)
(ON-1)
M52047ODD5(16)
LDW280M 8115-11
LDW280-18760-11
MS20470DD5 (8)
MS20470DD5(2)
MS20470DD4(7)
ZONE 2F SH4)
MS20470DD4(7)
MS20470DD4(7)
MS20470DD5(2)
MS20470DD4(6)
MS20470DD 5(6)
MS20470DD5
(ON-1)
MS51397DD4
CSK F5 IN
LDW200552#-
MS20470DD5
(ON-1)
MS20470DD4(11)
(ON-1)
GR500A4C(6)
(ON-1)
MS20470DD5(5)
LDW280-18760-12
MS20470DD5(2)
MS20470DD5
(ON-1)
MS20470DD4(7)
MS20470DD5(2)
MS20470DD4(9)
GS12E04 OA05B12
MS20470DD5(2)
MS20470DD5(G)
D 3
LDW280-60901(REF)
MS20470DD4(10)
MS20470DD5(2)
MS20470DD4(10)
LDW280-18760-13
MS20470DD4(6)
GS12E 04 5A04B10
MS20470DD4(11)
(ON-1)
NAS 1097DD4
CSK F5 IN
LDW200552#-11
MS20470DD4(8)
MS20470DD 5 (10)
-18970-15NS
-18760-17FS
GR500A5 F(10)
▲SEE NOTE IO
(ON-1)
GB511U08-3(3)NS
AN960DBL(3)NS
MS21043-08(3)FS
(ON-1)
GR500A5FE(B)
▲SEE NOTE IO (ON-1)
GR500A5G
▲SEE NOTE IO (ON-1)
MS21043-08 (3) FS
ON-1
GR500A5E
(ON-1)
GR500A4C(6)
(ON-1)
GR500A4C(B)
(ON-1)
LDW280-60901(REF)
MS20470DD5(3)
MS20470DD5
(ON-1)
M52047ODD5(5)
GR500A5E
(ON-1)
GR500A4C(8)
(ON-1)
MS20470DD5(4)
(ON-1)
LDW280-18760-12
MS20470DD5(2)
MS20470DD4(7)
MS20470DD4(9)
MS20470DD5(2)
LDW280-18760-15(REF)
MS20470DD5(2

THIS IS AN ORIGINAL DWG

GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE, L.I., NEW YORK

SIZE	CODE IDENT NO	LDW200-55524
K	26512	

SCALE FULL SHEET 4 OF 4.00

LDW200-55524 REV T

ZONE	FROM	SHEET	TO
2	FWD	4	-5524

LDW280-18766-13(REF)
LDW280-18716-13(REF)
MS20470DD5 (ON-1)
▲ SEE NOTE 10
MS20470DD5(9)
GR500A5F(20) (ON-1)
▲ SEE NOTE 10
GR500A5G (ON-1)
▲ SEE NOTE 10 (ON-1)
GS12E070A12B05 (REF)
GR500A5E (ON-1)
MS20470DD4(7)
LDW280-18716-18
MS20470DD5(2)
GR500A4(8) (ON-1)
GS12E090A05B11
MS20470DD4(9)
LDW280-60901(REF)
▲ SEE NOTE 10 (ON-1)
GR500A5N
MS20470DD5(6)
GR500A5F(2) (ON-1)
GBS11J08-3(3) NS
AN960 DBL (3) NS
MS21043-08 (3) FS
(ON-1)
GR500A5-5 (ON-1)
LDW200-55524-21
MS20470DD5(2)
GR500A4(6) (ON-1)
MS20470DD5(6)
MS20470DD5
MS20470DD5(4)
LDW280-18716-17
MS20470DD5 (ON-1)
GS12E045A04B10
GS12E080A05B12 (ON-1)
MS20470DD5(10) (ON-1)
MS20470DD5(5)
GBS11K08-6(3)
GN 512H08 (3)
▲ SEE NOTE 10 (ON-1)
LDW200-55524-19
LDW280-60901(REF)
B
LDW280-18716-16
GS12E050A04B10
MS20470DD5(10) (ON-1)
B (ZONE 6F SH4)
NAS1097DD4
CSK F5 IN
LDW200-55524-11
MS20470DD4(8) (ON-1)
GS12E075A06B13
LDW280-25537(REF)
LDW280M18115-11 (REF)
SEE NOTE 11
LDW280-18767-15(REF)
LDW280-60901(REF)
LDW200-55524-23 (REF)
SEE NOTE 11
GR500A5E(2) (SEE NOTE 9) (ON-1)
42.81000(REF)
LDW280-25526 (REF)
LDW280-18716-12 NS
LDW280-18760-18 FS
MS20470DD5(5)
LDW200-55524-11
MS20470DD5 (ON-1)
LDW280-25526(REF)
GR 511K08-5(3)
GN 512H08(3) ONH
(BORE .343 DIA x .031 CORNER R x .099/.089
REMAINING MAT IN LDW280M17118 F5.(TYP)
(3)PLACES (ON-1)
▲ SEE NOTE 10
+281.000 FWD END BULKHEAD
PANEL REFERENCE PLANE
-Y27.000(REF)

SECT A-A (ZONE 7G SH4)

LDW280-18716-12(REF)
LDW200-55524-19(REF)
X131.140(REF)
LDW280-18760-18(REF)
LDW200-55524-11(REF)

SECT B-B (ZONE 4G SH4)

MAS 9-1100

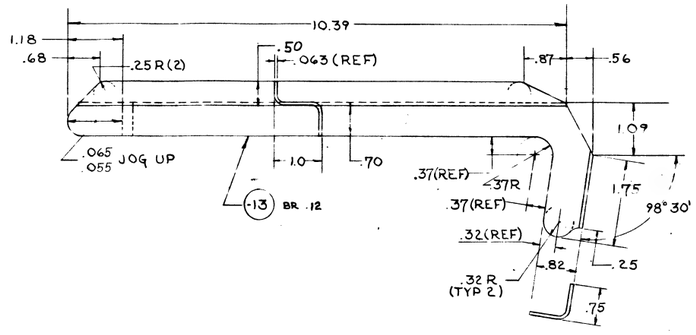
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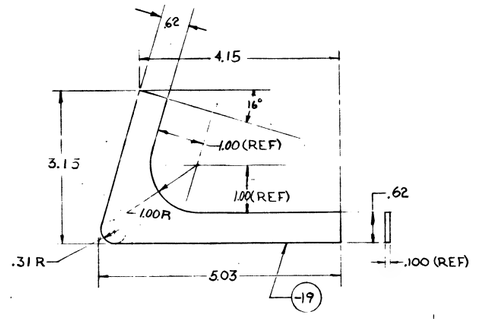
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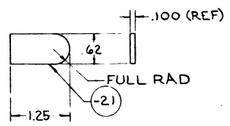
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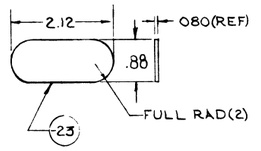
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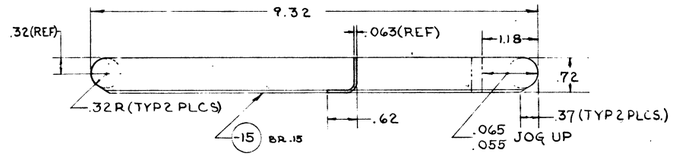
REVISIONS						
ZONE	LTR	DESCRIPTION	ECP CODE	MODEL	DATE	APPROVED

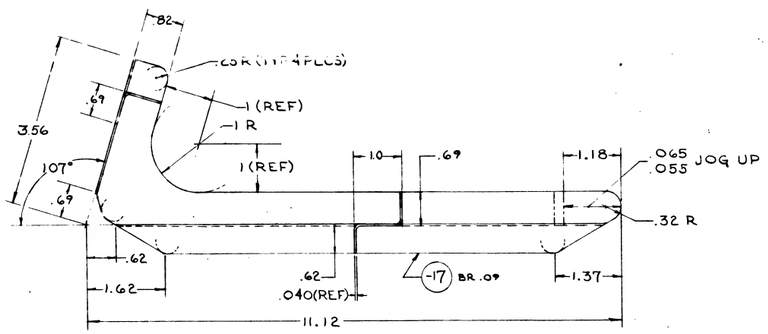












UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES			CONTRACT NO.	GRUMMAN AEROSPACE CORPORATION BETHPAGE, NEW YORK 11714
LINEAR TOL	.XX .XXX	±.03 ±.010	DRAWN BY	
ANGULAR TOL		±0°30'	LAYOUT BY	
TOL ON LOFTED DEFINITIONS IS			CHECKED BY	
			GR LEADER	
			REL GROUP	
			PROJ ENGR	
			GOVT APPD	
			SIZE D	CODE IDENT NO 26512 LDW200-55524
			SCALE	SHEET 5, 00 OF

DISTR LIST #

NAS 9-1100

GRUMMAN AEROSPACE CORPORATION
CODE IDENT NO. 26512
ENG 32.1 REV 3-65 **ENGINEERING ORDER**

DWG. NO. LDW200-55524		EO NO. A1
CONTROL INFO NO. LM-2- 5926		

FOR -1 INSTL
ON -3 ASSY, IN FLD/DWG & B/M
LDW280-18770-19 WAS LDW280-18770-11
LDW280-18770-21 WAS LDW280-18770-13

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD 3890	(2)

REASON FOR EO: PARTS REDESIGNED TO ELIMINATE GAP & PROVIDE EDGE DISTANCE FOR FASTENERS

DESCRIPTION OF EO: ON -3 ASSY, IN FLD/DWG & B/M LDW280-18770-19 & -21 WAS LDW280-18770-11 & -13 RESPECTIVELY

GAEC EO RELEASE: R — JK 7/1/70

MODEL	EFFECTIVITY E ~~PROCURING ACTIVITY NO.~~ I	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY / DATE	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
								GAEC			GAEC			
LM	LFM507	LTA-5/R(159)		✓		✓		2-2-70			2/2/70	1/29/70	1/24/70	2-2-70
								VDI			VDI			1/29/70

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	DECK INSTL~D/S~FWD~LOWER (REWORK OF LDW280-25508)LFM507	LDW200-55524	A1

ISSUED BY LIAISON J. MALONEY 1/29/70 X3604 SECTION V.D.I. GROUP NO. 335 PL 25

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENG 32.1 REV 3-65
ENGINEERING ORDER

DWG. NO. LDW200-55524 | EO NO. A2
CONTROL INFO NO. LDW280 B9915

* USE NEXT AVAIL NOTE

IN F/D, B/M AND NOTE 4 LDW280M17181-1 WAS
LDW280M17461-3

ADD NOTE *
NOTE * ON -1 INSTL ALL PARTS MAY BE TRIMMED .25 INCH MAXIMUM ON ALL DIMENSIONS WITH A MIN OF 1½ DIA EDGE DISTANCE MAINTAINED ON ALL FASTENERS UNLESS OTHERWISE NOTED.

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG: LCD 3870 PAG 95 (5)

REASON FOR EO: LM 10 TANK EXPANSION FOR LTA 5

DESCRIPTION OF EO: ON -1 INSTL LDW280M17181-1 WAS LDW280M17461-3 & ADDED NOTE *

GAEC EO RELEASE: 2-11-70

MODEL	EFFECTIVITY			DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY	DATE								
	EI	GAEC UNIT NO.	SUB CONTR UNIT NO.	REVISE DWG	RECORD EO	REWORK	SCRAP			SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	-0044
LM	LEM507	LTA5IR(159)						VDI	2-9-70			2/9/70		2-10-70	2/11/70	

PRIORITY: C
DRAWING TITLE: DECK INSTALLATION - DESCENT STAGE FORWARD LOWER REWORK OF LDW280-25508 (LEM 507)
DRAWING NO.: LDW200-55524
EO NO.: A2

C DR 2/12/70
ISSUED BY ED COLEMAN / G. HANSMANN Y87222 SECTION VDI GROUP NO. 335 PL 25

01

NAS 9-1100

LFM

LDW200-55525

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		LFM-507	LDW200-55530	LTA5/R(LM)	1
								PART NO. LDW200-55525-1		GAEC SCH NO.	

WORK PKG FUNCTION #110 (15)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH											
SHEET	1.00		2.00	2.01		3.00	4.00				
REV											
SHEET			2.02	2.03							
REV											
SHEET											
REV											

LAST SECT LTR USED	C-C
LAST DASH NO. USED	-11

GRUMMAN REF INFO
PRIM NO. JK(024)
207 ME-16-V-12/19

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/16 ± .020 ± ½°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 3890 PKG #95	

CONTRACT NO. NAS 9-1100 LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	REISER 11/17/69				
LAYOUT BY	REISER 11/17/69				
CHECKED BY	W. Jaap 11-25-69				
GR LEADER	[illegible] 11/26/69				
V.D.I.	[illegible] 12/2/69				
STRUCT		PROJ ENGR	[illegible] 12-1-69		
STRUCT	[illegible] 2/1/69	REL GROUP	[illegible] 12-1-69		

(R) GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

DECK INSTALLATION
DESCENT STAGE AFT LOWER
(REWORK OF LDW280-25508 LFM 507)

SIZE	CODE IDENT NO.	
B	26512	LDW200-55525

SCALE NONE SHEET 1 OF 7

ENG 77.1 12-65

12-5-67

01

NAS 9-1100

QTY PER ASSEMBLY								CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
					1				LDW280-18767-17	E	RING	SEE DWG						5C
					2				LDW280-18766-13		TEE							4D
					1				LDW280-18766-11		TEE							7B
					1				LDW280-18764-13		BRACKET							6B
						1			LDW280-18764-11		ANGLE							5A
					1				LDW280-18765-17		STIFFENER							5B
					1				LDW280-18763-15									11B
					1				LDW280-18762-13									8B
					1				LDW280-18762-12									5F
					1				LDW280-18762-11		STIFFENER							10A
					1				LDW280-18761-18		ANGLE							5B
					1				-17									6B
					2				-15									6B
					1				-14									10B
					1				-12									10C
					1				LDW280-18761-11		ANGLE							4C
						1			LDW280-18068-19		CLIP							9A
						1			LDW280-18068-17		CLIP							11C
						1			LDW280-18068-15		CLIP							11C
						1			LDW280-18067-17		CLIP							3A
						2			LDW280-17906-13		PLATE							4D
						1			LDW280-17787-17		BRACKET							5A
						1			LDW280-17787-15		BRACKET							3A
						1			LDW280-17786-19		BRACKET	SEE DWG						3A
					1				LDW200-55525-11		WEB	AL ALLOY SH.	QQ-A-250/12	7075-T6	.050x54x57	NONE	TG	11B
						1			LDW200-55525-3	A	DECK ASSY					NONE	NONE	7A
					-3	-1			LDW200-55525-1	E	DECK INSTL.					NONE	NONE	7A

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
TG	ALODINE	LSP14-9010

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55525

SCALE NONE SHEET 2 OF 2

ENG 77.2 7-65

01 NAS 9-1100

QTY PER ASSEMBLY		CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
			SEE NOTE 3		SHIM							
5			GS12E-070A12B05	E	SHIM	GRUMMAN STD.						
4			GS12E-060A12B04		↑	↑						
3			GS12E-055A04B10									
1	2		GS12E-040A05B12									
3			GS12E-045A04B10		↓	↓						
2			GS12E-040A04B10		SHIM	GRUMMAN STD.						
			SEE NOTE 3		SHIM							
	1		LDW280M17599-3		FITTING	SEE NOTE 4						6B
	1		LDW280M17461-2		FITTING	SEE NOTE 4						11C
	1		LDW280M17490-3		FITTING	SEE NOTE 4						4G
	1		LDW280M17187-5		FITTING	SEE NOTE 4						3C
1			LDW280M18115-11		FITTING	SEE DWG.						8G
	1		LDW280-18066-15		FITTING	SEE DWG.						1G
	1		LDW280-18066-13		FITTING	SEE DWG.						8H
	2		LDW280-17996-12		PLATE	SEE DWG.						3D
1			LDW280-18760-20		ANGLE	SEE DWG.						10L
1			-19		↑	↑						4L
1			-18									3F
1			-17									11F
1			-16									12E
1			-15									4E
1			-14									5F
1			-13									10G
1			-12		↓	↓						3G
1			LDW280-18760-11	E	ANGLE	SEE DWG.						6G
-3	-1											

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55525

SCALE NONE SHEET 2.0

ENG 77.2 7-65

01

NAS 9-1100

QTY PER ASSEMBLY -3	QTY PER ASSEMBLY -1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
	5		GN512H3	E	NUT	GRUMMAN STD.						
	24		GN512H08		NUT							
	1		GB511K3-7		BOLT							
	2		GB511K3-6		BOLT							
	2		GB511K3-4		BOLT	GRUMMAN STD						
	24		GB511K08-5		BOLT	GOVT. STD						
	2		MS90354-0505		FASTENER	GOVT STD.						
	2		GR501A-5G		RIVET	GRUMMAN STD.						
	4		GR500A-5K		RIVET							
	17		GR500A-5J									
	26		GR500A-5H									
	54		GR500A-5G									
	2		GR500A-5F									
	38		GR500A-5E									
	20		GR500A-5D									
	108		GR500A-4C		RIVET							
	4		GB511J08-4		BOLT							
	20		GB511J03-3		BOLT	GRUMMAN STD.						
	24		AN960D8L		WASHER							
	2		AN960D416L		WASHER							
	2		NAS680C4		NUT PLATE	GOVT. STD						
	2		NAS674V4	E	BOLT	GOVT. STD						

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55525

SCALE " = | SHEET 2.02

ENG 77.2 7-65

01

NAS 9-1100

QTY PER ASSEMBLY -3	QTY PER ASSEMBLY -1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
			NAS1097DD5	E	RIVET	IND. STD.						
			NAS1097DD4		RIVET	IND. STD.						
			MS21042CAD3		RIVET	GOVT. STD						
	24		MS2104308		NUT							
			MS20470DD5		RIVET							
			MS20470DD4	E	RIVET	GOVT. STD.						

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

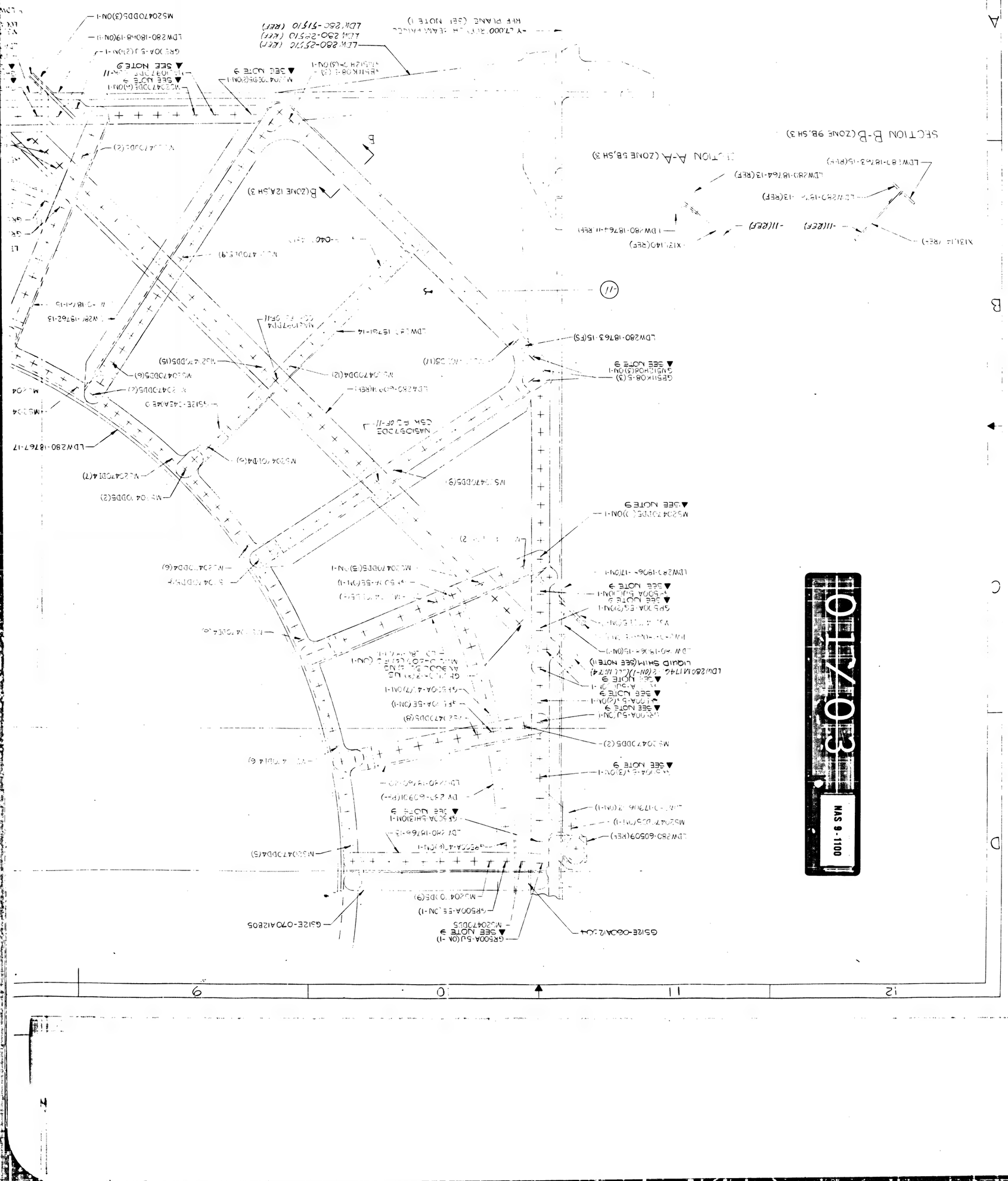
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55525

SCALE NONE SHEET 203

ENG 77.2 7-66

CODE IDENT NO.	DWG NO.	SHEET	REV
26512	LDW200-55525	3	



NAS 9-1100

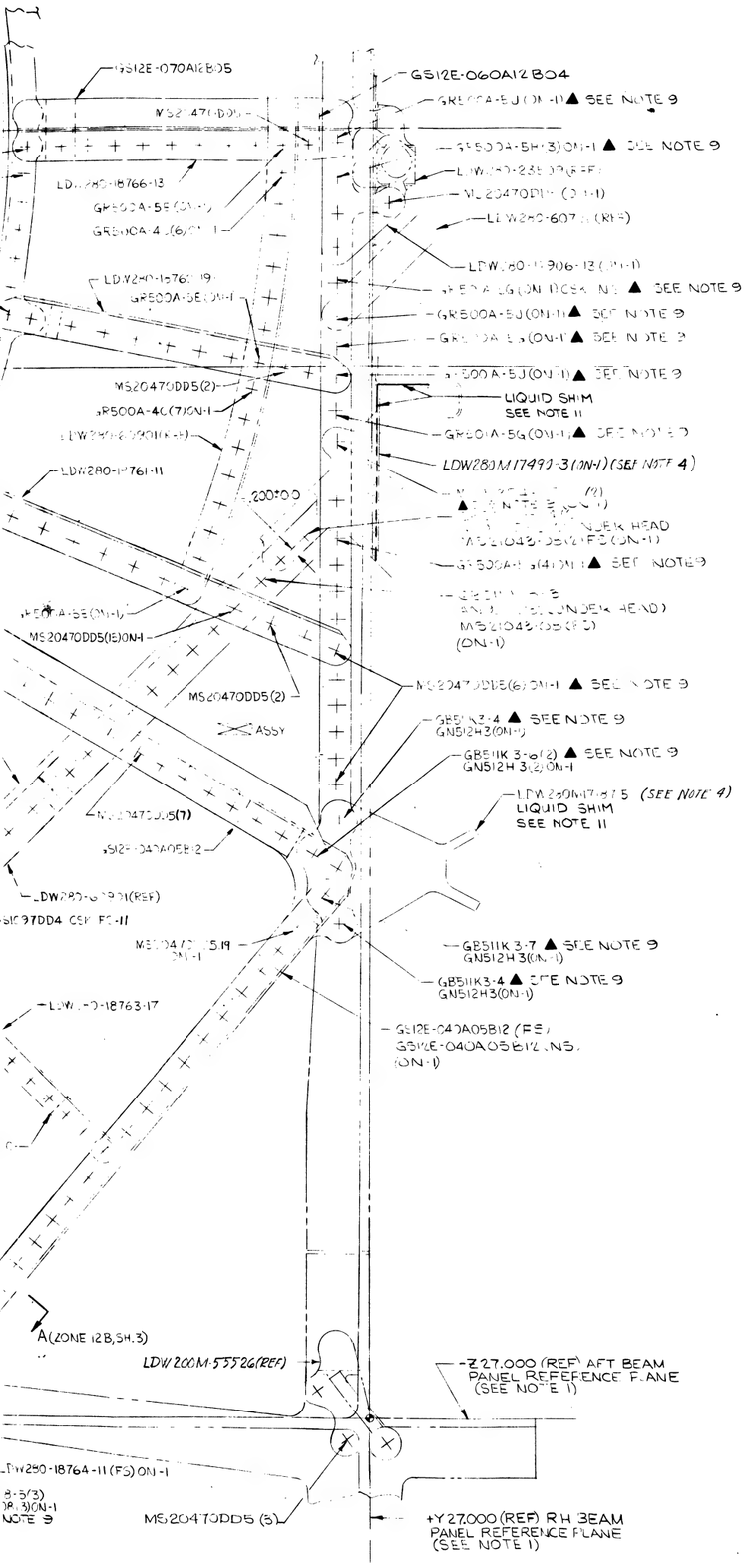
LDW703

± Z 0.000 (REF)

± Y 0.000 (REF)

NAS 9-1100
102/03

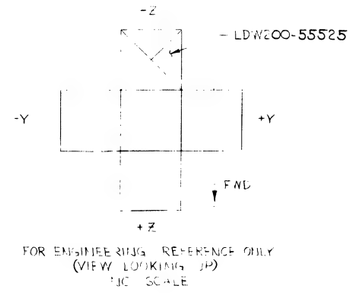
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MS20470DD4(5)
MS20470DD5(8)
MS20470DD4(6)
MS20470DD5(7)
LDW280-18762-13
LDW280-18766-11
LDW280-18761-15
LDW280-18764-13
LDW280-18763-17
LDW280-18761-17
LDW280-18761-18
GR500A-5E(ON-1)
GR500A-4C(7)ON-1
GR500A-5K(ON-1)
GR500A-5H(6)ON-1
▲ SEE NOTE 9
GR500A-5H(2)ON-1
LDW280-17786-19
LDW280-17787-17
LDW280-18067-19(ON-1)
LDW280-17786-15
MS20470DD5(3)
MS20470DD5(2)
MS20470DD4(4)
MS20470DD5(1P)
MS20470DD4(3)
MS20470DD5(5)
MS20470DD4(7)
MS20470DD4(8)
MS20470DD5(1E)ON-1
GR500A-5E(ON-1)
GR500A-4C(7)ON-1
GR500A-5E(2)ON-1
GR500A-5K(2)ON-1
GR500A-5K(ON-1)
GR500A-5H(4)ON-1
GR500A-5H(5)ON-1
GR500A-5H(3)ON-1
GR500A-5H(E)ON-1
GR500A-5E(2)ON-1
GR500A-5E(ON-1)
GR500A-4C(6)ON-1
GR500A-4C(7)ON-1
GR500A-4C(8)ON-1
GR500A-5E(ON-1)
GR500A-5E(ON-1)
GR500A-5E(ON-1)



NAS 9-1100

NOTES:

1. FOR BASIC JIG DATA SEE LDW280-23511
2. INSTALL FASTENERS PER LSP14-15302, LSP14-15303, LSP14-15304 & LSP14-15306.
3. FULL SIZE DWG. MAY BE SCALED FOR DIM. NOT SHOWN.
4. LDW280M17187-5, LDW280M17597-3, LDW280M17490-3 LDW280M17496-2 ARE TO BE SALVAGED & USED ON LDW200-55525-1
5. FASTENER MFD. HD (OTHER THAN CSK ATTACHMENTS) TO BE ON WEB SIDE UNLESS OTHERWISE SPECIFIED.
6. REMOVE LDW280-25544-1 DECK PRIOR TO REWORK & REPLACE WITH LDW200-55525-1 INSTL.
7. ALL RIVET LOCATIONS ARE IDENTICAL TO LDW280-60544-1 EXCEPT AS NOTED IN FID.
8. SHIM AS REQD USING 2024-T3 AL ALLOY SH, QQ A-250/4 FINISH #16 PER LSP14-9010.
9. FOR FASTENER LOCATIONS MARKED ▲ DRILL HOLES FROM EXISTING STRUCTURE
10. FINAL HOLE SIZE FOR GB511J05 TO BE .164 - .166 DIA.
11. SHIM PER LPC280-53



FOR ENGINEERING REFERENCE ONLY
(VIEW LOOKING UP)
NO SCALE

SUPPLEMENTARY DATA
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKING IS REQDN MARKED ~~USE BOTH SIDES OF HOLE~~	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	✓
INSTALL RIVETS IN ACCORDANCE WITH SEE NOTE 2	✓
INSPECTION INFORMATION: MINIMUM PERMISSABLE EDGE DISTANCE IS 1½ FASTENER DIAMETERS	✓
UNLESS OTHERWISE SPECIFIED TOLERANCE ON LOFTED DELINEATIONS IS ± 1/16	✓

DWG. SIZE D 96

PRINT TRIM LINE
FULL SIZE SHEET AREA 42 x 106 = 31 SQ FT
¼ SIZE SHEET AREA = ¼ OF FULL = 8 SQ FT
PRINTING INFO ONLY

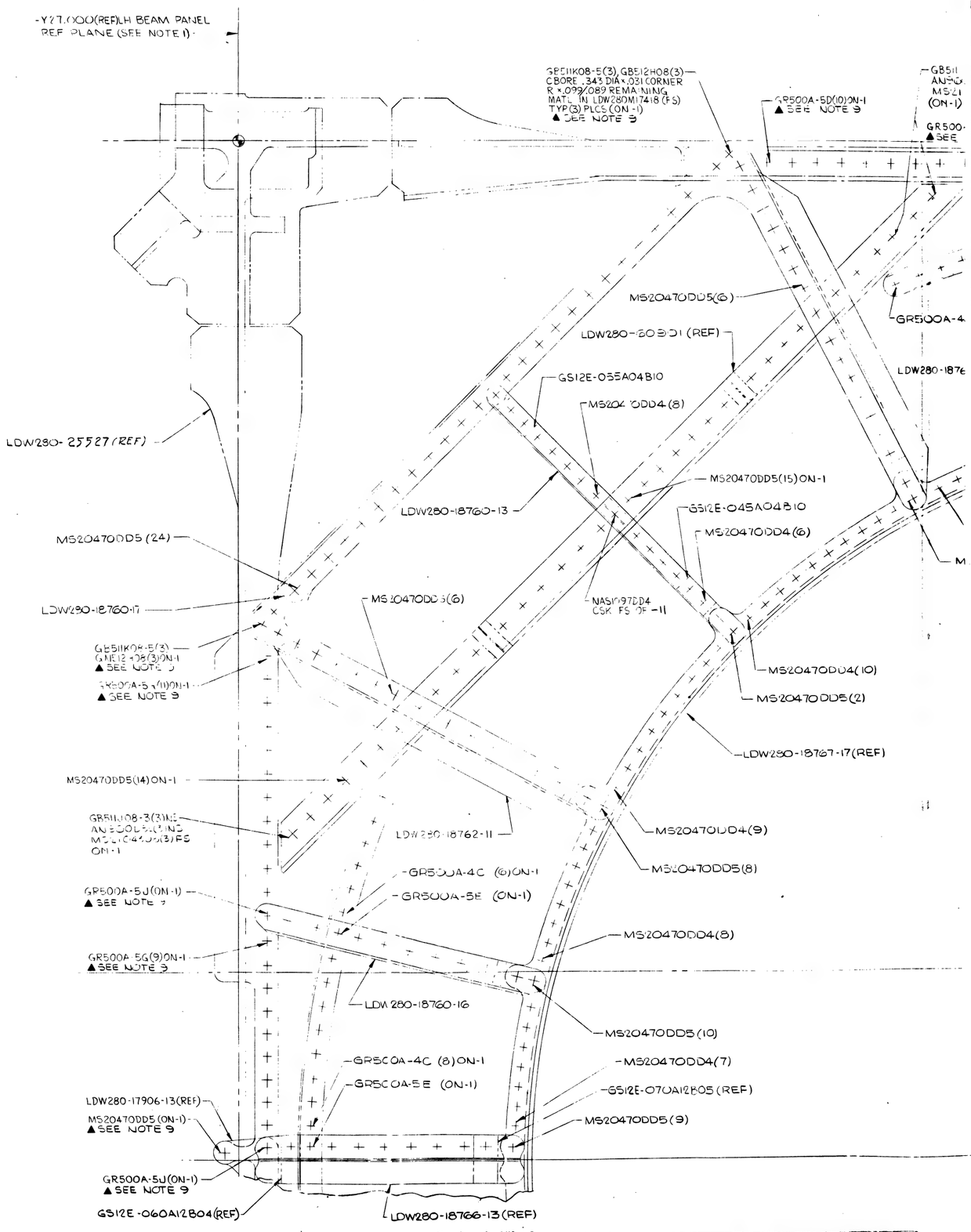
D
C
B
A

LDW200-55525
LDW200-55525

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I. NEW YORK			
SIZE	CODE IDENT NO.	LDW200-55525	
K	26512		
SCALE FULL		SHEET 3 OF 8	

THIS IS AN ORIGINAL DWG.

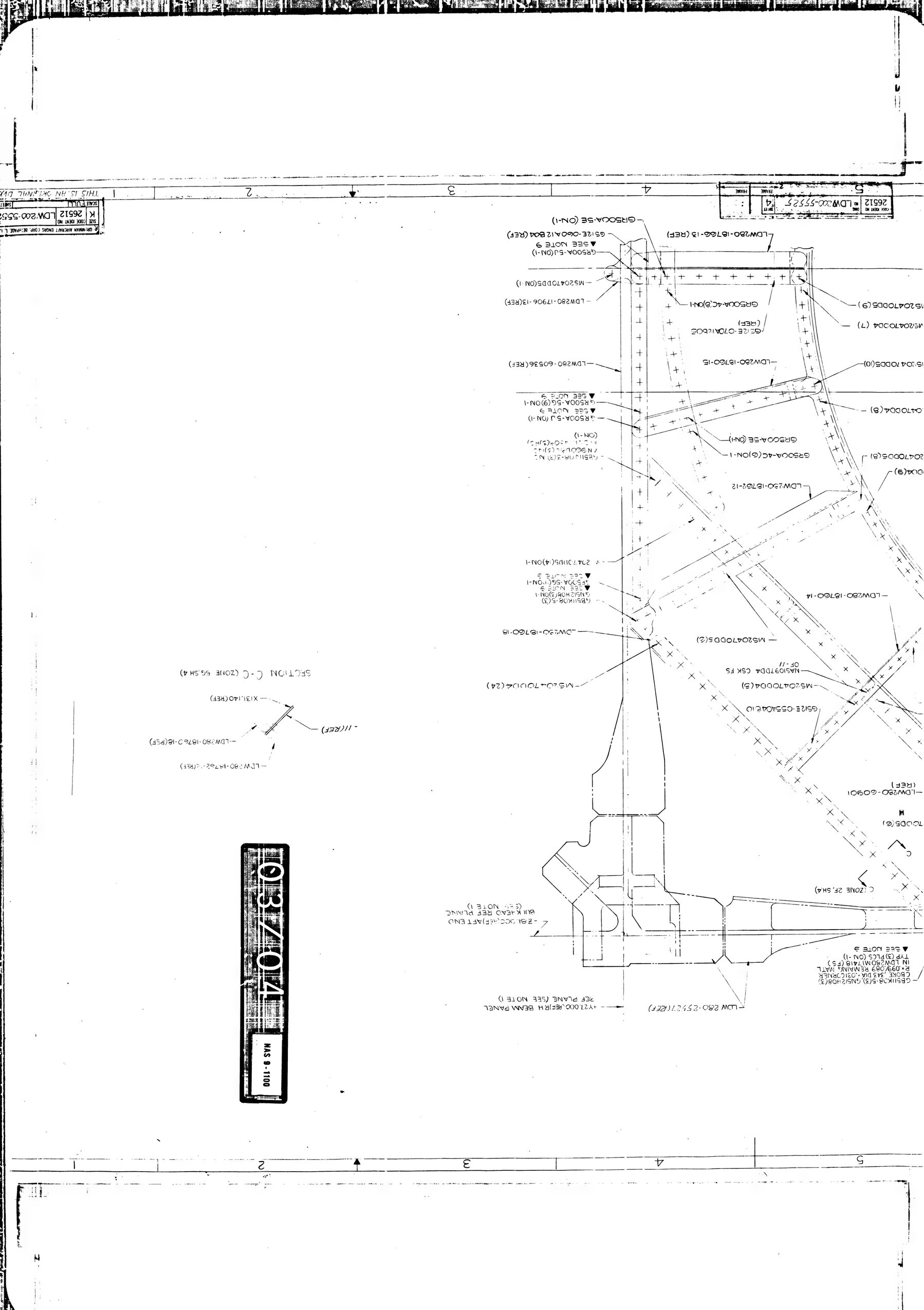
55525 SHEET 8
FRAME FRAME
4 3 2 1


-Y27.000(REF)LH BEAM PANEL REF PLANE (SEE NOTE 1)
GR500A-5D(10)ON-1 ▲SEE NOTE 9
MS20470DD5(6)
LDW280-18760-13
MS20470DD5(24)
LDW280-18760-17
MS20470DD5(6)
MS20470DD4(10)
MS20470DD5(2)
LDW280-18767-17(REF)
MS20470DD5(14)ON-1
LDW280-18762-11
MS20470DD4(9)
MS20470DD5(8)
GR500A-4C (6)ON-1
GR500A-5E (ON-1)
GR500A-5J(ON-1) ▲SEE NOTE 9
GR500A-5G(9)ON-1 ▲SEE NOTE 9
MS20470DD4(8)
LDW280-18760-16
MS20470DD5(10)
GR500A-4C (8)ON-1
GR500A-5E (ON-1)
MS20470DD4(7)
GS12E-070A12B05(REF)
MS20470DD5(9)
LDW280-17906-13(REF)
MS20470DD5(ON-1) ▲SEE NOTE 9
GR500A-5J(ON-1) ▲SEE NOTE 9
GS12E-060A12B04(REF)
LDW280-18766-13(REF)
LDW280-25527(REF)
MS20470DD4(6)
GS12E-045A04B10
LDW280-18760-11
LDW280-18760-10
LDW280-18760-9
LDW280-18760-8
LDW280-18760-7
LDW280-18760-6
LDW280-18760-5
LDW280-18760-4
LDW280-18760-3
LDW280-18760-2
LDW280-18760-1
LDW280-18760-12
LDW280-18760-14
LDW280-18760-15
LDW280-18760-16
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LDW280-18760-49
LDW280-18760-50
LDW280-18760-51
LDW280-18760-52
LDW280-18760-53

DOC REV N: 26512 | DWG NO LDW200-57525 | SH 4 | SIZE E | SCALE NONE

LDW200-57525-1 INSTL (REF)
-3 ASSY (REF)

NAS 9-1100



SIZE	CODE IDENT NO	26512	LDW200-55525
K			

SCALE FULL SHEET

GRUMMAN AIRCRAFT ENGNG CORP. BETHPAGE L.I.

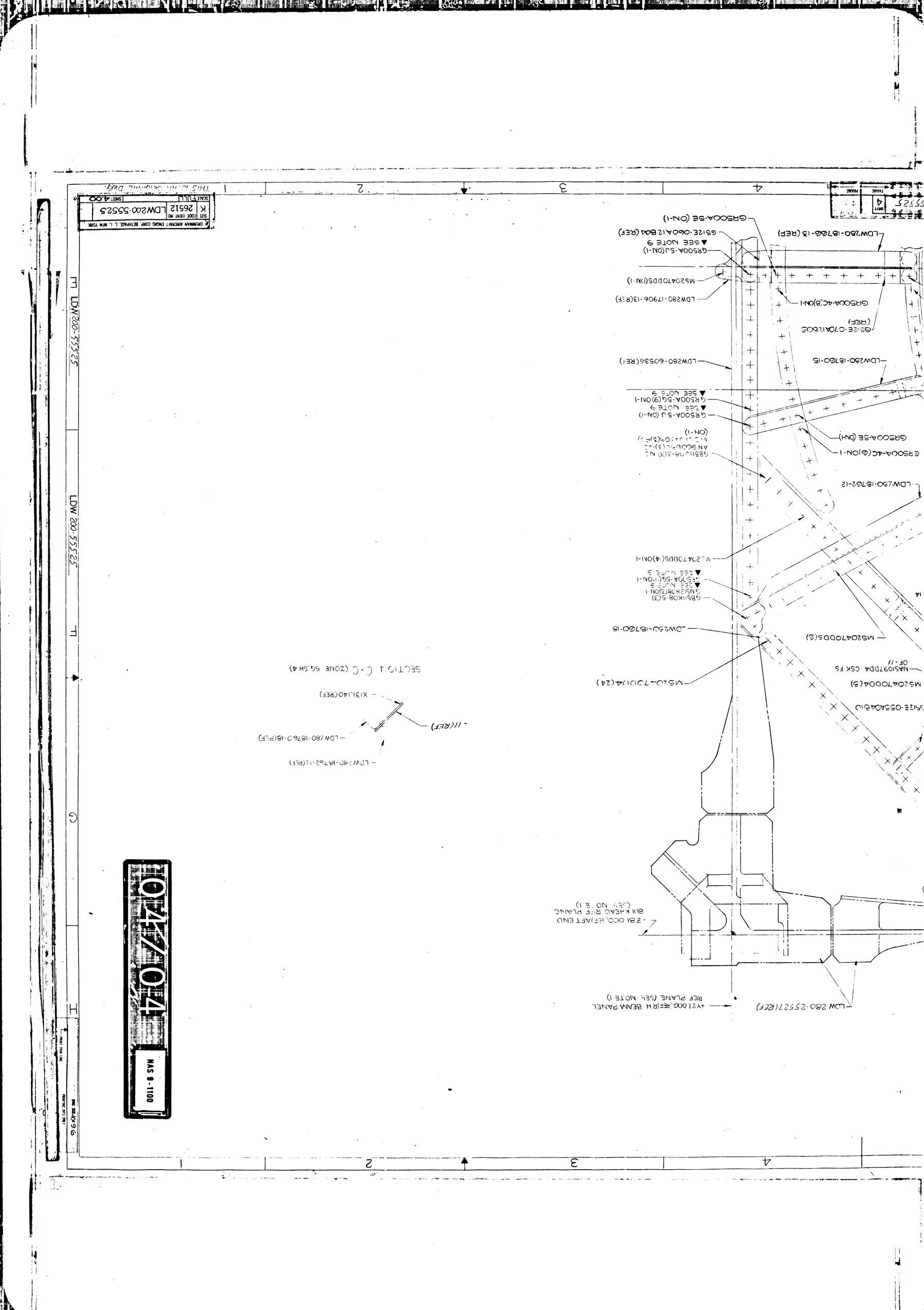
THIS IS AN ORIGINAL DRAWING

CAGE CODE NO	DWG NO	SHEET
26512	LDW200-55525	4

FRAME

NAS 9-1100

0137-0104


LDW280-18760-15
GR500A-4C(8)ON-1
GR500A-5E (ON-1)
LDW280-18760-12
LDW280-18760-13 (REF)
GR500A-5E (ON-1)
GR500A-5U(ON-1)
▲SEE NOTE 9
LDW280-17906-13(REF)
LDW280-60536(REF)
GR500A-5U (ON-1)
▲SEE NOTE 9
GR500A-5G(9)ON-1
▲SEE NOTE 9
LDW280-18760-18
MS204700D5(2)
MS204700D4(3)
OF-11
MS2047JD1D4(24)
LDW280-25527(REF)
REF PLANE (SEE NOTE 1)
BULKHEAD REF PLANE
(SEE NOTE 1)
SECTION C-C (ZONE 5G,SH 4)
(REF)
LDW280-18760-18(REF)
X131L40(REF)
CHUNKY 9.6
FRONT TRIM LINE
PRINTING DOT LINE
MAS 9-1100
LDW200-55525
LDW200-55525
LDW200-55525
CHUNKY AIRCRAFT ENGNG CORP. BETHPAGE L.I. NEW YORK
SIZE K
CODE IDENT NO 26512
LDW200-55525
SCALE FULL
SHEET 4.00
THIS IS THE ORIGINAL DWG.
SHEET 4
FRAME
FRAME

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW280-55525 | EO NO. A1

CONTROL INFO NO. LDW280B9932

* USE NEXT AVAIL NOTE

IN F/D B.M AND NOTE 4 LDW280M17181-3 WAS LDW280M17461-2

ADD NOTE *

NOTE * ON -1 INSTL ALL PARTS MAY BE TRIMMED .25 INCH MAXIMUM ON ALL DIMENSIONS WITH A MIN OF 1½ DIA EDGE DISTANCE MAINTAINED ON ALL FASTENERS UNLESS OTHERWISE NOTED

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	☑ LCD 3890 FRG 95

REASON FOR EO: LM 10 TANK EXPANSION FOR LTA5

DESCRIPTION OF EO: ON -1 LDW280M17181-3 WAS LDW280M17461-2 ADDED NOTE *

GAEC EO RELEASE: RPD 2-10-70; RPP 2-11-70

MODEL	EFFECTIVITY: EI (PROCURING ACTIVITY NO.)	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 507	LTA5/R(159)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	DATE	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	-GOVT
✓		✓		RPT	2-9-70			2/9/70	2-10-70		RPT 2-10-70	2/11/70
					VDI							

PRIORITY: C

DRAWING TITLE: DECK INSTALLATION ~ DESCENT STAGE AFT LOWER REWORK OF LDW280-55508

DRAWING NO.: LDW 200-55525

EO NO.: A1

COR 02/12/70 ISSUED BY E COLEMAN / G HANSMANN 87222 SECTION VDI GROUP NO. 335 PL 25

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NAS 9-1100

GRUMMAN AEROSPACE CORPORATION
CODE IDENT NO. 26512

ENG 33.3 REV 3-68

ENGINEERING ORDER

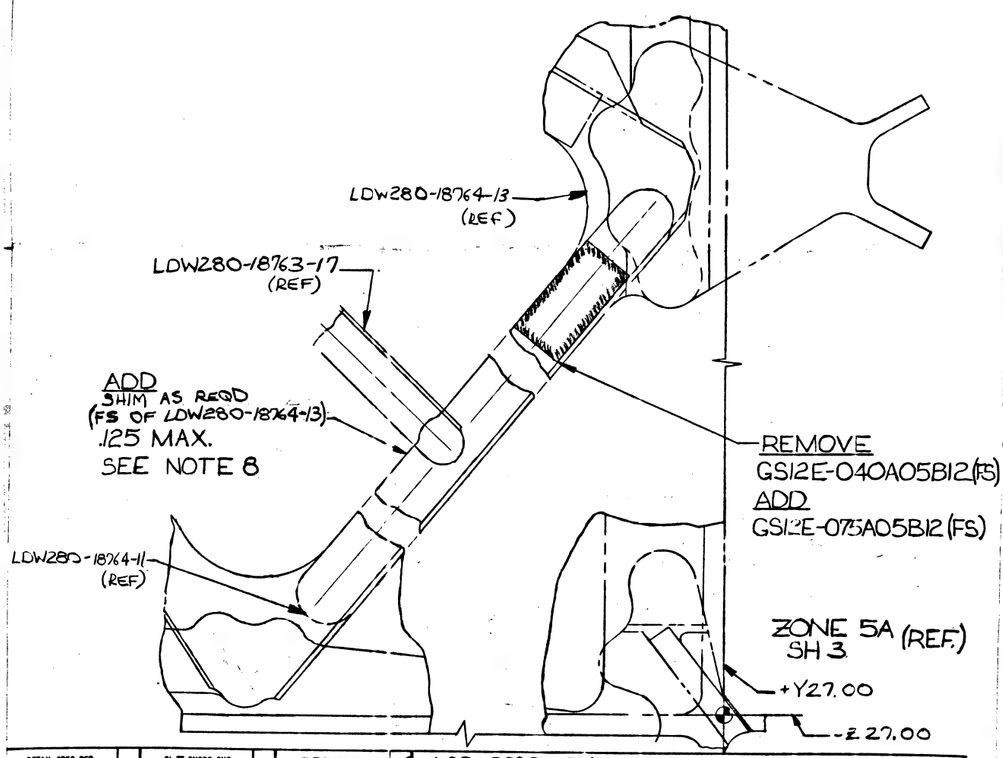
DWG. NO. LDW200-55525 | EO NO. A2

CONTROL INFO NO. LDW280C0141

ON -1:

IN F/D & B/M
- ADD LDW280-18068-13 REPLACING LDW280-18068-19
- ADD LDW280-18068-11 REPLACING LDW280-18067-19
- ADD GS12E-075A05B12 & REMOVE GS12E-040A05B12 AS SHOWN
- ADD SHIM AS REQD CALLOUT AS SHOWN TO F/D

REVISE NOTE 4: "LDW280M17187-5, LDW280M17599-3, LDW280M17490-3, LDW280M17481-3 & LDW280I3068-11&-13 ARE TO BE SALVAGED....."
WAS "LDW280M17187-5, LDW280M17599-3, LDW280M17490-3, LDW280M17481-3 ARE TO BE SALVAGED....."



DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD 3890 PKG 95

REASON FOR EO: TO ELIMINATE IMPROPER JOGGLE OF ANGLE TO MATCH CAP STRIP

DESCRIPTION OF EO: CN -1: ADDED LDW280-18068-11,-13, GS12E-075A05B12 REMOVED GS12E-040A05B12, LDW280-18068-19& I2 NOTE 4 ADDED SALVAGE LDW280I8068-11&-13) LDW280-18067-19

GAEC EO RELEASE: (B) 3/24/70

MODEL	EFFECTIVITY: GAEC UNIT NO.	SUB CON'R UNIT NO.
LM	LTA5/R(159)	

DRAWING CHANGE REQD: REVISE E/O ✓ | RECORD E/O | DISPOSITION OF PARTS: REWORK ✓ | SCRAP

P. URITY (C)

DRAWING TITLE: DECK INSTL-DS-AFT LWR (RWK OF LDW-25508 LFM 507)

APPROVED BY	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
DATE	3/13/70	3/24/70	3/24/70	3/24/70
VDI	SUPPORT	RELIAB. GROUP		

DRAWING NO. LDW200-55525 | EO NO. A2

ISSUED BY 3/24/70 J. PEDERSEN/G. HANSMANN 87222 SECTION VDI GROUP NO. 335 PL 25

NAS 9-1100

LDW200-55526

LEM

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		LFM508	LDW200-55530	LTA-5/R(5)	1
								PART NO. LDW200-55526-1		GAEC SCH NO.	

WORK PACKAGE FUNCTION NO. 110 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00			2.00	3.00	4.00			
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	L	GRUMMAN REF INFO	
LAST DASH NO. USED	-13	PRIM NO.	207

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
XX±.03 XXX±.010 ±0°30'

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
	LCD 3994 PKG 60

CONTRACT NO. NAS 9-1100 LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	KRAVITZ/SCHAGAT		
LAYOUT BY	KRAVITZ/SCHAGAT		
CHECKED BY	L. ATLAS 12/2/69		
GROUP LDR	12-2-69		
VEH. DES. INT	12/4/69		
STRUCTURES	CW 12-2-69	PROJ ENGR	12/4/69
STRUCTURES	12/4/69	REL GROUP	12/4/69

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SUPPORT INSTALLATION
DESCENT STAGE-PROPELLANT LINES
(REWORK OF LDW280-25508 LFM508)

SIZE	CODE IDENT NO.	
B	26512	LDW200-55526

SCALE NONE SHEET 1.00 OF 4

CDR 12-5-69

ENG 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
3		MS90354-05-04	E	RIVET	GOVT STD						
1		GN512H-3	E	NUT	GRUMMAN STD						
20		GN512H-08	E	NUT							
1		GB511K-3-7	E	BOLT							
7		GB511K-08-6	E	BOLT							
5		GB511K-08-5	E	BOLT							
4		GB511K-08-4	E	BOLT							
4		GB511K-08-3	E	BOLT	GRUMMAN STD						
AR		NAS 1097DD5	E	RIVET	IND STD						
AR		MS20470DD5	E	RIVET	GOVT STD						
1		LDW280M17578-5	E	FITTING	SEE DWG.						9F
1		LDW280M18127-13	E								11E
1		LDW280M17961-13	E								13C
1		LDW280M18083-7	E								15B
1		LDW280M17968-13	E	FITTING	SEE DWG.						16F
1		LDW280-60624-1	E	BRACKET INSTL	SEE DWG.						7B
1		LDW280-60618-1	E	BEAM INSTL							6A
1		LDW280-60617-1	E	BEAM INSTL							2E
1		LDW280-60616-1	E	SUPPORT INSTL							8C
1		LDW280-60614-1	E	SUPPORT INSTL							3B
1		LDW280-60613-1	E	SUPPORT INSTL							2C
1		LDW280-60611-1	E	SUPPORT INSTL	SEE DWG.						5F
1		LDW200-55526-13	E	PLATE	AL ALLOY SH	QQ-A-250/12	7075-T6	.190 x 1¾ x 2½	NONE	88	14C
1		LDW200-55526-11	E	FITTING	AL ALLOY BAR	QQ-A-225/9	7075-T7351	1¼ x 1¾ x 3¼	FP1 NOTE 3	NOTES 4 & 5	18F
		LDW200-55526-1	E	SUPPORT INSTL					NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
FP	ZYGLO	MIL-I-6866
88	ANODIZE	LSP14-9030

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55526

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130.	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☐ SHALL USE BOTH SIDES IF NECESSARY	
LENGTHS OF AN NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL RIVETS IN ACCORDANCE WITH LSP-14-9326	✓
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE SINGLE ASTERISK, *	✓

NOTES:
1. REFER TO LLO 280-169 FOR COMPLETE GEOMETRY LAYOUT OF PROPELLANT LINES.
2. SHIM PER LPC 280-53.
3. MATERIAL SHALL MEET THE ULTRASONIC REQUIREMENTS OF LSP-14-1000, TABLE II.
4. SULPHURIC ACID ANODIZE PER MIL-A-8625, TYPE II.
5. AFTER SULPHURIC ACID ANODIZE, PROTECTIVE COAT USING ONE COAT OF PRIMER MIL-P-23377 PER LSP-14-9305.

-Y
Z 0.00 (REF)
+Z 27.000 (REF)
-Z 27.00 (REF)
FUEL
-Y 48.475 (REF)
LDW280M17307 (REF)
LDW280M18127-13 (REF)
SEE DETAIL D ZONE 11D
-Z 44.685 (REF)
LDW280-18066 (REF)
-Y 27.00 (REF)
LDW280-23612 (REF)
LDW280M17492 (REF)
(ADD) LDW280-60611-1
(REMOVE) LDW280-23611-1
LDW280-18066 (REF)
LDW280-60617-1 (ADD)
(REMOVE) LDW280-23617-1
OX
OX
LDW280-17787 (REF)
+Z
Y 0.00 (REF)
-Z
LDW280M17582 (REF)
LDW280M17599 (REF)
SEE DETAIL A ZONE 19D
LDW200-55526-11 (REF)
LDW280-17419 (REF)
LDW200-55526-13 (REF)
LDW280M18083-7 (REF)
LDW280-18066 (REF)
SEE DETAIL H ZONE 16A
LDW280-60613-1 (ADD)
(REMOVE) LDW280-53613-1
(ADD) LDW280-60616-1
(REMOVE) LDW280-53616-1
+Y 27.000
LDW280M17306 (REF)
LDW280-17795-13 (REF)
LDW280-17795-19 (REF)
LDW280M17968-13 (REF)
SEE DETAIL B ZONE 16F
LDW280M17490 (REF)
-Z 48.629
LDW280-25798 (REF)
(ADD) LDW280-60624-1
(REMOVE) LDW280-23624-1
LDW280M17961-13 (REF)
SEE DETAIL K ZONE 13E
LDW280-60614-1 (ADD)
(REMOVE) LDW280-53614-1
LDW280M17578-5 (REF)
LDW280M17188 (REF)
SEE DETAIL F ZONE 9D
LDW280-23615 (REF)
FUEL
ADD LDW280-60618-1
REMOVE LDW280-23618-1
+Y

LDW 200-55526 -1 INSTL
VIEW LOOKING UP

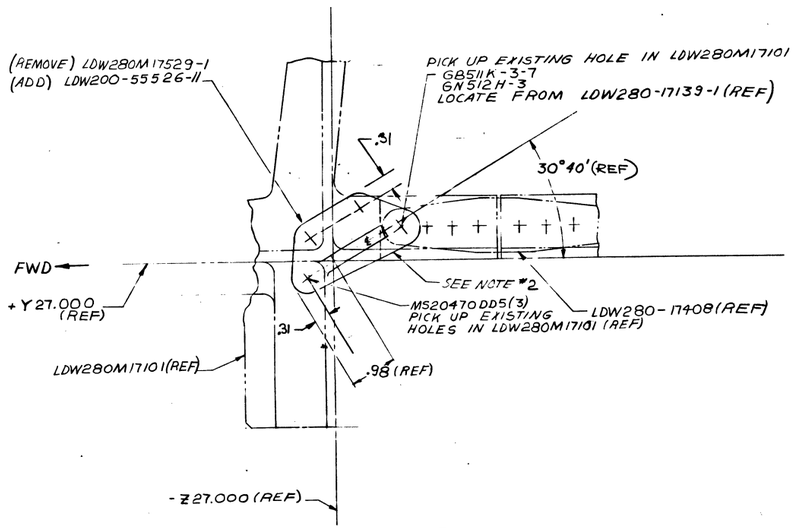
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NAS 9-1100

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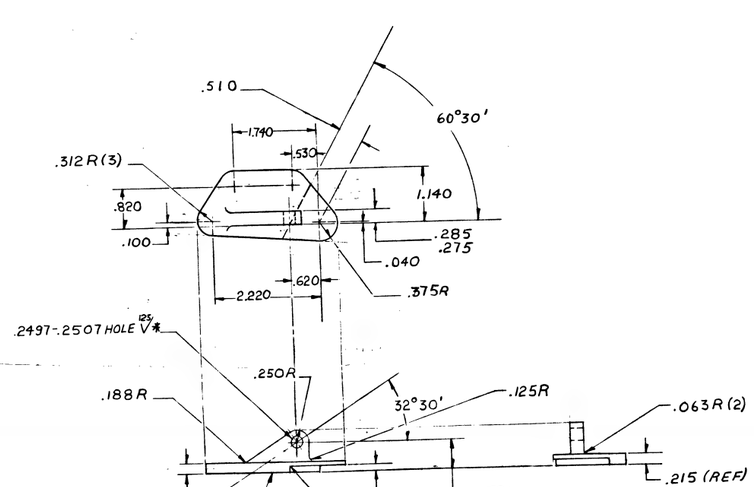
GRUMMAN AIRCRAFT ENGINEERING CORPORATION
BETHPAGE, NEW YORK 11714

SIZE	CODE IDENT NO.	LDW200-55526
E	26512	
SCALE 1/4		SHEET 3 OF 30

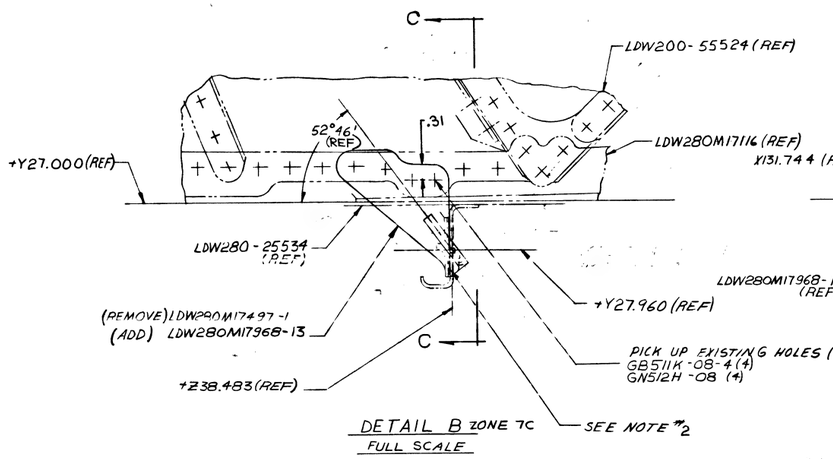
LDW200-55526



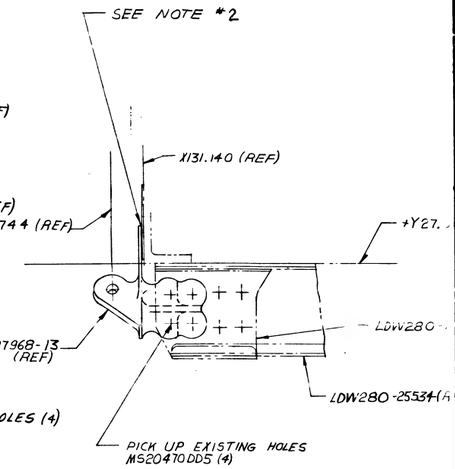
DETAIL A ZONE 4D
FULL SCALE



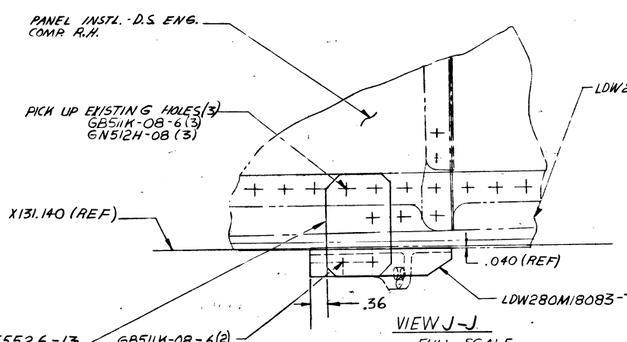
FULL SCALE



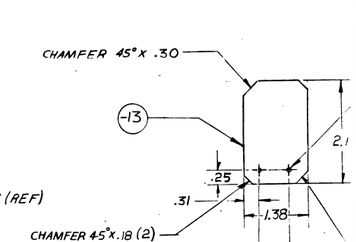
DETAIL B ZONE 7C
FULL SCALE



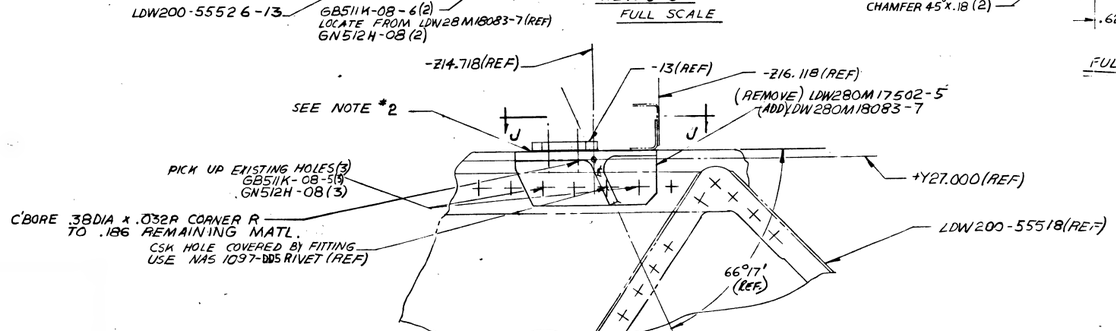
SECTION C-C
FULL SCALE



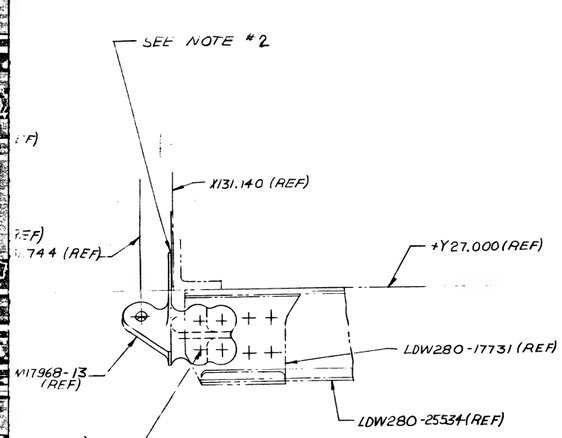
VIEW J-J
FULL SCALE



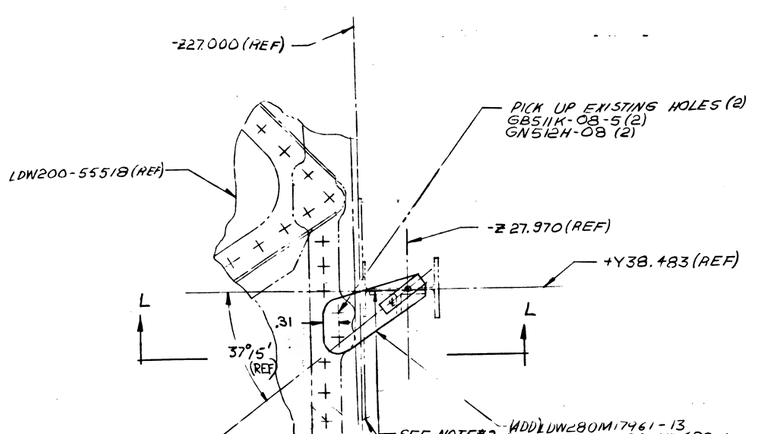
FULL SCAL



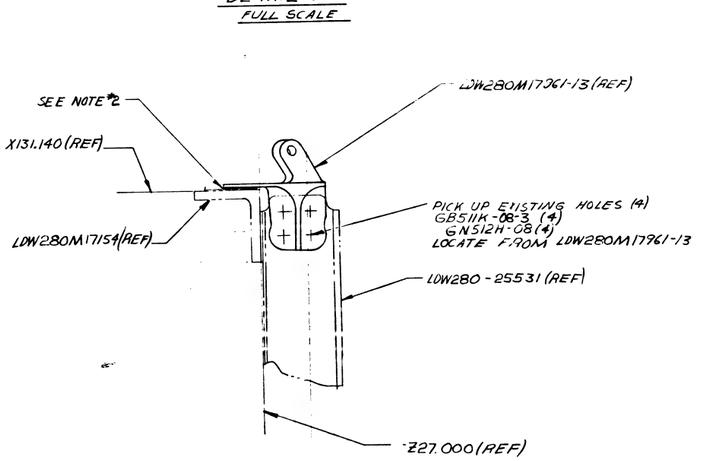
DETAIL H ZONE 5C
FULL SCALE



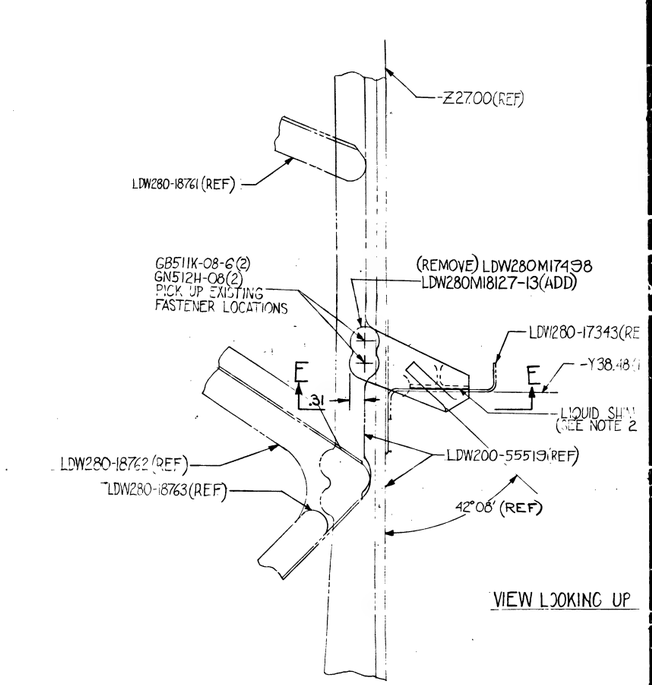
SECTION C-C
FULL SCALE



DETAIL K ZONE 4B
FULL SCALE

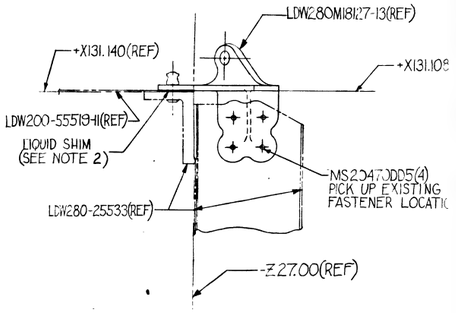


SECTION L-L
FULL SCALE

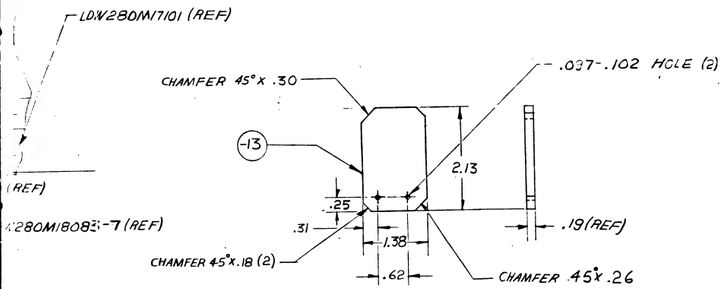


VIEW LOOKING UP

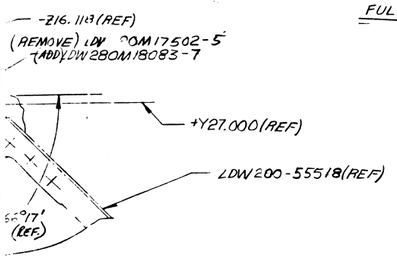
DETAIL D ZONE 2G
FULL SCALE



SECTION E-E
FULL SCALE



FULL SCALE



H. SCHAGAT

02403 NAS 9-1100

PICK UP EXISTING HOLES (2)
GB511K-08-5 (2)
GN512H-08 (2)

-Z 27.970 (REF)

+Y38.483 (REF)

L

NOTE #2 (ADD) LDW280M17961-13
(REMOVE) LDW280M17499-1

LDW280-25531 (REF)

K ZONE 4B
/LE

LDW280M17961-13 (REF)

PICK UP EXISTING HOLES (4)
GB511K-08-3 (4)
GN512H-08 (4)
LOCATE FROM LDW280M17961-13

LUW280-25531 (REF)

-Z27.000 (REF)

TION L-L
LL SCALE

-Z27.00 (REF)

LDW280-18761 (REF)

GB511K-08-6 (2)
GN512H-08 (2)
PICK UP EXISTING
FASTENER LOCATIONS

(REMOVE) LDW280M17498
LDW280M18127-13 (ADD)

LDW280-17343 (REF)

-Y38.48 (REF)

E

.31

E

LIQUID SHIM
(SEE NOTE 2)

LDW280-18762 (REF)

LDW280-18763 (REF)

LDW200-55519 (REF)

42°08' (REF)

VIEW LOOKING UP

DETAIL D ZONE 2G
FULL SCALE

LDW280M18127-13 (REF)

+X131.140 (REF)

+X131.108 (REF)

LDW200-55519-11 (REF)

LIQUID SHIM
(SEE NOTE 2)

MS20470DD5 (4)
PICK UP EXISTING
FASTENER LOCATIONS

LDW280-25533 (REF)

-Z27.00 (REF)

SECTION E-E
FULL SCALE

+Z27.00 (REF)

LDW280-25528 (REF)

LDW200-55518 (REF)

45° (REF)

G

LIQUID SHIM
(SEE NOTE 2)

90° REF

LDW280-60902 (REF)

LDW280M17578-5 (ADD)

+Y46.72 (REF)

MS90354-05-04 (3)
PICK UP EXISTING
FASTENER LOCATIONS

.31

G

REMOVE (3):
LDW280M17308-1
LDW280-17795-15
LDW280-17795-17

+Y48.47 (REF)

LDW200-55518 (REF)

VIEW LOOKING UP

DETAIL F ZONE 6B
FULL SCALE

LDW280-25541 (REF)

LDW200-55518 (REF)

MS20470DD5 (4)
PICK UP EXISTING
FASTENER LOCATIONS

LIQUID SHIM
(SEE NOTE 2)

LDW280M17578-5 (REF)

+Y45.79 (REF)

+Y46.44 (REF)

LDW280-25570 (REF)

.31

+X131.110

SECTION G-G
FULL SCALE

03703 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
J	26512	LDW200-55526

SCALE FULL SHEET 1 OF 2

LDW200-55526 D C B A

ENG 32.1 REV 3-65

GRUMMAN AEROSPACE CORPORATION
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW200-55526 | EO NO. A1
CONTROL INFO NO. LDW280C0314

ON -1 IN F/D:
REVISE CALLOUT LDW280-23624-1 (REF)
WAS
(ADD) LDW280-60624-1
(REMOVE) LDW280-23624-1 (ZONE 7B SH3)

ON -1 IN B/M REMOVE LDW280-60624-1

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD 3994 PKG 60

REASON FOR EO: PARTS NOT REQUIRED FOR LTA-5/R(159)

DESCRIPTION OF EO:
ON -1:
IN F/D REVISED CALLOUT LDW280-23624-1 (REF) WAS
(ADD) LDW280-60624-1
(REMOVE) LDW280-23624-1
IN B/M REMOVED LDW280-60624-1

GAEC EO RELEASE

MODEL	EFFECTIVITY: E [redacted] I,	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 508	LTA-5/R(159)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: ✓ REWORK	SCRAP
✓		✓	

APPROVED BY								
DATE	4-9-70			4/9/70	4/10/70		4/13/70	4/13/70
	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY: C
DRAWING TITLE: SUPPORT INSTL-D/S PROPELLANT LINES (REWORK OF LDW280-25508 LFM 508)
DRAWING NO.: LDW200-55526
EO NO.: A1

04/14/70
ISSUED BY J. PEDERSEN/G. HANSMANN X87222 SECTION VDI GROUP NO. 335 PL 25

01

NAS 9-1100

QTY PER ASSEMBLY -3	QTY PER ASSEMBLY -1	PART NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
144		GR500A-4	E		RIVET	GRUMMAN STD.						
48		MS20426AD3	E		RIVET	GOVT. PART						
24		NAS680C08	E		NUT, PLATE	GOVT. PART						
4		LDW200-55527-19	E		DOUBLER	SEE NOTE 7						
4		LDW200-55527-17	E		DOUBLER	SEE NOTE 7						
24		AN737TW34	E		CLAMP	GOVT STD						
16		LDW200-55527-15	E		FITTING	AL ALLOY	WW-T-700/3	2024-T3	1.000 DIA. x .095 WALL x 4½	FP	NONE	
16		LDW200-55527-13	E		FITTING	AL ALLOY	WW-T-700/3	2024-T3	.875 DIA x .120 WALL x 2½	FP	NONE	
16		LDW200-55527-11	E		FITTING	AL ALLOY	WW-T-700/3	2024-T3	.875 DIA x .120 WALL x 2¼	FP	NONE	
		LDW200-55527-3	E		COVER ASS'Y							
		LDW200-55527-1	E		REINF. INST'L						NONE	

SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC
FP	ZYGLO	MIL-I-6866

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH NONE

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

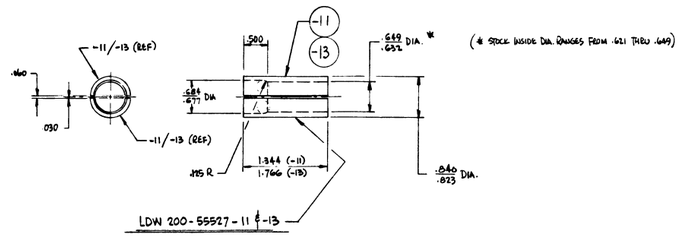
SIZE	CODE IDENT NO.	
B	26512	LDW 200-55527

SCALE NONE SHEET 2.00

ENG 77.2 5-64

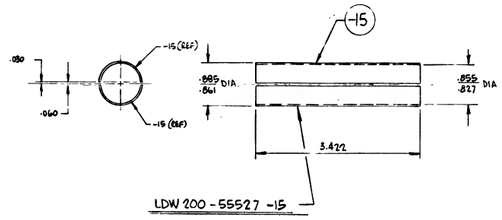
NAS 9-1100

SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☐ USE BOTH SIDES IF NECESSARY	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL RIVETS IN ACCORDANCE WITH	

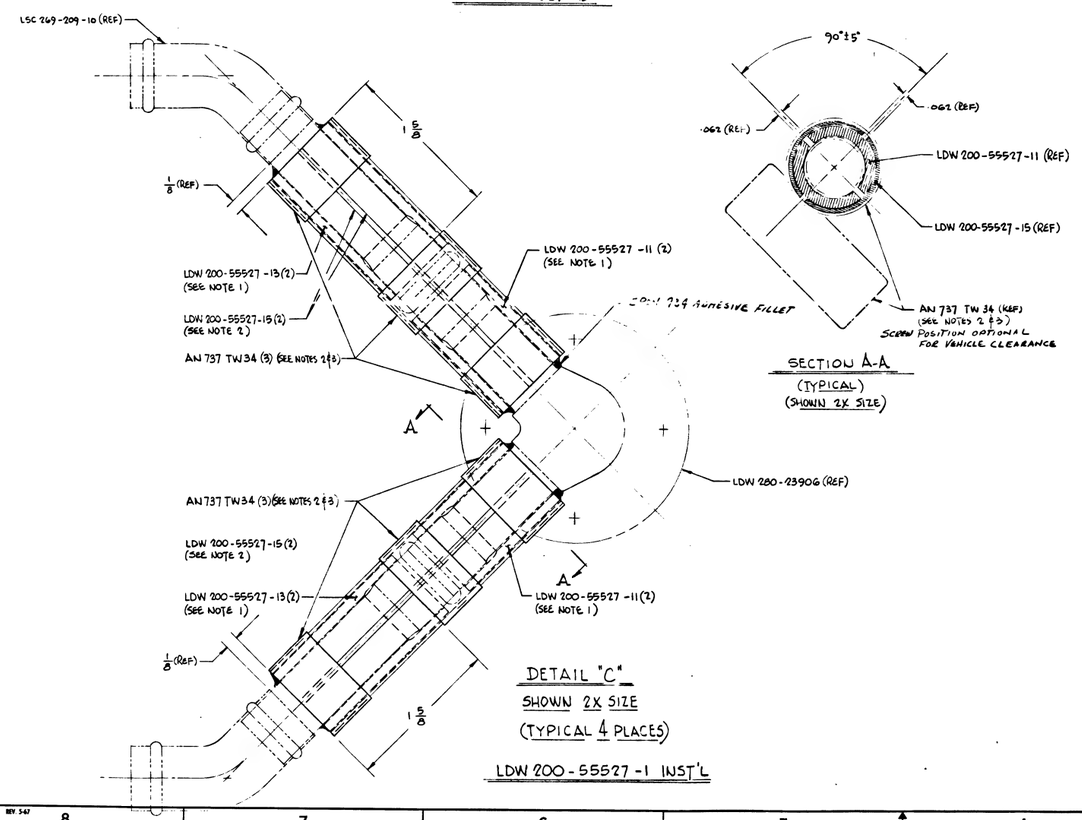


(* STOCK INSIDE DIA. RANGES FROM .621 THRU .649)

LDW 200-55527-11 & -13

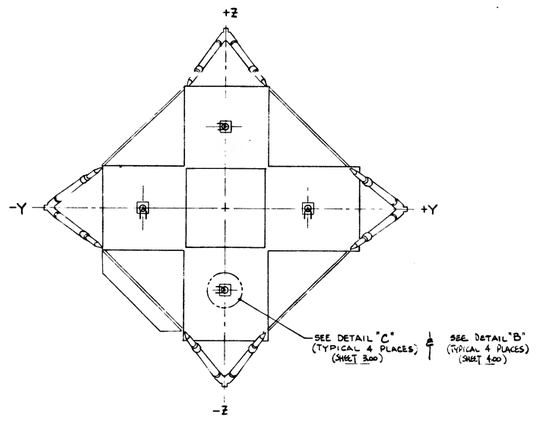


LDW 200-55527 -15



DETAIL "C"
SHOWN 2X SIZE
(TYPICAL 4 PLACES)

SECTION A-A
(TYPICAL)
(SHOWN 2X SIZE)



PLAN VIEW LOOKING DOWN - DESCENT STAGE

LDW 200-55527-1 INST'L

NOTES:

1. BOND LDW 200-55527-11 (2) AND LDW 200-55527-13 (2) TO LDW 280-23906, AS SHOWN, USING EPON 934 PER LSP 14-22500, CURE RANGE I. (TYPICAL 8 PLACES).
2. BOND LDW 200-55527-15 (2) TO LDW 200-55527-11 (2) & -13 (2) USING EPON 934 PER LSP 14-22500, CURE RANGE I. (TYPICAL 8 PLACES). NOTE: GAPS BETWEEN PARTS TO BE FILLED WITH EPON, AND FILLETS AT ENDS OF PARTS TO REMAIN. PARTS TO BE SECURED, DURING CURE OF EPON, WITH AN 737 TW 34 (3), CLAMPS "FINGER TIGHT." (TYPICAL 8 PLACES.)
3. AFTER CURE OF EPON, RE-TORQUE AN 737 CLAMPS (3) TO 25 IN-LB (TYPICAL 8 PLACES), AND APPLY DAB OF EPON 934 TO WORM MECHANISM TO ENSURE POSITIVE LOCK OF CLAMP.
4. FINAL SIZE AND FASTENER LOCATIONS SHALL BE DETERMINED FROM ENGR APPROVED MASTER TEMPLATES.
5. THICKNESS OF -17 AND -19 NOTED.
6. NO TOOLING HOLES PERMITTED IN PARTS.
7. a. GLASS REINFORCED PLASTIC TO BE MANUFACTURED IN ACCORDANCE WITH LSP 14-11101 USING POLYESTER RESIN LAMINAC 4146 "A" WITH 0.7% TO 1.0% LUCIDOL DDM AND 0.05% TO 0.1% COBALT NAPTHANATE (6%). FIBERGLASS CLOTH TO BE STYLE 181 OR 181/150 GARAN OR VOLAN "A" FINISH OR CORDOPREG FRC-72. FINAL MINIMUM CURE TEMP AND TIME FOR LAMINAC RESIN SYSTEM SHALL BE 180°F FOR (1) HOUR FOLLOWED BY 250°F FOR (2) HOURS. CURE SCHEDULE FOR FRC-72 SHALL BE IN ACCORDANCE WITH LSP 14-11101.

7. b. EXTERIOR SURFACE TO BE SUFFICIENTLY PIT FREE TO INSURE SATISFACTORY FINAL FINISH.

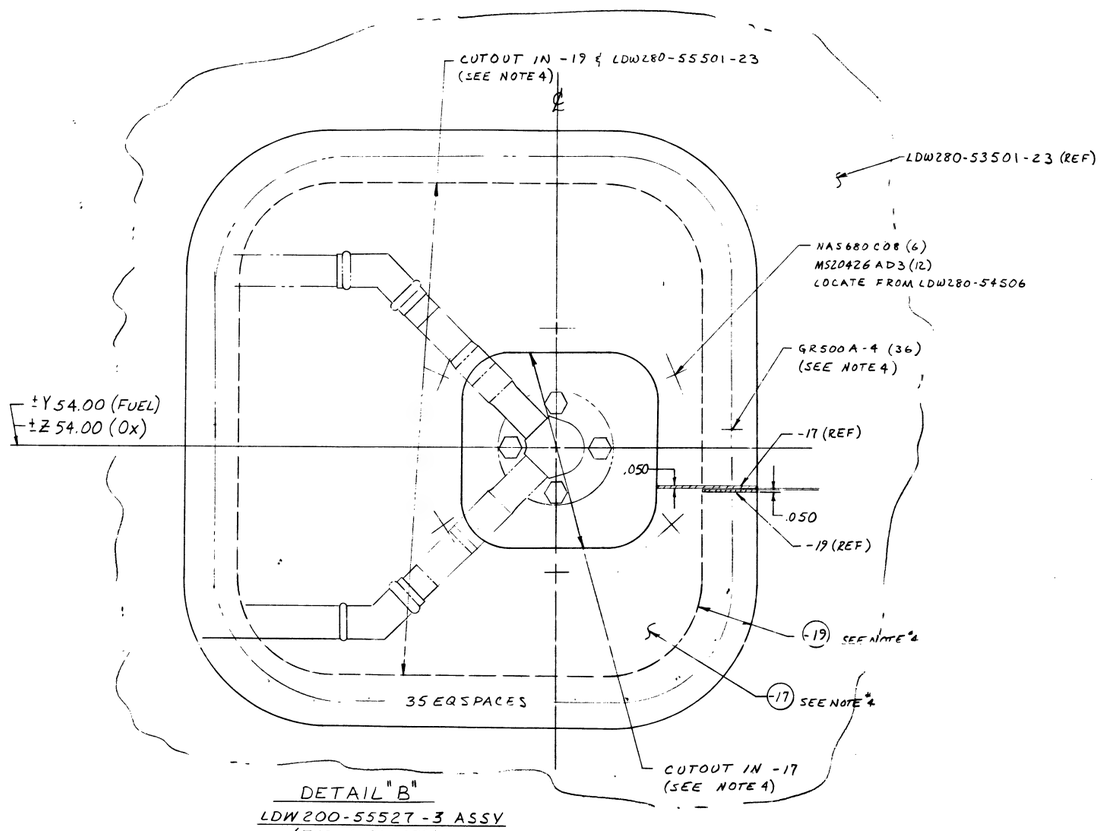
GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714		
SIZE F	CODE IDENT NO. 26512	LDW 200-55527
SCALE NOTED		SHEET 3.00

BAC 73.5 REV. 5-67

NAS 9-1100

LDW 200-55527

REVISIONS						
ZONE	LTR	DESCRIPTION	EFF CODE	MODEL	DATE	APPROVED



DETAIL "B"
LDW200-55527-3 ASSY
(TYP 4 PLACES)

OUTBD

FOR PARTS LIST, USAGE DATA, AND DWG SH STATUS, SEE DOCUMENT SAME NUMBER PREFIXED PL

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES			CONTRACT NO.	GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714			
LINEAR TOL	.XX	± .03	DRAWN BY				
	.XXX	± .010	LAYOUT BY				
ANGULAR TOL		± 0°30'	CHECKED BY				
TOL ON LOFTED DELINEATIONS IS			GR. LEADER				
			NEL GROUP				
			PROJ ENGR	SIZE D	CODE IDENT NO. 26512	LDW200-55527	
			GOVT APPD	SCALE		SHEET 4 OF	

DISTR LIST #

NAS 9-1100

LDW 200-55527

NAS 9-1100

TO 1

INF/D & B/M ON-3 REMOVE -17, REVISE QTY OF -19 (8 REQD) WAS (4 REQD) REVISE CALLOUT: INF/D & B/M -3 ASSY S/B -3 INSTL

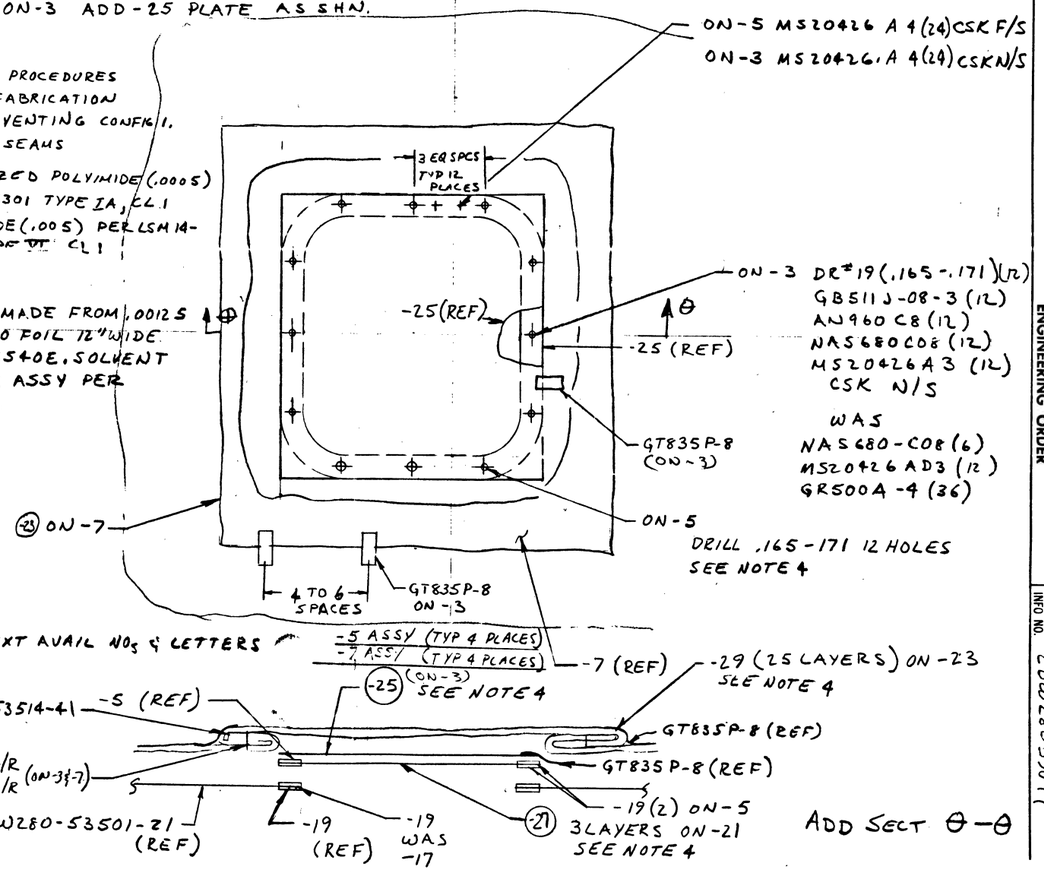
IN F/D, B/M ON-3 ADD -5 DOOR ASSY AS SHN,
ON-3 ADD -7 BLANKET ASSY AS SHN (REPLACES LDW280-54568-5)
ON-3 ADD -25 PLATE AS SHN.

ADD NOTES
*1 APPLICABLE PROCEDURES
LPC 280-1 FABRICATION
LPC 280-2 VENTING CONFIG.
LPC 280-3 SEAMS

*2 -29, ALUMINIZED POLYIMIDE (.0005) PER LSM 14-5301 TYPE IA, CL 1

*3 -27 POLYMIDE (.005) PER LSM 14-5301 TYPE ~~II~~ CL 1

*4 -25 TO BE MADE FROM .0012 S INCONEL 600 FOIL 12" WIDE PER AMS 5540E, SOLVENT WIPE BEFORE ASSY PER LSP 14-7011.



ADD SECT Θ-Θ

BNO 322 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO.	LDW200-55527	ED NO. A1
CONTROL INFO NO.	LDW280139077	

CDR 110669
ISSUED BY Don Regas

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | LCD 5243

REASON FOR ED: IN F/D & B/M ON-3 REMOVE -17, ASSY -21-25-27 & REVISED CALLOUT: ON-3 DR #19 (12) GB511J-01-3 (12), AN960C8 (12), NAS680C08 (12), MS20426A3 (12), GR500A-4 (36), -3 ASSY -21-25-27 (ON-3) NAS680-C08 (6), MS20426A3 (12), GR500A-4 (36), -3 ASSY -21-25-27 (ON-3) NAS680-C08 (6), MS20426A3 (12), GR500A-4 (36), ADDED NOTES & *1 *2 *3 *4 & SECT Θ-Θ

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO
LM	LEM509	LM (7) (37)	

TO REDUCE WEIGHT OF PRESENT DESIGN.

REVISE BOMS	RECORD ED	REWORK	-17
PRIORITY C	REWORK OF DISC PARTS	SCRAP	

DIFFUSER, REWORK OF LDW280-54568, LEM NO 509

	DRAWN	CHECKED	APPROVED BY	DATE
	VDJ			9/6/68

DRAWING TITLE INSTL D/S-HC

	GROUP LEADER	RELIAB GROUP	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG

DRAWING NO. LDW200-55527 A1

ED NO.

ED RELEASE DATE 10-7-68

SECTION VDJ GROUP NO. 280 PL 25

PK 10 SH 1

LDW200-55528

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW200-55528-1		GAEC SCH NO.	

LFM 563 LDW280-25508 ITA-5/R&D LEA

WORK PACKAGE FUNCTION NO. 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00		2.00		3.00				
REV									
SHEET									
REV									
SHEET									
REV									

		GRUMMAN REF INFO
LAST SECT LTR USED	B-B	PRIM NO.
LAST DASH NO. USED	-1	227

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 5430 PKG 5	

CONTRACT NO. NAS 9-1100 LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	L. BALDASSIN 3/30/70		
LAYOUT BY			
CHECKED BY			
GRP LDR	3/30/70		
VDI	3-30-70		
STRUCT	3/30/70	PROJ ENGR	3/30/70
		REL GROUP	3/30/70

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

EQUIPMENT INSTL
D/S SUBSYSTEMS
(REWORK OF LDW280-25508 LFM563)

SIZE	CODE IDENT NO.	
B	26512	LDW200-55528

SCALE NONE SHEET 1.00 OF 3

CDR 4-10-70

ENG 77.1 12-65

01

NAS 9-1100

A						1		LDW 390-25119-3	E	HARNESS ASSY	SEE DWG									2B
A								LDW 200-55528-1	E	LINES INSTL										
CL	QTY PER ASSEMBLY					-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE			

CL = CLEANLINESS LEVEL / LSP-14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

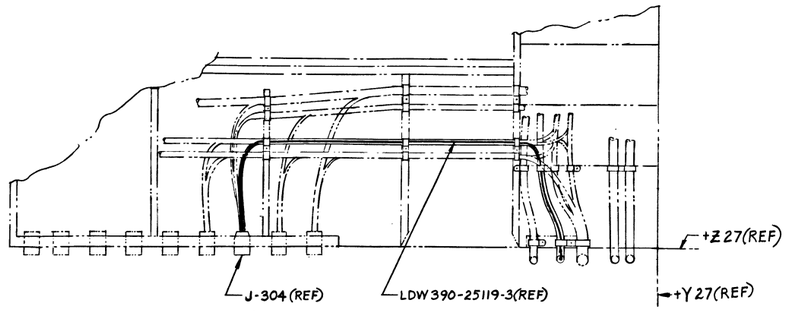
SIZE	CODE IDENT NO.	
B	26512	LDW 200-55528

SCALE NONE SHEET 2.00

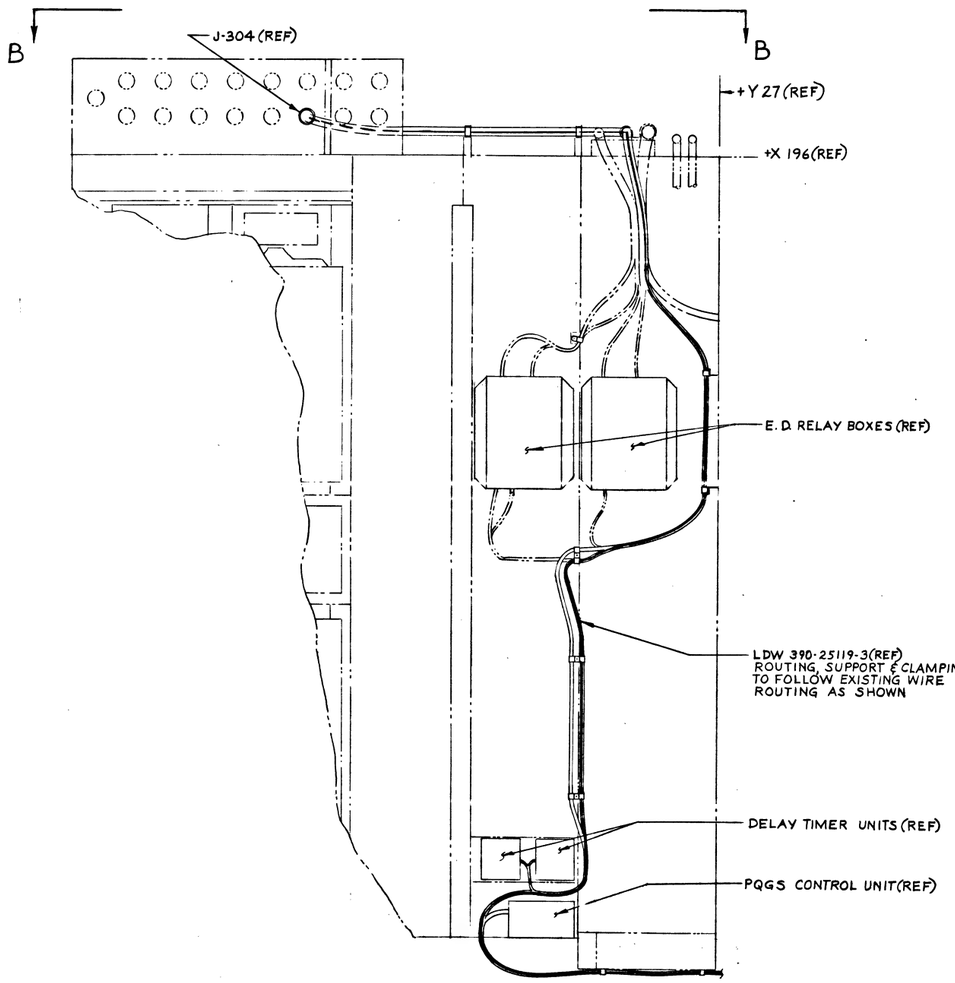
ENG 77.2 7-65

01 NAS 9-1100

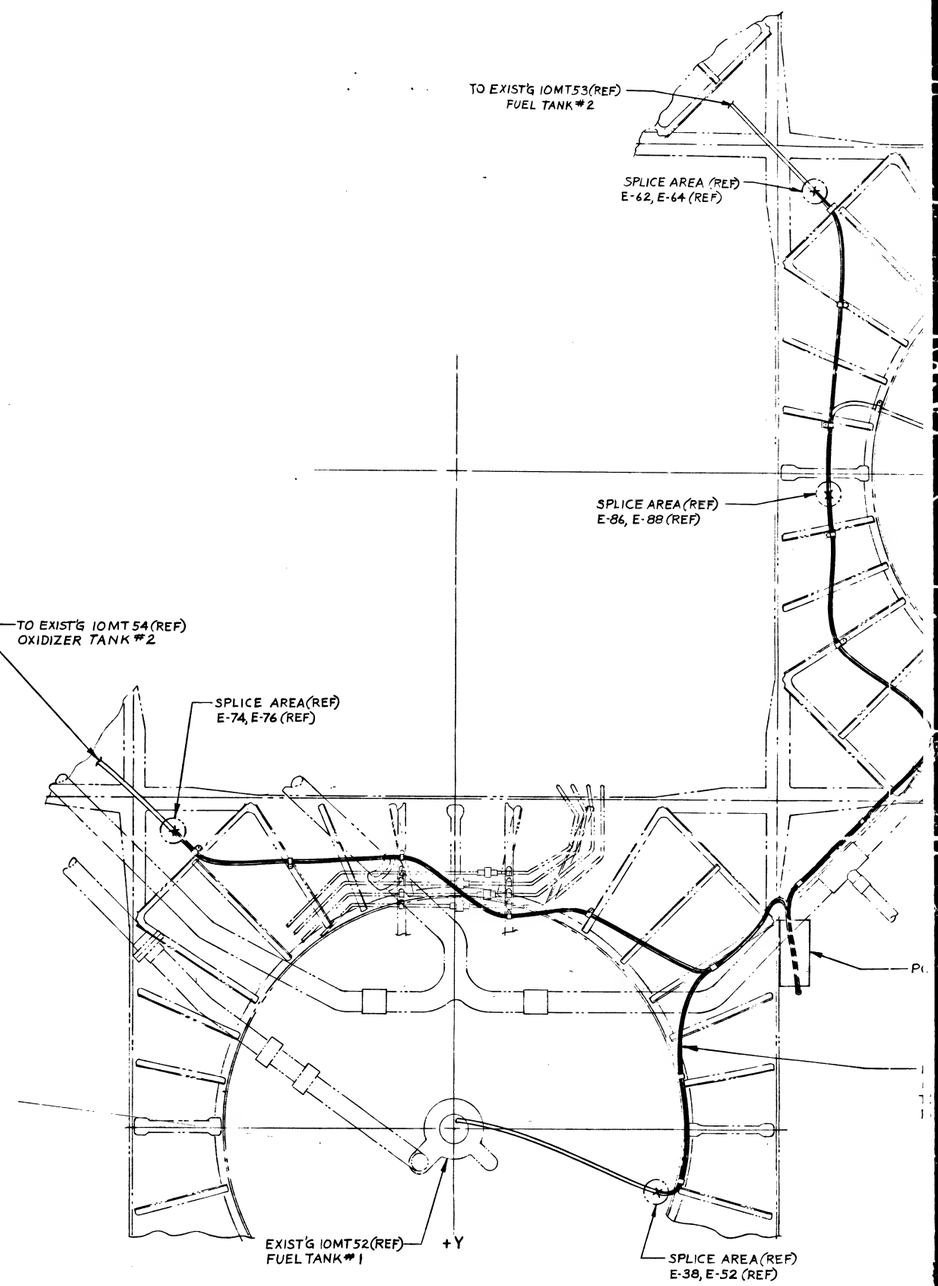
TUM 500-22253



VIEW B-B



VIEW A-A

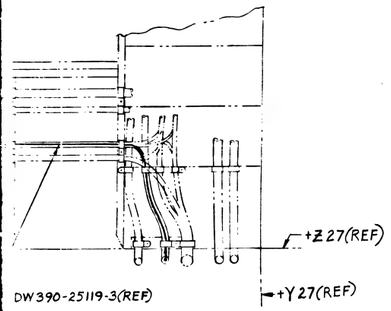


VIEW LOOKING DOWN
LDW 200-55528-1 INSTL

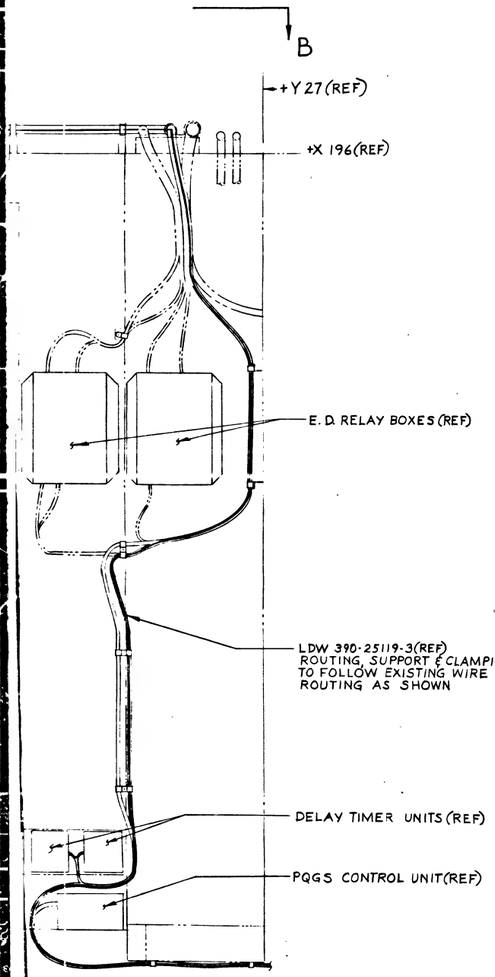
01/02 NAS 9-1100

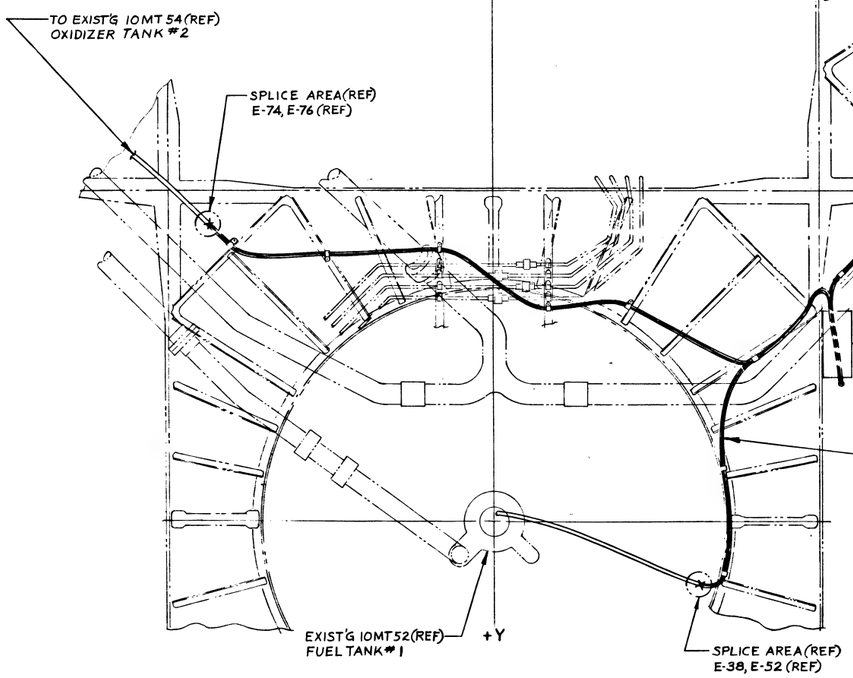
CODE IDENT NO.	DWG NO.	SHEET
26512	LDW200-55528	3

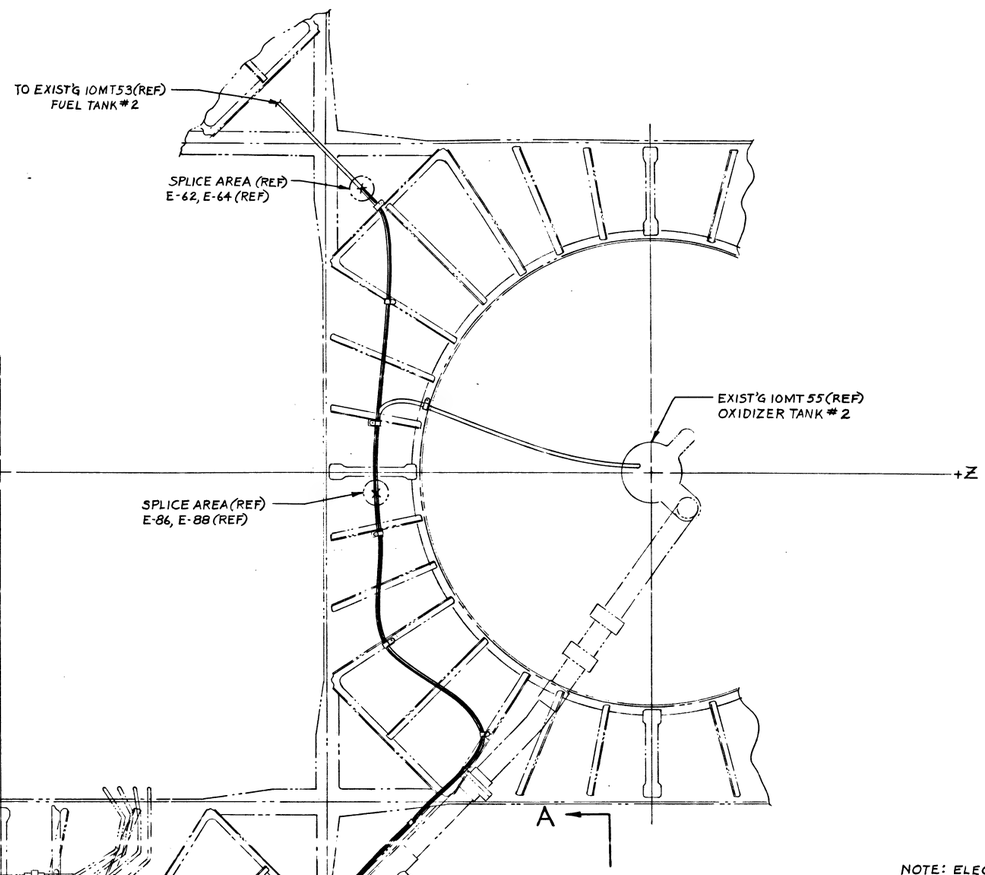
FRAME 1 FRAME 2



DW 390-25119-3 (REF)







PQGS CONTROL UNIT (REF)

LDW 390-25119-3
ROUTING, SUPPORT & CLAMPING
TO FOLLOW EXISTING WIRE
ROUTING AS SHOWN

NOTE: ELECT. CLAMPS TO BE PER LPC 280-23

VIEW LOOKING DOWN
LDW 200-55528-1 INSTL

02/025 NAS 9-1100

CODE IDENT NO.	DWG NO.	SHEET
26512	LDW 200-55528	3

FRAME 1 FRAME 2

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
J	26512	LDW 200-55528
SCALE 1/4		SHEET 3.00

LDW 200-55528 B

LDW 200-55528 C

D

DWG SIZE IS FULL SIZE WHEN PRINTED ONLY
PRINT TRIM LINE
FULL SIZE SHEET AREA 36 X 24 = 1/2 SQ FT
½ SIZE SHEET AREA (½ OF FULL) = .5 SQ FT

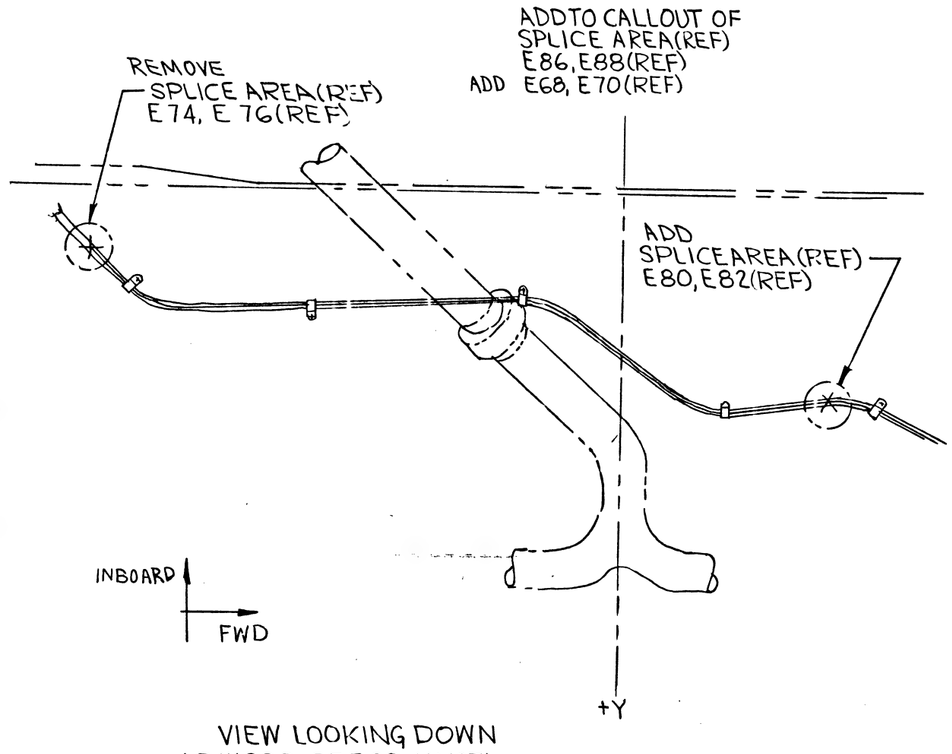
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.2 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200-55528		EO NO. A1
CONTROL INFO NO. LDW280C0361		

REMOVE
SPLICE AREA (REF)
E62, E64 (REF)



VIEW LOOKING DOWN
LDW200-55528-1 INSTL.
SH 3 ZONE 2C & 3B

NAS 9-1100

LFM

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓ LCD 5430 PKG 5

REASON FOR EO
TO FACILITATE MFG DUE TO UNAVAILABILITY OF PROPELLANT PROBES AT MSC

DESCRIPTION OF EO
ON-1 INSTL
ADDED E68, E70 (REF) TO E86 & E88 (REF) SPLICE AREA (REF) ADDED SPLICE AREA (REF) E80, E82 (REF) REMOVED SPLICE AREA (REF) E62, E64, E74, E76 (REF)

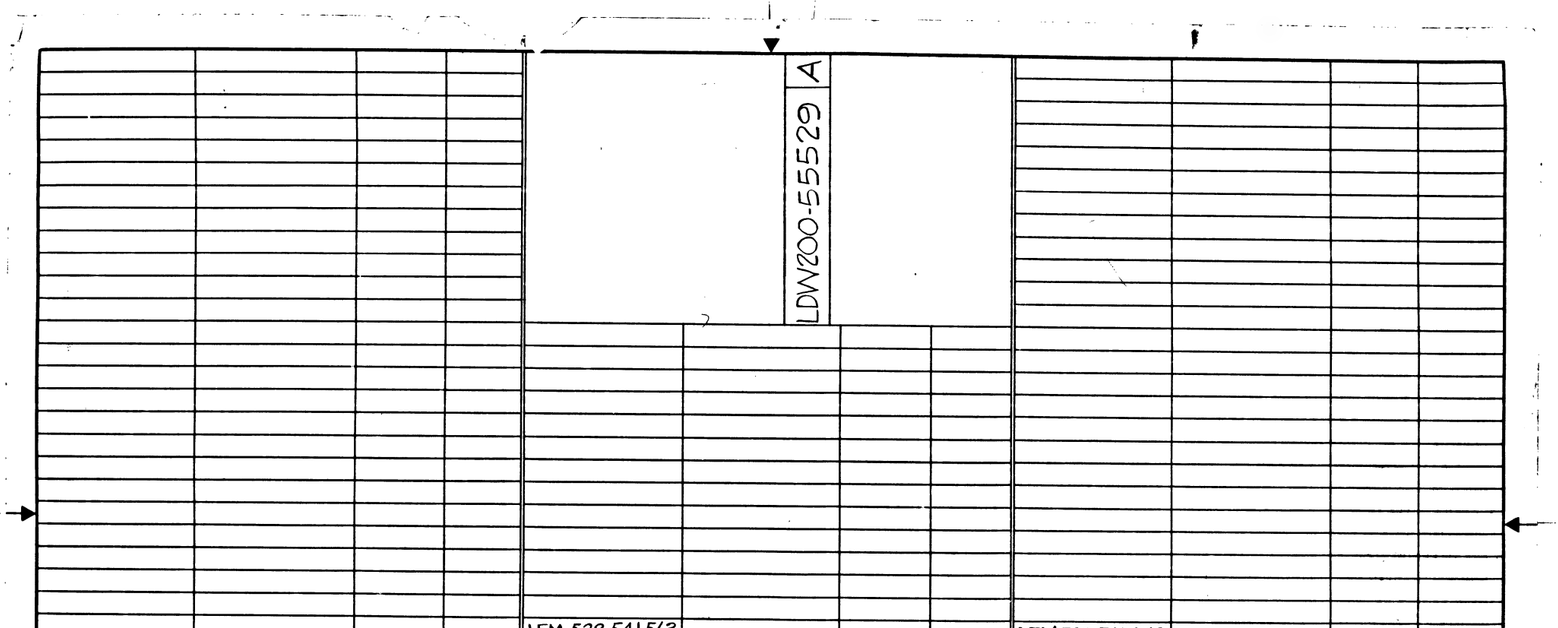
GAEC EO RELEASE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM	LFM 563	LTA5/R(159)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
✓		✓		DATE 4-20-70	VDI		4-17-70	4/21/70		4/21/70

PRIORITY: C
DRAWING TITLE: EQUIPMENT INSTL D/S SUBSYSTEMS
DRAWING NO.: LDW200-55528
EO NO.: A1

COR 4-22-70
ISSUED BY ROSADO x86046 SECTION EQUIP LINES GROUP NO. 332 PL 25



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO. LDW200-55529-3&-11		GAEC SCH NO.		PART NO. LDW200-55529-1&-9		GAEC SCH NO.	
				LFM 528,541,563				LFM 528,541,563			
				LFM 507,508	LDW280-25608	TA-5 (REF)	1 EA	LFM 507,508	LDW280-25608	TA-5 (REF)	1 EA

WORK PACKAGE FUNCTION NO. 110 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	1.10	1.11	1.12	1.13		2.00	2.01	2.02
REV	A	A	A	A	A		A	A	A
SHEET	2.03	2.04	2.05	2.06	2.07	3.00	3.01	3.02	3.03
REV	A	A	A	A	A			A	A
SHEET		4.00	5.00	6.00	7.00	8.00	9.00	10.00	
REV		A	A	A	A	A	A	A	
LAST SECT LTR USED	CK	GRUMMAN REL INFO							
LAST DASH NO. USED	-45	PRIM NO.							
		-227							

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.	
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES	±1/32 ±.03 ±1/2°
ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD3890, LCD3994	

CONTRACT NO. NAS 9-1100 | LINE ITEM | DOCUMENTATION TYPE II

DRAWN BY	COMMISSO 12/2/69		
LAYOUT BY	BALDASSIN		
CHECKED BY	W Buckley 12/30/69		
GR. LDR	A Lupinacci 12-26-69		
VDI,	[illegible] 12-17-69		
STRUCT	M MARKELOW 12/18/69	PROJ ENGR	12-18-69
		REL GROUP	1-5-70

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

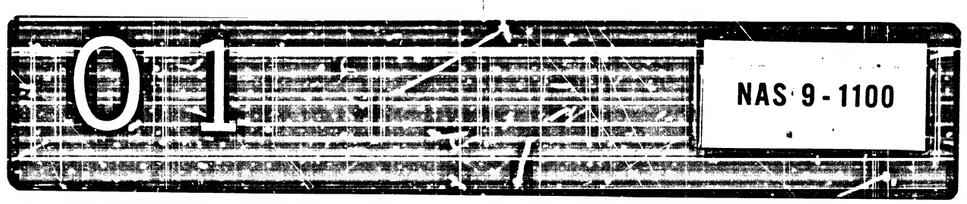
LINES INSTALLATION - DESCENT STAGE - PROP SYSTEM
(REWORK OF LDW280-25608 (SEE NOTE 33)

SIZE	CODE IDENT NO.	
B	26512	LDW200-55529 A

SCALE NONE | SHEET 1.00 OF 24

ENG 77.1 12-65

LCD3994 PKG 5, PG 11 CDR 4-23-70



REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
									ADDED SH 1.10, SH 1.11, SH 1.12, SH 1.13, SH 2.07 LAST SECTION LTR USED CK WAS BV, LAST DASH NO USED -45 WAS-33 SH 1.00 OF 24 WAS 1.00 OF 19						
A	1	6.00 5.00 3.02, 3.03 1.00	27B 27C 14A 14C 15A 15C 17A 17B	LFM 507 LFM 541		✓		EO A1 LCD 3890 LCD 5263	ON-3 INSTL DELETED -7 ASSY & -936 DFD-4; ADDED -1025 DFD-4, -1026 DFD-4, -1027 DFD-4, LSC269-200-4, LSC269-204-4, LDW280P16247-11(2) & -7-1 ASSY, MAKE -7-1 ASSY SAME AS -7 ASSY EXCEPT ADD -117 DSF-4; DELETED PICTURE OF NTN51098-1-201, TRANSDUCER & LSC269-223-4, TEE (2 PLACES); ADDED PICTURE OF GC560A-4C, CAP (2 PLACES) AND CALLOUTS "REUSE -825 DSO-4 (REF)" & "REUSE -826 DSF-4 (REF)"; RELOCATED CALLOUTS "REUSE -868 DSO-4 (REF)" & "REUSE -869 DSF-4 (REF); IN SECT AB-AB, DETAIL F & DETAIL Y, LDW200-55529-5 (REF) WAS LDW280-16098-1 (REF); IN SECT AA-AA, SECT AE-AE & DETAIL F, LDW200-55529-7-1 (REF) WAS LDW280-16097-1 (REF); IN VIEW R-R, REVISE CALLOUT -1025 DFD-4 (REF) WAS -936 DFD-4 (REF) & -7-1 ASSY (REF) WAS -7 ASSY (REF); IN VIEW P-P, LDW200-55529-7-1 ASSY (WELDED) AS NOTED WAS -7 ASSY (WELDED) AS NOTED; LDW280M16104-1 (ON-7-1) WAS (ON-7); LSC360-605-301 (ON-7-1) WAS (ON-7); ADDED LDW280-16097-1 (ON-7-1) WAS ADDED LDW280-16097-1 (ON-7); ADDED DETAIL BW IN NOTES 20, 24, 25 & 26 "ON-7-1 WAS ON-7" ON-1, -3, -9 & -11 IN M/B & TITLE BLOCK ADDED LFM 541	LTA-5/R(159)	✓		4-23-70 L. BALZASSIN		
	2	5.00 3.02, 3.03 1.00	17C 17A 17D 18D 19D 20D 13C 13D 19B 16B	LFM 563				EO A2 LCD 5430	ON-3 INSTL DELETED LDW200-55529-5 ASSY & ADDED -35 ASSY IDENTICAL TO -5; DELETED LDW200-55529-7-1 ASSY & ADDED -37 ASSY, IDENTICAL TO -7-1; DELETED DETAIL U, VIEW V-V, SECT W-W & SECT X-X; ADDED SECT BY-BY & SECT BZ-BZ; IN SECT S-S & R-R RELOCATED LSC360-605-301, LDW280M16104-1 & ADDED GN11BF-305 (SEE NOTE 26) & GN11BF-306 (SEE NOTE 26); IN NOTES 20, 24, 25 & 26 -35 ASSY WAS -5 ASSY, -37 ASSY WAS -7-1 ASSY ON-3 IN M/B & TITLE BLOCK ADDED LFM 563						

CHG APPROVED

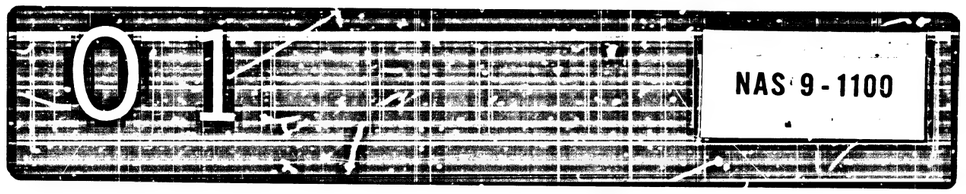
LTR	GROUP LDR

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW280-55529	A

SCALE NONE SHEET 1.10

ENG 77.16 3-66



REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	3	4.00 6.00 1.00	2C 3D 4C 5B 5D 6A 6C 6D 7A 7B 8A 8B 9A 9C 21A 24B 24D 25A 25C 26C 27C	LFM 563		✓		EO A3 LCD 5430	ON-1 INSTL DELETED -973 DSH-8, -974 DSH-8, -975 DSH-8, -976 DSH-8, LSC 269-221-6; ADDED -1038 DSH-10(4), -1039 DSH-4, -1040 DSH-4, -1041 DSH-4, -1042 DSH-4, -1043 DSH-4, -1044 DSH-4, -1045 V-6, -1046 DSH-4(4), -1047 DSH-8, -1048 DSH-8, -1049 DSH-8, -1050 DSH-8, NAS43DD3-32(3), GU10B-4K(4), GS570J-4(9), AN924-4K(4), AN960C716L(8), AN929-4K(4), LSC269-240-22(4), LSC 269-224-4(6), LSC 269-200-6 & SECT CB-CB; RELOCATED LSC 269-242-1 (4 PLACES); IN VIEW B-B, GC560A-4C WAS AN806KS; -1045 V-6(REF) WAS -971 V-6(REF); ON-3 INSTL DELETED AN929-4K(2); ADDED -1028 DSO-4, -1029 DSO-4, -1030 DSF-4, -1031 DSF-4, -1032 DSO-4, -1033 DSO-4, -1034 DSO-4, -1035 DSF-4, -1036 DSF-4, -1037 DSF-4, LSC 269-228-4(2), LSC269-224-4(4), GE11C-4K(4), GS570J-4(8), AN924-4K(4), AN960C716L(8), AN929-4K(4), NAS43DD3-32, VIEW CA-CA & VIEW CC-CC; REWORKED -1005 DSF-4, -1006 DSF-4, -1004 DSO-4, -1010 DSH-10, -1011 DSH-10, -1012 DSH-10, -1013 DSH-10, -979 DSH-4; ON-1 & -3 IN M/B & TITLE BLOCK ADDED LFM 563	LTA-5/R(15)	✓		L. BALDASSIN 4-23-70		
4	7.00	36A 40B 42D 44C 45C 49B 49C 51A	LFM 528					EO A4 LCD 5288	ON-11 INSTL ADDED -31(4) -41(4) & -39(2) & DETAILS CE, CF, CG NOTES 32 & 33, REMOVED -29(4) GB11D-8-76(4) DETAIL AS AM & MS 20470 AD4(14). REMOVED LFM 507, 508, 541 & 563 FROM TITLE BLOCK						
5	1.00		LFM 528					EO A5 LCD 5288	ON SHEET 1.00, LCD 3890, LCD 3994, LCD 5288 WAS LCD 3890 LCD 3994. ON-3 ADDED LFM 528 FOR FFF LTA-5/R(159)						
6	5.00 6.00	18A 27B	LFM 508					EO A6 LCD 3994	ON-1 INSTL IN FLD OF DWG & B/M ADDED LDW 280-17388-1058 DSH-8 REMOVED LDW 280-17388-226 DSH-8						
7	7.00	48C 51C	LFM 528					EO A7 LCD 5288	IN F/D REMOVED -29(4) -31(2) GB11D-8-76(2) WAS REMOVE -29(4) GB11D-8-76(4) IN DESCRIPTION ADDED -43(4) -41(4) WAS ADDED -31(4) -41(4) REMOVED -29(4) -31(2) GB11D-8-76(2) WAS REMOVED -29(4) GB11D-8-76(4)						

CHG APPROVED

LTR	GROUP LDR

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW 200-55529	A

SCALE NONE SHEET 1.11

ENG 77.16 3-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	8	4.00	7D 8C 6D 6B 6A 4C	LFM 508		✓		LCD 3994 PKGS P 11	ON-1 INSTL REMOVED -731 DSH-4 (REF) ADDED -1051 DSH-4 GU500A-4C (1). REMOVED GE510A-12C(1) -725 DSH-4 (REF) -726 DSH-4 (REF) ADDED GE510A-10C(1) -1054 DSH-4, GU500A-4C(1) LSC400-9909-19 (XX3501P) WAS LSC400-9909-15 (XX3501P) LSC400-9909-19 (XX4001P) WAS LSC400-9909-15 (XX4001P) REF EO A-3 REMOVED -1047 DSH-8 ADDED -1052 DSH-8 & GE11A-4KB (WAS) GE11C-4K REVISED DETAIL A ADDED -1053 DSH-10, LSC269-206-10(1) NAS43DD3-32(1) RELOCATED LSC269-240-10 & CORRECTED PICTURE IN VIEW 'P-P' RELOCATED LSC269-218-6 ADDED LSC269-218-8(1) REUSE -684 DSH-6 (WAS) REMOVE -684 DSH-6, REUSE-700 DSH-8 (WAS) REMOVE -700 DSH-8 REVISED VIEW R-R TO AGREE	LTA-5/R (159)	✓		L. BALDASSIN 4-23-70		
	9	5.00 6.00	14B 15A 27C 27B 26B 27A 35B 27A 27C 30D	LFM 508				LCD 3994 PKGS P11	ON-3 INSTL IN SECTION AC-AC REMOVED LDW280-17890-11 GB511K-08-2 (4) GN512H-08(4) SHIM AS REQD (.125 MAX) SEE NOTES 1 & 6 IN VIEW AA-AA REMOVED LDW280-17527 (REF) IN VIEW LKG DN REMOVED -869 DSF-4 ADDED -1061 DSF-4 -1060 DSF-4 GU500A-4C(1) REMOVED -868 DSO-4 ADDED -1059 DSO-4 -1062 DSO-4 & GU500A-4C(1) ADDED NAS43DD3-32(2) ADDED SECTION CD-CD & ON VIEW LKG DN SECT CD-CD (WAS) SECTION H-H (2 PLACES) IN VIEW LKG DN REMOVED -600 DFD-6, -601 DFD-6, -602 DFD-6 -603 DFD-6 -604 DFD-6 -605 DFD-6 -606 DFD-6 -607 DFD-6 & GU500A-6C (4) ADDED -1063 DFD-6, -1064 DFD-6, -1065 DFD-6 -1066 DFD-6, AN783-6K(2) AN833-6K(2) AN6289-6K(2) MS9058-6(2) GS13AJ-504(2) AN924-6K(2) AN960C916L(4) IN VIEW LKG DN CORRECTED PICTURE OF -1034 DSO-4, REMOVED SECTION AF-AF NAS43DD3-48(3) ADDED NAS43DD3-32(3) NAS43DD3-64(1) IN SECTION AG-AG, -1026 DFD-4 (REF) NAS43DD3-32 (REF) (WAS) -936 DFD-4 (REF) NAS43DD3-48 (REF)						

CHG APPROVED

LTR	GROUP LDR

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW200-55529	A

SCALE NONE SHEET 1.12

ENG 77.16 3-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	APPD
A	9	6.00	31B 34C 33A 25C 26C 21B 30C			✓		LCD 3994 PKG 5 P11	ON-3 INSTL IN SECTION L-L SHIM AS REQD (.250 MAX) (WAS) SHIM AS REQD (.125 MAX) SECTION H-H WAS TYP 3 PLACES IN DETAIL 'G' GS570V-7 (FUEL)(REF) GS570V-2 (OX)(REF) (WAS) GS570-4 (REF). GS13AL-135 (FUEL)(REF) GS13AL-139 (OX)(REF) (WAS) GS13AL-144 (REF) IN VIEW LKG DN LSC 269-113-6 (WAS) LSC 269-504-6 (4 PLACES)	LTA-5/R (159)	✓		L. BALDASSIN 4-23-70		
	10	7.00 8.00 10.00	40C 42C 41C 44B 54A 56D 57D 57B 67C 67D 71A	LFM 508				LCD3994 PKG 5 P11	ON-11 INSTL ADDED VIEW CJ-CJ & DETAIL CK, IN VIEW LKG DN REMOVED DETAIL AR (1 PLACE). ON-9 INSTL VIEW LKG DN, REMOVED DETAIL 'BA', 'BM' & BL RELOCATED DETAIL BW & CORRECTED PICTURE, ADDED DRILL #11 (.190-.196) & DIM .31 & 2.50 ADDED VIEW CH-CH ON-9 INSTL IN DETAIL BK, -Z 10.563 (WAS) +Z 10.557 REMOVED DIM 1.86 ADDED DIM 1.50 REMOVED DETAIL 'BM' IN DETAIL 'BC' REMOVED -33 ADDED -45 JCobb 4-24-70						

CHG APPROVED	LTR	GROUP LDR	V.D.I	STRUCTURES
	A	[illegible] 4-23-70	[illegible] 4/23/70	[illegible] 4/23/70

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW 200-55529	A

SCALE NONE SHEET 1.13

ENG 77.16 3-66

01

NAS 9-1100

A					6			LDW280P16247-11	E	SUPPORT	SEE DWG							18C
J			1	1				LDW280M16104-1		BOSS								19C
A					1			LDW280-17848-21	T	BRACKET								15A
A					1			LDW280-17848-11	E	DOUBLER								16A
J				1				LDW280-16098-1	S	LINES ASSY								19B
			1					LDW280-16097-1	S									17B
					1			LDW280-16057-9	E			(SEE NOTE 14)						24A
J					1			LDW280-16055-9		LINES ASSY	SEE DWG	(SEE NOTE 14)						23C
A	4							LDW200-55529-43		SUPPORT	AL ALLOY SH	QQ-A 250/4	2024-T3	.063x10.00x10.75	NONE	76		
	4							-41		SUPPORT	AL ALLOY SH	QQ-A-250/4	2024-T3	.063x5.50x8.50	NONE	76		
		1						-45		BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	C40x4.75x5.00	NONE	76		71B
	6							-31		CLIP				C40x1.12x1.50				47D
	2							-39		SHIM				.063x.750x4.00				
		1						-27		ANGLE				.050x5.00x11.50				74A
		1						-25		ANGLE				.050x6.00x10.50				74C
		1						-23		ZEE				.050x7.88x11.75				73C
		1						-21		CHANNEL				.050x3.88x4.75				60A
		4						-19		CHANNEL	AL ALLOY SH	QQ-A-250/4	2024-T3	.050x4.38x7.00				61C
		2						-17		CLIP	AL ALLOY EXTR	QQ-A-200/3	2024-T3511	GS180A7BFx.88				63B
		8						-15		CLIP	AL ALLOY EXTR	QQ-A-200/3	2024-T3511	GS180C32BFx1.25				67C
		1						-13		ANGLE	AL ALLOY EXTR	QQ-A-200/3	2024-T3511	GS180C29BFx2.75	NONE	76		63D
								-11		SUPPORT INSTL	(PROPELLANT)							40A
A								-9		SUPPORT INSTL	(He PRESS)							55A
J					1			-37		LINES ASSY(FUEL)	(WELDED)							17C
J					1			-35		LINES ASSY(OXID)	(WELDED)							19A
G								-3		LINES INSTL	(PROPELLANT)							14A
L								LDW200-55529-1	E	LINES INSTL	(He PRESS)							6B
CL	-11	-9	-37	-35	-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE	
	QTY PER ASSEMBLY																	

CL - CLEANLINESS LEVEL / LSP-14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						76	ALODINE	LSP-14-9010

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : LPC-19-2(GRUMMAN), LPC-19-3(VENDOR)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW200-55529	A

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

| | | |

| | | |

								LDW280-17388-																		
L						1		-1016DSH-4	E	TUBE	SEE DWG															6D
↑						1		-1015DSH-4	↑	↑	↑															6D
						1		-1014DSH-4																		6D
						1		-1013DSH-10																		7A
						1		-1012DSH-10																		6D
						1		-1011DSH-10																		4C
						1		-1010DSH-10																		8C
						1		-1009DSH-6																		17A
↓						1		-1008DSH-8																		17A
L						1		-1007DSH-8																		17C
J					1			-1006DSF-4				(SEE NOTE * 23)														25C
J					1			-1005DSF-4																		25C
J					1			-1004DSO-4		TUBE																29C
L					1			-1039DSH-4		TUBE ASSY																6C
L					1			-1038DSH-10		TUBE																3D
J					1			-1037 DSF-4		TUBE ASSY																25A
↑					1			-1036 DSF-4		TUBE																26C
					1			-1035 DSF-4		TUBE ASSY																2C
					1			-1034 DSO-4		TUBE																27B
↓					1			-1033 DSO-4		TUBE ASSY																2C
J					1			-1032 DSO-4		TUBE																27D
L						1		-995DSH-10		TUBE																8C
L						1		-994 V-12		TUBE																8D
J					1			-993DSO-16		TUBE ASSY																25A
↑					1			-992DSF-16		↑																29A
					1			-991DSF-8																		15D
↓					1			-990DSO-8																		29C
J					1			-989DSO-8																		24B
L						1		-988DSH-6		TUBE ASSY	SEE DWG	(SEE NOTE * 23)														1A
								LDW280-17388-	E																	
CL	-11	-9	-37	35	-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
QTY PER ASSEMBLY																	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW200-55529	A

SCALE NONE SHEET 2.03

ENG 77.2 7-65

01

NAS 9-1100

J					3			LSC269-228-4	E	TEE	SEE NOTE 5																		16B
L						1		-240-14	E	TEE - REDUCER	SEE NOTE 5																		7D
J					4			-504-6	E	SEAL	SEE NOTE 5																		26A
L					1			-252-3		TEE - REDUCER																			27B
					4	1		-248-1		UNION-REDUCER																			27D
						4		-210-10		TEE																			8C
						4		-242-1		UNION-REDUCER																			4C
						7		-240-21		TEE - REDUCER																			8C
						2		-240-10		TEE - REDUCER																			5C
					2			-234-5		TEE - REDUCER																			25D
					2			-225-4		CROSS																			27B
					7	11		-224-4		UNION																			29B
						1		-222-8		TEE																			17C
						1		-221-6		ELBOW																			4C
						5		-218-8		UNION																			18A
						2		-218-6		UNION																			18A
					2			-206-28		UNION																			25B
					2			-206-24		UNION																			28C
					2			-206-16		UNION																			25A
						10		-206-10		UNION																			8B
						10		-209-10		ELBOW																			8B
J					2			-202-4		ELBOW																			18C
L					5			200-4		UNION																			16B
J						1		-200-6		UNION																			8A
J						5		LSC269-240-22		TEE - REDUCER																			8C
J			1	1				LSC360-605-301		TEMP XDUCER	SEE NOTE 5																		15B 19B
								LDW280-17388-																					
J				1				-117 DSF-4		TUBE	SEE DWG																		16D
L						1		-1018 V-12		TUBE	SEE DWG (SEE NOTE # 23)																		9C
L						1		-1017 DSH-4	E	TUBE	SEE DWG																		6D
								LDW280-17388-																					
CL	-11	-9	-37	-35	-3	-1																							
QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE												

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

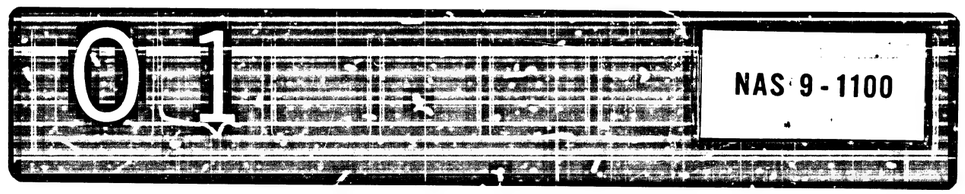
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW200-55529	A

SCALE NONE SHEET 2.04

ENG 77.2 7-65



CL	QTY PER ASSEMBLY						CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
J						1		LSC269-204-4	E	UNION	SEE NOTE 5						
J					4			LSC269-113-6	E	SEAL	SEE NOTE 5						26C
A					SEE NOTE 4			MS21042L	E	NUT	GOV STD						
↕					↕	↕		AN960D	↕	WASHER	GOV STD						
↕					↕	↕		GR511J		BOLT	GRUMMAN STD						
A					SEE NOTE 4			GC12H		CLAMP	↕						
J						4		GU10B-4K		UNION							5D
A				1				GN11BF-306		NAMEPLATE		(SEE NOTE #26)					19D
A			1					GN11BF-305		NAMEPLATE		(SEE NOTE #26)					17D
J					4			GE11A-4KB		ELBOW							
A					AS REQ			GT835M-8		TAPE		(SEE NOTE #22)					10A
L						1		GE810A-12C		ELBOW							7D
L						1		GU500A-12C		UNION							7D
L						1		GC560A-6C		CAP							9A
L					2	4		GU500A-4C		UNION							7C
L					4	4		GT17D-8K		TEE - BHD							22A
J					4			GS570V-5		SEAL							31A
L					4	4		GS570J-8		SEAL							22A
L					12	12		GS570J-4		SEAL							22A
J					4			GS13AL-144		SEAL							31A
L					4	4		GS13AJ-508		SEAL							22A
L					4	4		GR18A-8G4G		UNION-REDUCER							22A
J					1			GP10T-97		ORIFICE PLATE							31B
J					1			GP10T-94		ORIFICE PLATE							31B
A					36			GN512H-08		NUT							31B
↕						2		GE510A-4C		ELBOW							7C
↕					36			GB511K-08-2		BOLT							31B
A					4			GB511J-3-2		BOLT							14B
A	7	1						GB11D-8-76		BRACKET							47C
L						1		GA500F-12C12		ADAPTER-BHD							7D
L						1		GA500E-12C	E	ADAPTER	GRUMMAN STD						9C
CL	-11	-9	-37	-35	-3	-1											

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW200-55529	A

SCALE NONE SHEET 2.05

ENG 77.2 7-65

01

NAS 9-1100

J					2			AN924-6D	E	NUT	GOVT STD												28A
J					2			MS9058-6	E	GASKET	GOVT STD												28A
						AS REQD		LUBRICANT	E	(SEE NOTE 13)													
						AS REQD		NITROSO		SEALANT	(SEE NOTE # 19)												
						AS REQD		VISTANEX		SEALANT	(SEE NOTE # 19)												
A			AS REQD	AS REQD				WELDING ROD		(SEE NOTE 21)	308L												
A					AS REQD			SHIM		(SEE NOTE 1)											NONE	76	
					AS REQD			EPON 934A		EPOXY	(SEE NOTE # 15)												
					4			AN960C916L		WASHER	GOVT STD												
J					2			GS13AJ-504		SEAL	GRUMMAN STD												
L						1		GE510A-10C		ELBOW	GRUMMAN STD												
					AR			NAS1097DD5		RIVET	IND STD												
A					1			NAS43DD3-64		SPACER													
A					1			NAS43DD3-48		SPACER													
A					3	4		NAS43DD3-32		SPACER													
A					1			NAS43DD3-16		SPACER	IND STD												
A					8	8		AN960C716L		WASHER	GOV STD												
A					4			MS21043-3		NUT													
A	AR							MS20470AD4		RIVET													
						8		MS51957-41		SCREW													
						8		AN960D8		WASHER													
A					8	8		AN960C1216L		WASHER													
L					2			AN929-16K		PLUG													25A
						2		AN929-12K		PLUG													9C
					4	4		AN929-8K		PLUG													22A
					6	8		AN929-4K		PLUG													22A
					4	4		AN924-8K		NUT													22A
					4	4		AN924-4K		NUT													
L						5		AN806-K4	E	PLUG	GOV STD												9D
CL	-11	-9	-37	-35	-3	-1																	
QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE						

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW200-55529	A

SCALE NONE SHEET 2.06

ENG 77.2 7-65

NAS 9-1100

J					2			AN6289-6K	E	NUT	GOVT STD							28A
J					2			AN833 - 6K	E	ELBOW BHD	GOVT STD							28A
J					2			AN783 - 6K	E	TEE BHD	GOVT STD							28A
								LDW280-17388-										
J					1			-1066DFD-6	E	TUBE ASSY	SEE DWG							27A
↑					1			-1065DFD-6	↑	↕ ↕	↑							27A
↕					1			-1064 DFD-6	↕	↕ ↕	↕							28A
↕					1			-1063DFD-6	↕	TUBE ASSY	↕							28A
↕					1			-1062DSO-4	↕	TUBE ASSY	↕							26B
↕					1			-1061DSF-4	↕	TUBE ASSY	↕							26C
↓					1			-1060DSF-4	↕	TUBE	↕							26C
J					1			-1059DSO-4	↕	↕	↕							26B
L						1		-1058DSH-8	↕	↕	↕							26C
↑						1		-1056DSH-10	↕	↕	↕							4C
↕						1		-1054DSH-4	↕	TUBE	↕							8C
↕						1		-1052DSH-8	↕	TUBE ASSY	↕							6A
↕						1		-1051DSH-4	↕	TUBE	↕							7D
↕						1		-1050DSH-8	↕	TUBE ASSY	↕							3C
↕						1		-1049DSH-8	↕	TUBE ASSY	↕							9C
↕						1		-1048DSH-8	↕	TUBE ASSY	↕							6D
↕						1		-1046DSH-4	↕	TUBE	↕							3D
↕						1		-1045V-6	↕	TUBE	↕							3A
↕						1		-1044DSH-4	↕	TUBE ASSY	↕							6B
↕						1		-1043DSH-4	↕	TUBE	↕							6B
↕						1		-1042DSH-4	↕	TUBE ASSY	↕							6C
↓						1		-1041DSH-4	↓	TUBE	↓							7C
L						1		-1040DSH-4	E	TUBE ASSY	SEE DWG							6C
								LDW280-17388-										
CL	-11	-9	-37	-35	-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE	
QTY PER ASSEMBLY																		

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW200-55529	A

SCALE NONE SHEET 2.07

ENG 77.2 7-65

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NAS 9-1100

NOTES : (CONTINUED)

18. b) FOR FLUID SYSTEMS WITH WORKING PRESSURES LESS THAN 500 PSI THERE SHALL BE NO WRINKLES OR KINKS DEEPER THAN TWO (2) PERCENT OF THE TUBE O.D. AND NO SCRATCHES DEEPER THAN TEN (10) PERCENT OF THE NOMINAL WALL THICKNESS. SCRATCHES WITHIN THESE TOLERANCES SHALL BE BLENDED OUT. (REF: LSM 14-17400)
19. AFTER "COLD FLOW I" APPLY SECONDARY SEALANT LSM-14-4106 (NITROSO) ON DIFFUSER ASSEMBLIES OF THE OXIDIZER TANKS AND LSM-14-4105 (VISTANEX) ON DIFFUSER ASSEMBLIES OF THE FUEL TANKS PER LPC280-46 . AFTER PROCEDURE HAS BEEN ACCOMPLISHED, INSTALL MS51957-41 SCREWS PER LPC280-47 AND TORQUE TO 15-20 IN. POUNDS.
20. HELIUM LEAK CHECK-35 AND-37 WELDED ASSEMBLIES WITH 100% HELIUM CONCENTRATION AT ONE ATMOSPHERE DIFFERENTIAL. HELIUM TO BE CONTAINED WITHIN A POLYETHYLENE BAG SURROUNDING THE WELDED JOINT. LEAK RATE PER LPC270-001.
21. WELD PER MIL-W-8611, USING 308L FILLER WIRE. ALL WELDS ARE CRITICAL. ANNEALED AREAS ADJACENT TO WELD PERMISSIBLE.
22. AFTER BRAZING OPERATION IS COMPLETED, WRAP ONE (1) LAYER OF GT835M-8 TAPE (ALUMINIZED MYLAR) PER DETAIL AL. OVERLAP ENDS 1/4 INCH MINIMUM.
23. THE FOLLOWING DASH NUMBERED TUBES OF LDW280-17388 MAY BE MADE BY TRIMMING THE INDICATED EXISTING DASH NUMBERED TUBES OF LDW280-17388 :

TO MAKE (NEW)	*TRIM (EXISTING)
-951 DSH-10	-326 DSH-10
-952 DSH-10	-329 DSH-10
-959 DSH-10	-441 DSH-10
960 DSH-10	-336 DSH-10
961 DSH-10	-441 DSH-10
963 DSH-10	-348 DSH-10
964 DSH-10	-334 DSH-10
966 DSH-10	-328 DSH-10
967 DSH-10	-330 DSH-10
968 DSH-4	-476 DSH-4
969 DSH-10	-329 DSH-10
988 DSH-6	-351 DSH-6

TO MAKE (NEW)	*TRIM (EXISTING)
~~-996 DFD-6~~	~~-912 DFD-6~~
~~-997 DFD-6~~	~~-913 DFD-6~~
~~-998 DFD-6~~	~~-914 DFD-6~~
~~-999 DFD-6~~	~~-915 DFD-6~~
-1006 DSF-4	-393 DSF-4
-1018 V-12	-320 V-12

* NOTE: REMOVE AND/OR REPLACE REUSEABLE BRAZED LINES PER LSP-14-6306

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW200-55529	A
SCALE —		SHEET 3.02	

ENG 72.1 6-64

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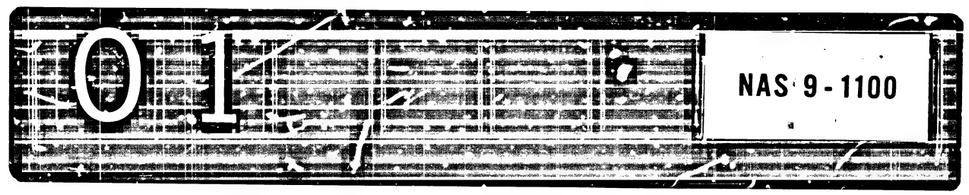
NAS 9-1100

NOTES: (CONTINUED)

24. PROOF PRESSURE TEST (HYDRO-STATIC)-35 AND-37 ASSEMBLIES TO 360 PSIG AT ROOM TEMPERATURE FOR ONE(1) MINUTE. NO LEAKAGE OR PERMANENT DEFORMATION OF ASSEMBLY TO BE PERMITTED.
25. IDENTIFY-35 AND-37 ASSEMBLIES PER LSP-14-4708. ELECTRO-ETCH PER LSP-14-4706.
26. INSTALL AS CLOSE AS POSSIBLE TO TRANSDUCER USING EPON 934A PER LSP-14-22500. NAMEPLATE SHALL BE WIPED WITH A CLEAN CLOTH PAD SATURATED WITH AN APPROVED SOLVENT PER LSP-14-7011. UNDER NO CIRCUMSTANCES ARE THE BARE METAL SURFACES OF-35 AND-37 ASSEMBLIES TO BE SCUFF SANDED. (ROOM TEMPERATURE CURE FOR SEVEN (7) DAYS PERMISSIBLE) ENGINEERING TO BE NOTIFIED OF LOCATION OF INSTALLED NAMEPLATE.
27. TUBING CLEARANCE TO BE IN ACCORDANCE WITH LEI280-019.
28. TORQUE LSC400-9909-19, 70-80 INCH POUNDS ONTO AN815-4C.
29. INSTALL FASTNR PER LSP-14-15302 & LSP-14-15306.
30. NO TOOLING HOLES ALLOWED IN DETAIL PARTS.
31. FOR HOLES MARKED ▲ SEE DWG LSC270-805-1 FOR CORRESPONDING HOLE PATTERN.
32. SHIM AS REQUIRED USING CAST PLASTIC SHIM PER LSP 14-11700 TYPE II CLASS B MIX EPON 934 PER LSP 14-22500A CURE RANGE I
33. THIS DRAWING IS AFFECTED BY THE FOLLOWING LFMS: LFM 507, 508, 541, 563 & 528

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW200-55529	A
SCALE —		SHEET 3.03	

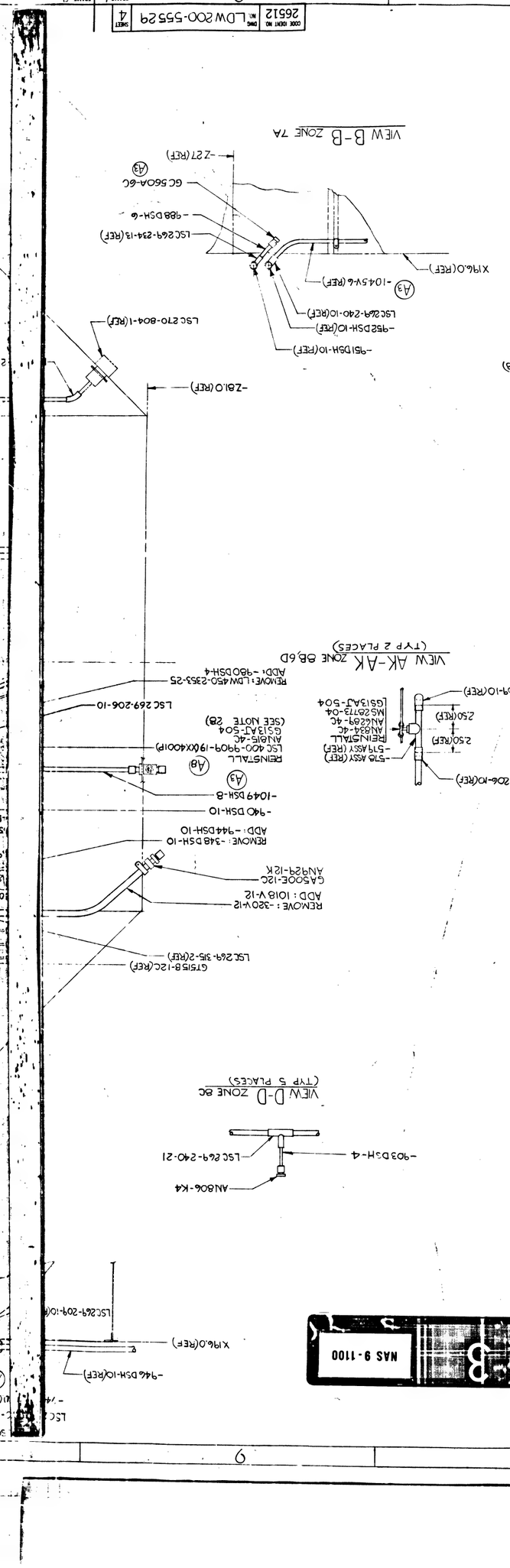
ENG 72.1 6-64



NAS 9-1100

COOK IDENT NO	DWG NO	SHEET
26512	LDW200-55229	4

FRAME 1 — FRAME 2



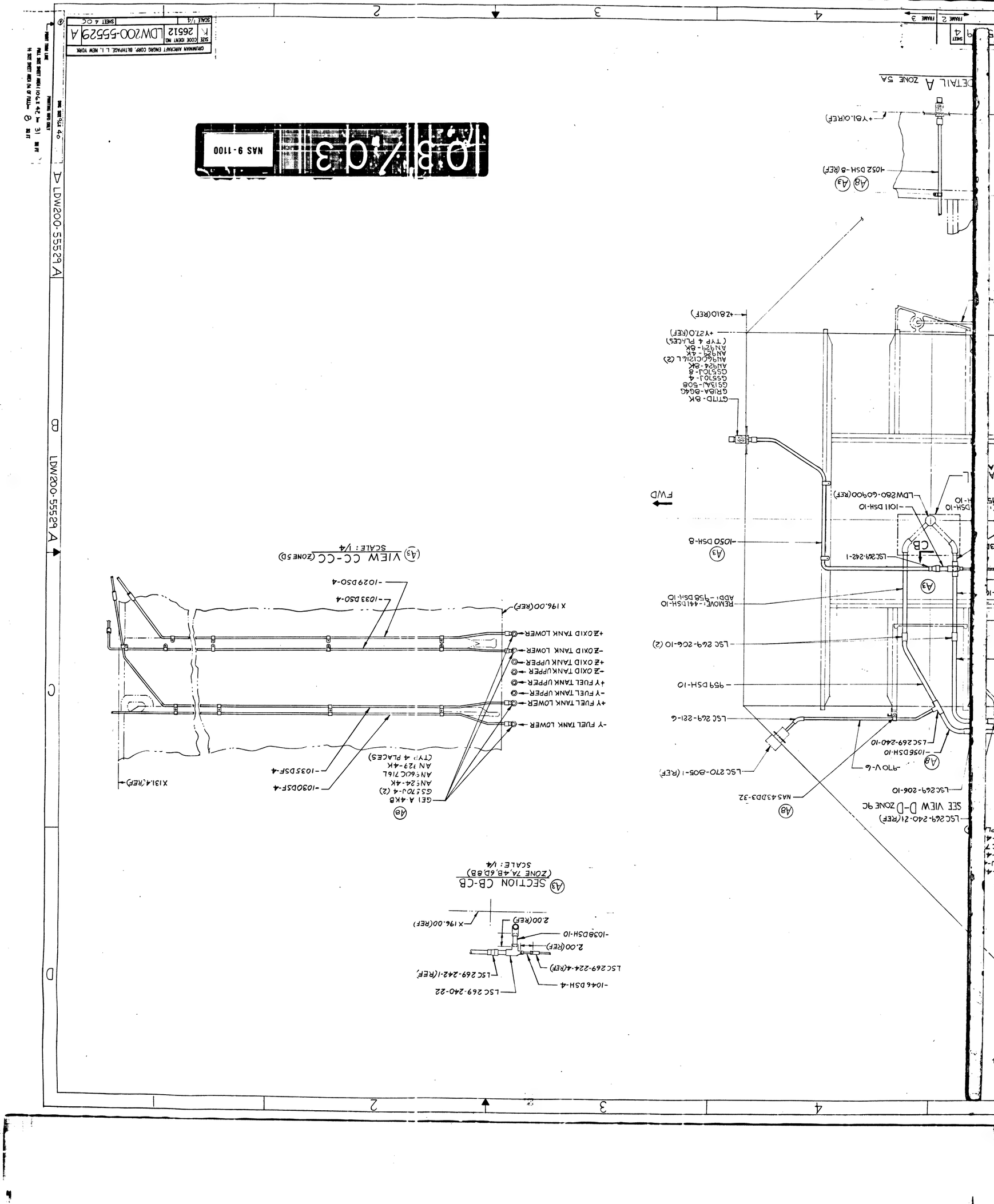
NAS 9-1100

8 7 6 5

LSC269-246-11(REF)
LSC269-240-22(REF)
-949DSH-10(REF)
-950DSH-10(REF)
LDW280-60900(REF)
-972V-12
LSC269-209-10(REF)
GA500F-12C12
AN929-12K
-727DSH-4(REF)
REMOVE:-476DSH-4
ADD:-1017DSH-4
LSC269-224-4(REF)
REMOVE:-725DSH-4
ADD:-1015DSH-4
REMOVE:-3.0DSH-4
ADD:-1014DSH-4
REMOVE:-32.DSH-4
ADD:-1016DSH-4
-1048DSH-8
REMOVE:-420DSH-4
ADD:-977DSH-4
NAS43DD3-32
REMOVE:-330DSH-10
ADD:-948DSH-10
LSC269-240-21
-1051DSH-4
LSC100-9909-19(XX3501P) REINSTALL
ANGLE 4C
GS1341-504
(SEE NOTE 28)
REMOVE:LDW450-2353-24
ADD: 978DSH-4
571 ASSY (REF)
SEE VIEW AK-AK
ZONE 10B
VIEW C-C ZONE 6D
GU500A-4C
-730DSH-4(REF)
-994V-12
GU500A-12C
LSC269-240-14
REMOVE:-821DSH-10
ADD:-995DSH-0
-947DSH-10
-946DSH-10
GE510A-10C
-430DSH-4(REF)
LSC269-242-1
-1012DSH-10
LSC269-209-10
LSC269-20610
CB
C ZONE 8D
CB (ZONE 3D)
LDW280-60900(REF)
CC (ZONE 2B)
GU10B-4K
GS570J-4(2)
AN924-4K
AN960C716L
AN929-4K
(TYP 4 PLACES)
GSE ΔP
CONNECTIONS
(REF)
NAS43DD3-32(2)
LSC269-240-21(REF)
SEE VIEW D-D ZONE 9C
-945DSH-10
LSC269-240-22
-968DSH-4
LSC269-224-4
-1040DSH-4
GU500A-4C(2)
REMOVE:-406V-12
GE510A-4C(2)
REMOVE:-400DSH-10
ADD:-950DSH-10
LSC269-224-4
-961DSH-10
LSC269-240-21(REF)
LSC269-231-7(REF)
-965DSH-10
ZONE 9C
D
-999DSH-10
-768DSH-10(REF)
LSC269-206-10
-769DSH-10(REF)
GU500A-4C
LSC269-20610
-963DSH-10
-964DSH-10
335DSH-10
(REF)
LSC269-206-10(REF)
-1042DSH-4
LSC269-224-4
-943DSH-10
-967DSH-10
LSC269-240-21
-312DSH-4(REF)
-1054DSH-4
LSC269-204-10(REF)
REMOVE:-328DSH-10
ADD:-966DSH-10
LSC269-209-10
761DSH-10(REF)
-942DSH-10
PEMOVE:-432DSH-4
ADD:-979DSH-4
-423DSO-4(REF)
-421DSO-4(REF)
-425DSF-4(REF)
-427DSF-4(REF)
-979DSH-4(REF)
-960DSH-10
-346V-6(REF)
AK
CB
CB(ZONE3D)
-764DSH-10(REF)
-763DSH-10(REF)
-1041DSH-4
LSC269-224-4
REMOVE:-334DSH-10
ADD:-941DSH-10
-1010DSH-10
LSC269-242-1
-578 ASSY (REF)
AK
ZONE 10B
LDW280-60900(REF)
-969DSH-10
-311DSH-4(REF)
-957DSH-10
LSC269-224-4
CB
(ZONE 3D)
CB
-1039DSH-4
REMOVE:-336DSH-10
ADD:-956DSH-10
SEE DETAIL AL
ZONE 11A
-1044DSH-4
LDW200-55529-1 INSTL
VIEW LOOKING DOWN-TOP DECK
LSC269-224-4
-1043DSH-4
-327DSH-10(REF)
LSC269-240-10
LSC269-234-13(REF)
B
B ZONE 9A
LSC269-221-6(REF)
REMOVE:-351V-6
ADD:-971V-6
-1045V6
LSC269-200-6
REMOVE:-346V-6
-954DSH-10
-951DSH-10
LSC269-206-10(2)
CB
LSC269-224-4
REMOVE:-326DSH-10
ADD:-955DSH-10
LDW280-60900(REF)
CB L
(ZONE 3D)
-1013DSH-10
LSC269-242-1
-952DSH-10
REMOVE:-329DSH-10
ADD:-953DSH-10
REMOVE:-402V-12
-1052 DSH-8
-Z270(REF)
+Z270(REF)
FOR CONTINUATION OF LINE
SEE DETAIL A
ZONE 4A
DETAIL A ZC

SHEET 4
FRAME 1 FRAME 2
FRAME 2 FRAME 3
CODE IDENT NO 26512
DWG NO LDW200-55529
SHEET 4

NAS 9-1100



GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE L.I., NEW YORK
SIZE A | CODE IDENT NO 26512 | LDW200-55529 | A
SCALE 1/4 | SHEET 4 OF

.870-.880 DRILL THRU ONE WALL ONLY

LSC269-605-301 (REF) (GQ4311T)

LDW280M16104-1 (REF)

.12 ±.03

2.25

W

W

LDW280-16098-1 (REF)

GN11BF-306 (SEE NOTE 26)

SECTION W-W
SCALE: FULL
(A2)

DETAIL 'U' (A2) (ZONE 20C)
SCALE: FULL

X

LSC360-605-301 (REF) (GQ3811T)

LDW280M16104-1 (REF)

X

GN11BF-305 (SEE NOTE 26)

.870-.880 DRILL THRU ONE WALL ONLY

.12 ±.03

VIEW V-V (A2) (ZONE 17C)
SCALE: FULL

SECTION X-X
SCALE: FULL
(A2)

REMOVE
LDW280-25608-15
ADD
LDW280-16098-1 (ON -35) (A2)

AB

AB (ZONE 15B)

USE EXISTING HARDWARE

LSC360-605-301 LDW280M16104-1 (ON-35) (GQ4311T) (REF)

GN11BF-306 (SEE NOTE 26) (ON-35)

REMOVE -384 DFD-6
ADD -911 DFD-6

REMOVE -383 DFD-6
ADD -910 DFD-6

REMOVE -382 DFD-6
ADD -909 DFD-6

REMOVE -381 DFD-6
ADD -908 DFD-6

-735 DS0-4 (REF)

BZ (ZONE 13C)

BZ 1.50±.10

-368 DS0-4 (REF)

-390 DS0-4 (REF)

SEE DETAIL 'Y' (ZONE 15A)

LSC269-200-4 (REF)

-1034 DS0-4 (REF)

FOR CONTINUATION (SEE SHEET 6, ZONE 27A)

LDW200-55529-35 ASSY (WELDED) AS NOTED (A2)

VIEW S-S (SH 6, ZONE 26B)

REUSE -368 DS0-4 (REF)

LSC269-202-4

EPOXY ALL OVER AS SHOWN (SEE NOTE 15)

LDW280P16247-11(2) (SEE NOTE 16)

-35 ASSY (REF) (A2)

X 156.50 (REF) (ENGINE INTERFACE)

REUSE -719 DSH-8 (REF)

LSC269-218-8 (2)

LSC269-218-6 (A8)

SEE DETAIL 'BW' (ZONE 16D)

LSC269-218-8 RE-USE -685 DSH-6 (REF)

RE-USE -684 DSH-6 (A8)

REMOVE -704, -705 DSH-8 (A6)
ADD -1058 DSH-8 (ON-1)

LDW200-55529-37 ASSY (WELDED) AS NOTED (A1) (A2)

LSC269-218-8

-394 DSH-8 (REF)

(A8) RE-USE -700 DSH-8 (REF)

LSC269-218-8 (A8)

REMOVE -699 DSH-8
ADD -1007 DSH-8 (ON-1)

LSC269-222-8

-1007 DSH-8 (REF)

REINSTALL LSC360-627-407 (GQ34G3T)

-495 DSF-4 (REF)

LSC269-248-1

-1009 DSH-6 (ON-1) (A8)

LSC269-218-6 (A8)

REMOVE
LDW280-25608-13
ADD
LDW280-16097-1 (ON-37)

-1027 DFD-4 (REF) (A1)

LDW280P16247-11(2) EPOXY AS SHOWN (SEE NOTE 15 & 16)

REMOVE -754, -701 DSH-8
ADD -1008 DSH-8 (ON-1)

FOR CONTINUATION (SEE SHEET 6 ZONE 29C)

AA (ZONE 14A)

AA

AE (ZONE 14C)

AD (ZONE 14C)

AC (ZONE 14B)

AC

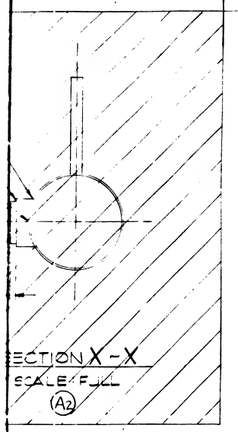
VIEW P-P (SH 6, ZONE 27C)

011702

NAS 9-1100

CODE IDENT NO.	DWG NO.	SHEET
26512	LDW200-55529	5

FRAME 1 FRAME 2

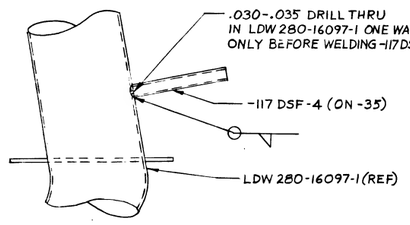


ECTION X-X
SCALE: FULL
(A2)

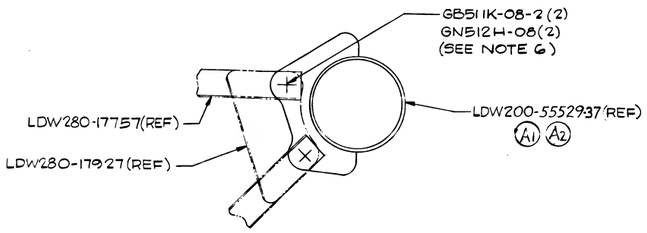
SSY (WELDED) AS NOTED

-5

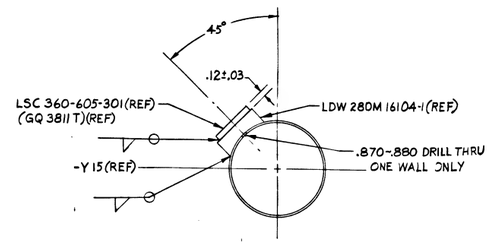
-8 (REF)



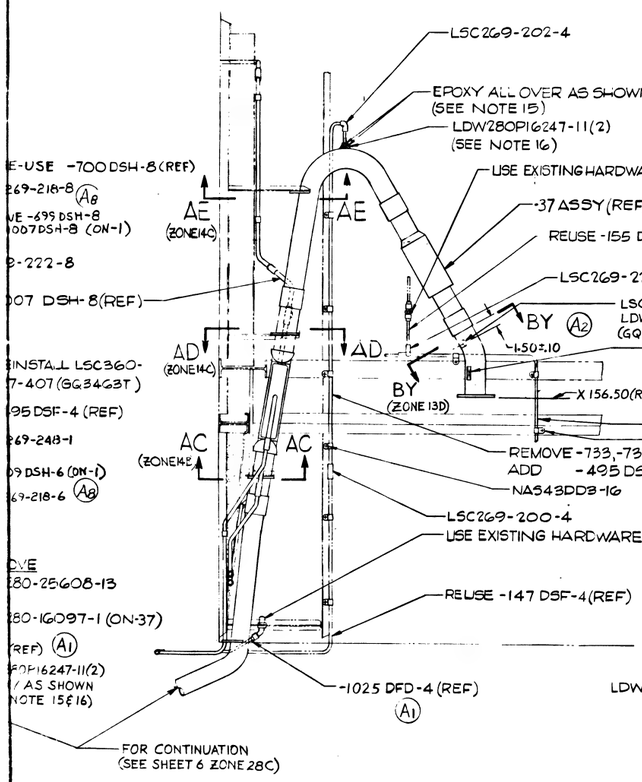
(A1) DETAIL "BW" (ZONE 17A)
SCALE: FULL



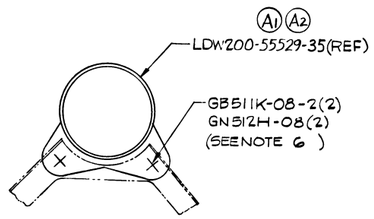
SECTION AE-AE (ZONE 16B)
SCALE: FULL



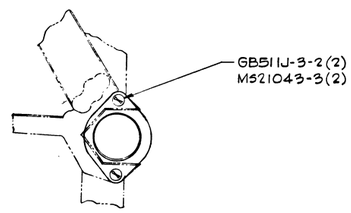
SECTION BY-BY (ZONE 16B)
SCALE: FULL
(A2)



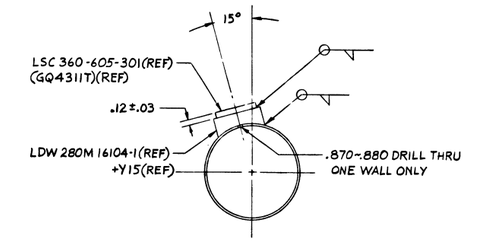
VIEW R-R (SH 6, ZONE 26B)



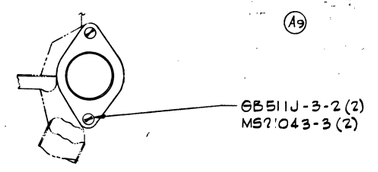
SECTION AB-AB (ZONE 19B)
SCALE: FULL



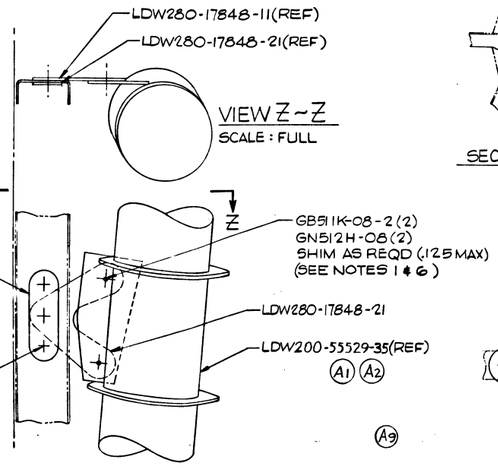
SECTION AD-AD (ZONE 16B)
SCALE: 1/2



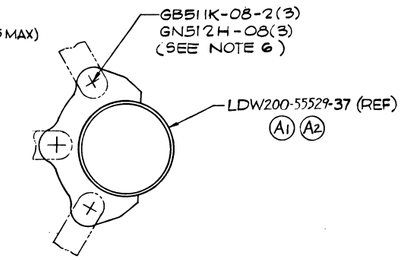
SECTION BZ-BZ (ZONE 19B)
SCALE: FULL
(A2)



SECTION AC-AC (ZONE 16B)
SCALE: 1/2



DETAIL Y (ZONE 18B)
SCALE: FULL



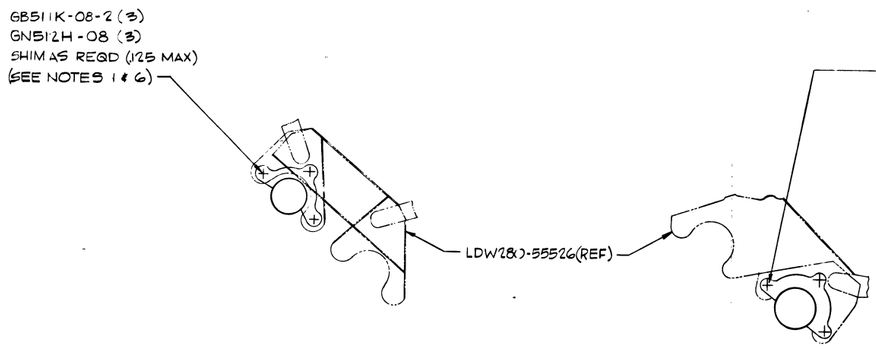
SECTION AA-AA (ZONE 17A)
SCALE: FULL
ROTATED 90° CW (REF)

02/02 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK
SIZE J | CODE IDENT NO. 26512 | LDW200-55529 | A
SCALE 1/6 ± | NOTED | SHEET 5.00

DRAWING SIZE 34 x 56
PRINTING INFO ONLY
FULL SIZE SHEET AREA = 56 x 196 = 24.5 SQ FT
½ SIZE SHEET AREA (¼ OF FULL) = 6.5 SQ FT
PRINT THIS LINE

01 04 NAS 9-1100

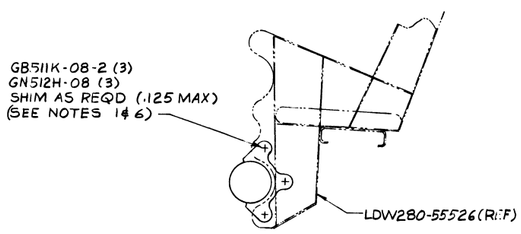


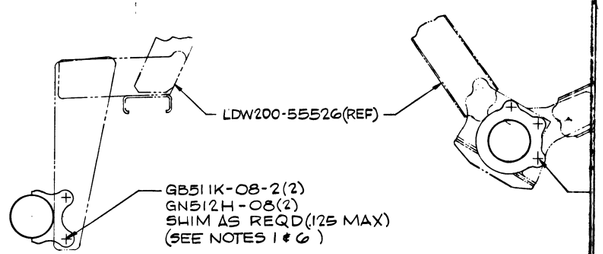
SECTION M-M (ZONE 28C)
SCALE : 1/2

SECTION K-K (ZONE 26A)
SCALE : 1/2

X196.000(REF)
-226 DSH-8

SECTION N-N (
SCALE : 1/2

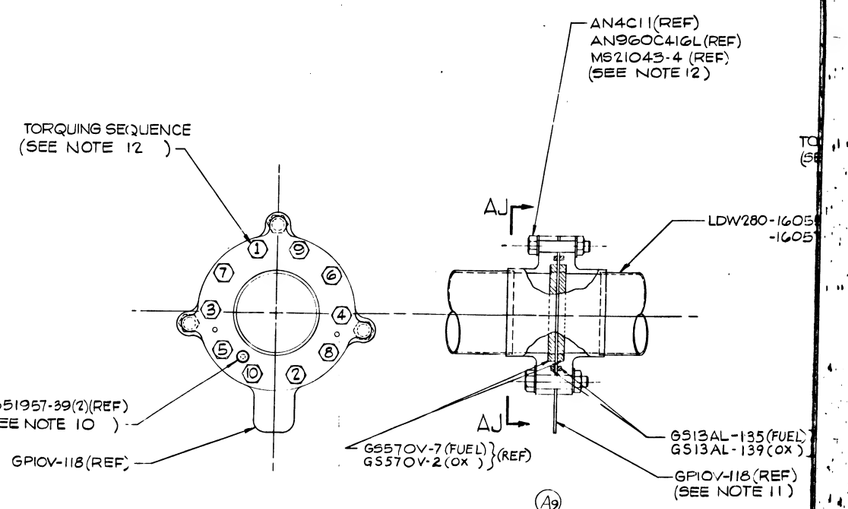




SECTION CD-CD (ZONE 27A)
SCALE = 1/2
(TYP 2 PLACES) (A9)

SECTION H-H (ZONE 28C)
SCALE : 1/2 (A9)

SECTION T-T (Z
SCALE : 1/2

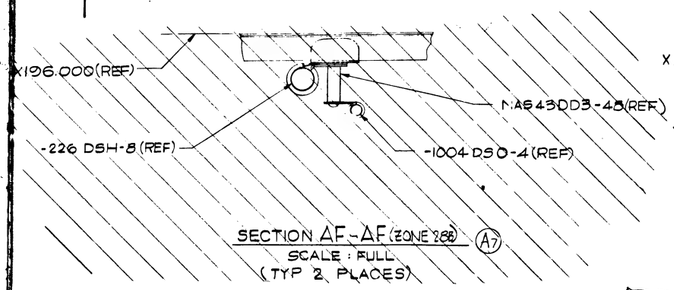


SECTION AJ-AJ

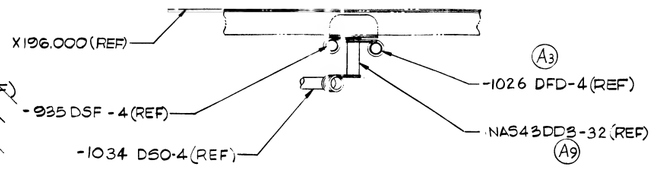
(A9)
DETAIL 'G' (ZONE 28A)
SCALE : NONE
(TYP 2 PLACES)

CODE IDENT NO.	DWG NO.	SHEET
26512	LDW200-55529	6

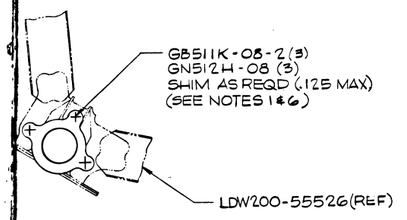
FRAME 1 FRAME 2

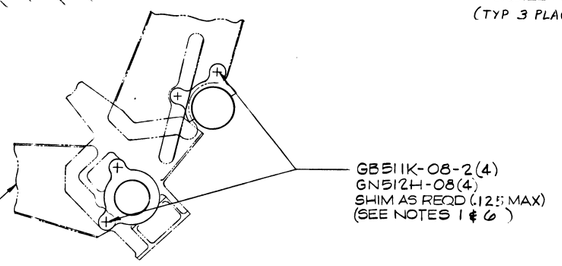


SECTION AF-AF (ZONE 26B) (A7)
SCALE : FULL
(TYP 2 PLACES)



SECTION AG-AG (ZONE 28C)
SCALE : FULL
(TYP 3 PLACES) (A9)





SECTION J-J (ZONE 27B)
SCALE : 1/2

SECTION N-N (ZONE 27C)
SCALE : 1/2

REMOVE -
LDW280-25608-7
-135 DFD-4
& FUEL DISCONNECT

REMOVE - LDW280-25608-7
ADD -LDW280-16055-9

LSC269-204-4

LSC269-200-4

REMOVE-391DSO-4
ADD -1004 DSO-4

LSC269-234-9

LSC269-

(A1)

-990 DSO-8

GT17D-8K
GR18A-8G4G
GS13AJ-508
GS570J-8
GS570J-4
AN924-8K
AN960C1216L(2)
AN929-4K
AN929-8K

LSC2

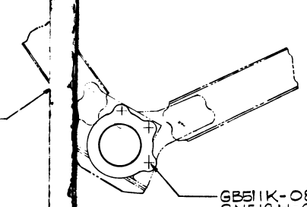
SEE DETAIL

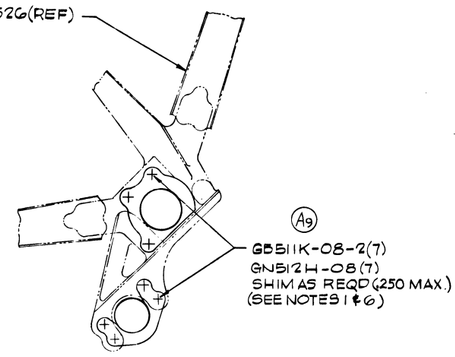
-987 DSO-8
LSC269-248-1
-981 DSO-6
LSC269-113-6
(A9)
-Z

LDW280-60900(REF)

NAS43DD3-32(2)
(A

LSC269-20





SECTION T-T (ZONE 25B)
SCALE : 1/2

SECTION L-L (ZONE 28B)
SCALE : 1/2

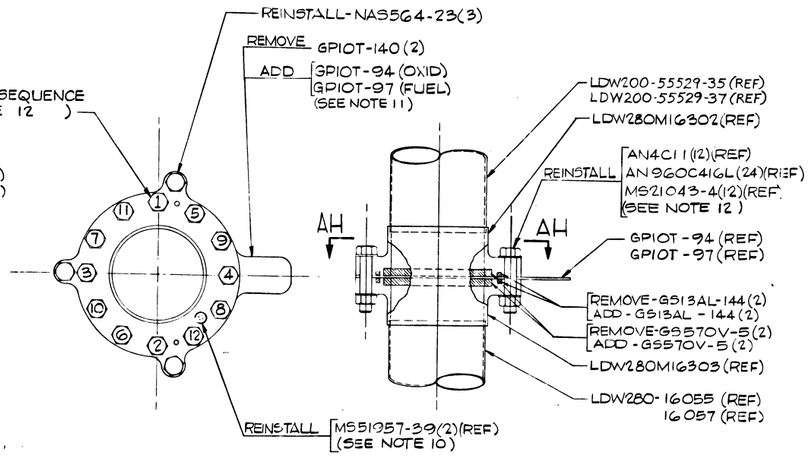
REMOVE-343DSH-4
ON-1 ADD -275DSH-4

LSC269-224-4(3)

-713 DFD-4(REF)
-709 DFD-4(REF)
-716 DFD-4(REF)

REMOVE-792 -793DSF-16
ADD -992 DSF-16

USE EXISTING HARDWARE
ADD-AN929-16K



SECTION AH-AH

DETAIL 'F' (ZONE 28C)
SCALE : NONE
(TYP 2 PLACES)

02104 NAS 9-1100

CODE IDENT NO 26512 | DWG NO LDW200-55529 | SHEET 6

28 27 26 25

-Y

GT17D-8K
GR18A-8G4G
GS13AJ-508
GS570J-4
GS570J-8
AN924-8K
AN960C1216L(2)
AN929-4K
AN929-8K
-991 DSF-8
LSC269-234-9
LSC269-248-1
-986D3F-8
-984 DSF-6
LDW280-60900(REF)
LSC269-113-6 (A9)
-1005 DSF-4
-1030 DSF-4 (REF)
LSC 229-228-4
-1031 DSF-4 (A3)
-1033 DSO-4 (REF)
LSC 269-224-4(3)
-1028 DSO-4
LSC269-206-24
1025 DFD-4 (A1)
LSC269-200-4
LSC269-200-4 (A1)
-1032 DSO-4
NAS43DD3-32
N (ZONE 30)
M (ZONE 35C)
P (SH 5, ZONE 18A) (A3)
CA CA (ZONE 24D)
-1027 DFD-4 (A1)
REMOVE-863DSF-4
ADD -1061DSF-4
REUSE EXISTING LINE (REF)
-1060 DSF-4
GU500A-4C (A9)
LSC269-225-4
LSC269-228-4
SEE DETAIL 'F' (ZONE 31A)
AG AG (ZONE 30D)
REINSTALL EXISTING PRESS. XDUCER (REF) (GQ3611P)
-982DSO-6
LSC269-113-6
LSC269-248-1
-1036 DSF-4 (A3)
-495 DSF-4 (REF)
-147 DSF-4 (REF)
NAS43DD3-32 (A9)
-1058 DSH-8 (REF) (A6)
LDW200-55529-37 (REF) (A2)
R (SH 5, ZONE 16A)
S (SH 5, ZONE 19A)
H H (ZONE 34B)
REMOVE -149 DFD-4
ADD -1026DFD-4
REMOVE -146 DSF-4
ADD -935DSF-4
-1034 DSO-4 (A3)
NAS43DD3-48
LSC269-200-4
LSC269-252-3
LDW200-55529-35 (REF)
LSC269-225-4
GU500A-4C
REMOVE-863DSO-4
ADD -1062DSO-4
REINSTALL EXISTING PRESS. XDUCER (REF) (GQ4111P)
LDW280-60900(REF)
LSC269-206-28
SEE DETAIL 'F' (ZONE 31A) (A9)
NAS43DD3-64
-390DSO-4 (REF)
-368 DSO-4 (REF)
-1059 DSF-4
REUSE EXISTING LINE (REF)
NAS43DD3-32(2) (A9)
T T (ZONE 32B)
L L (ZONE 31B)
-706DSH-8 (REF)
J (ZONE 31C)
P
-911DFD-6 (REF)
-910DFD-6 (REF)
-909DFD-6 (REF)
-908DFD-6 (REF)
SEE DETAIL 'G' (ZONE 33A)
LSC269-206-16
REMOVE-LDW280-25608
ADD -LDW280-16055
REMOVE-600DFD-6
-607DFD-6
ADD -1063DFD-6 (A9)
REMOVE-601 DFD-6
-606DFD-6
ADD -1064DFD-6
K K (ZONE 33C)
CD CD CD CD (ZONE 35B) (ZONE 35B) (A9)
REMOVE - LDW280-25608
-136 DOD-4
OXID DISCONNECT
LSC 269-224-4 (A3)
USE EXISTING HARDWARE
ADD-AN929-16K
REMOVE-794,-795 DSO-16
ADD -993 DSO-16
LSC269-504-6(4)
LSC269-206-24
REMOVE -602DFD-6
-605DFD-6
ADD -1065DFD-6 (A9)
REMOVE -603DFD-6
-604DFD-6
ADD -1066DFD-6
LSC269-206-16
-1037 DSF-4 (A3)
AN783-6K (2)
AN833-6K (2)
AN6289-6K (2)
MS9058-6 (2)
GS13AJ-504(2)
AN924-6K (2)
AN960C916L(4) (A9)
FOR CONTINUATION - SEE DETAIL 'E' (ZONE 22A)
LDW280-60900(REF)
+Y

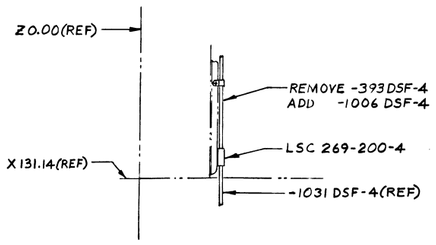
VIEW LOOKING
LDW200-5552

SHEET 6

CODE IDENT NO 26512 DWG NO LDW200-55529 SHEET 6

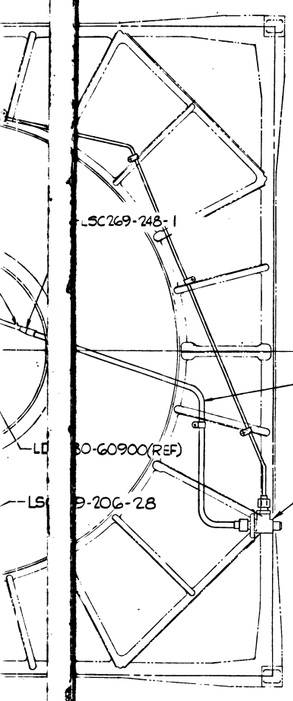
FRAME 2 FRAME 3 28 27 26 25 FRAME 3 FRAME 4

04/04 NAS 9-1100



(A3) VIEW CA~CA (ZONE 26C)
SCALE: 1/4

-10 50-4

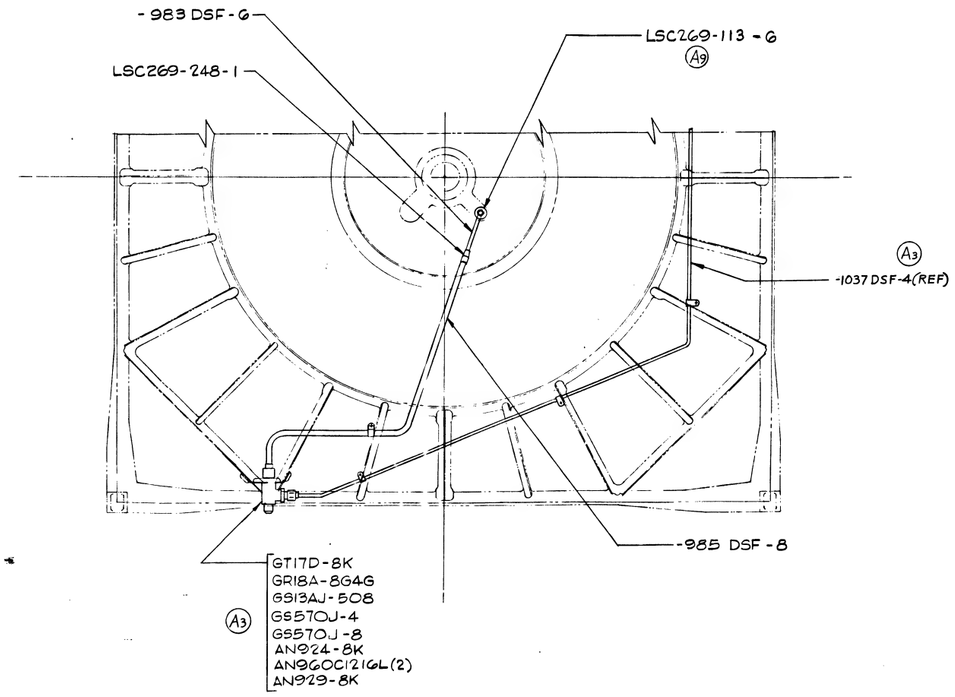


AIL 'G' (ZONE 33A)

REMO - LDW280-25608-5
ADD - LDW280-16057-9

MOVE DW280-25608-5
4 8G DOD-4
XID DISCONNECT
HARDV E
30-16
6

W LOOKING DOWN
L W200-55529-3 INSTL



DETAIL 'E' (ZONE 27A)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I. NEW YORK
SIZE K | CODE IDENT NO. 26512 | LDW200-55529 A
SCALE 1/4 & NOTED | SHEET 6.00

D C B A
LDW200-55529 A
LDW200-55529 A

SIZE SCALES FOR PRINTING INFO ONLY
FULL SIZE SHEET AREA 1 4 2 1/2 IN = 40.5 SQ IN
½ SIZE SHEET AREA ½ OF FULL = 10.5 SQ IN

CODE IDENT. NO. 26512	TYPE LDW200-555[illegible]	SIZE	SHEET 2

NAS 9-1100

10 7 X 04

(41) SUPPORT

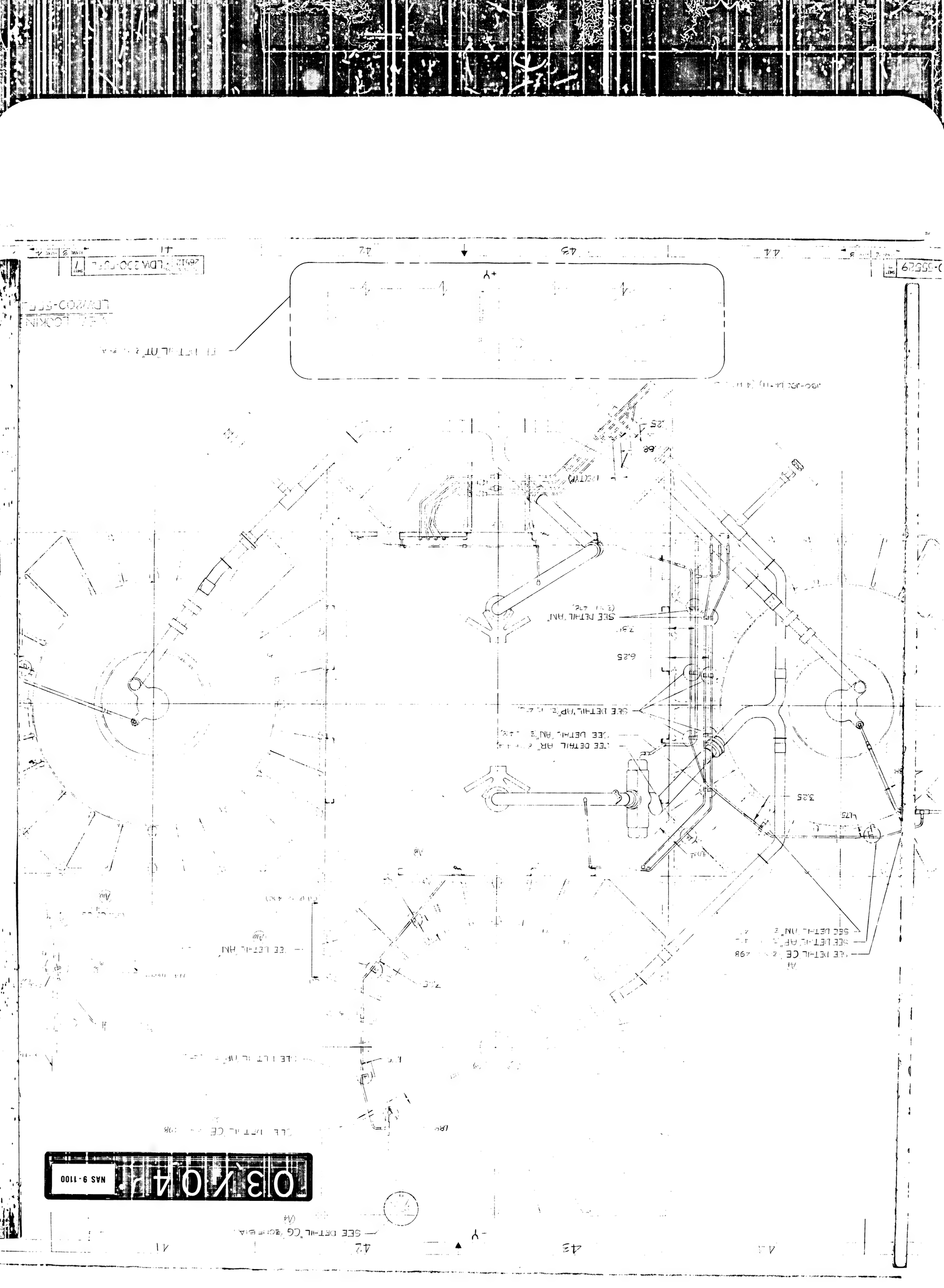
DETAIL "AP"
(6 PLACES)

SEE DETAIL "CG"

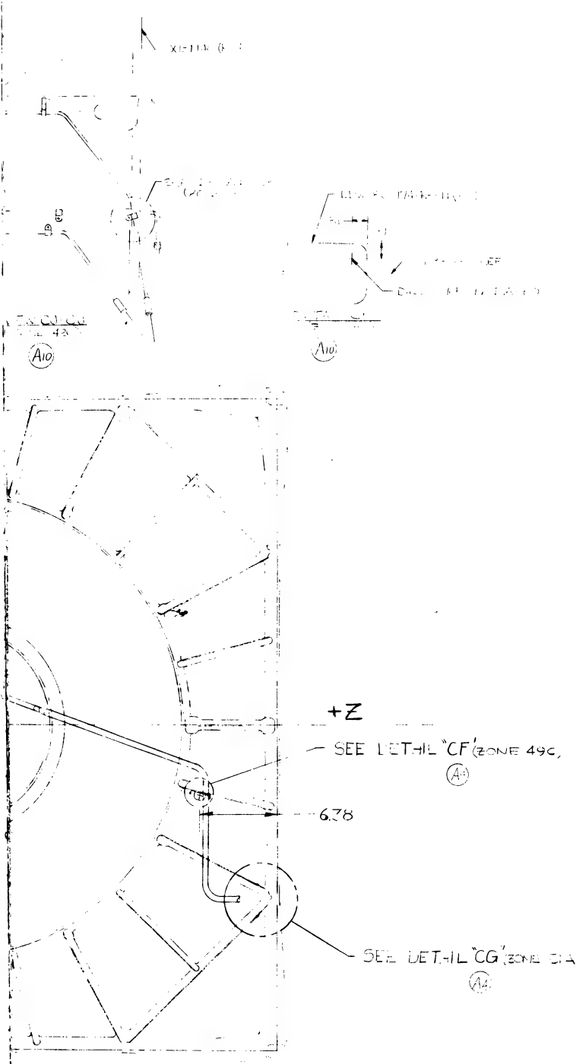
DETAIL "AN"
(6 PLACES)

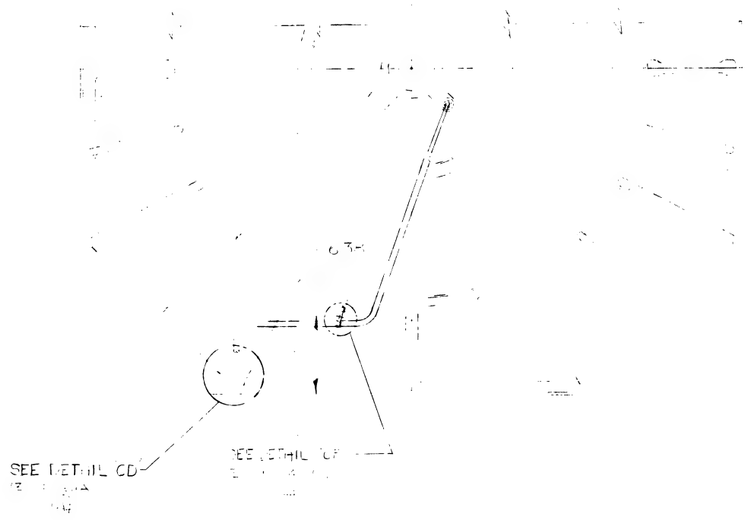
DETAIL "AR"

02/04 NAS 9-1100


SEE DETAIL "CG"
SEE DETAIL "AP"
SEE DETAIL "AR"
SEE DETAIL "AN"
SEE DETAIL "AF"
SEE DETAIL "AN"
SEE DETAIL "CE"
6.25
3.25
7.5"
NAS 9-1100

04/04 NAS 9-1100





E 35A)

VIEW LOOKING DOWN
LDW200-5552? -11 INSTL

DETAIL "AT" (ZONE 41A)

-5552? SHEET 7

FRAME 2 FROM A

48 39 30

D C B A

LDW200-5552? A

K 26512 LDW200 T5527 A

SCALE 4.8 INCHES SHEET 1

1340

011703 NAS 9-1100

60 59 58

D C B A

BT

BT(ZONE 59D)

VIEW BR BT
(ZONE 59B)

SECTION BT-ET
(ZONE 60A)

BR(ZONE 58X

BR(ZONE 58A)

BP

BD(ZONE 59A)

ET ET
(ZONE 59B)

ET

VIEW ET ET
(ZONE 59B)

60 59 58

012403 NAS 9-1100

58 57 56 55

SEE DETAIL "BK" (ZONE 67C)

DETAIL BN (ZONE 57)

SEE DETAIL "BJ" (ZONE 67C)

SEE DETAIL "BP" (ZONE 59A)

+Y

.31

SEE DETAIL "BW" (ZONE 57D)

DRILL #11 (.190-.196)

2.50

(A10)

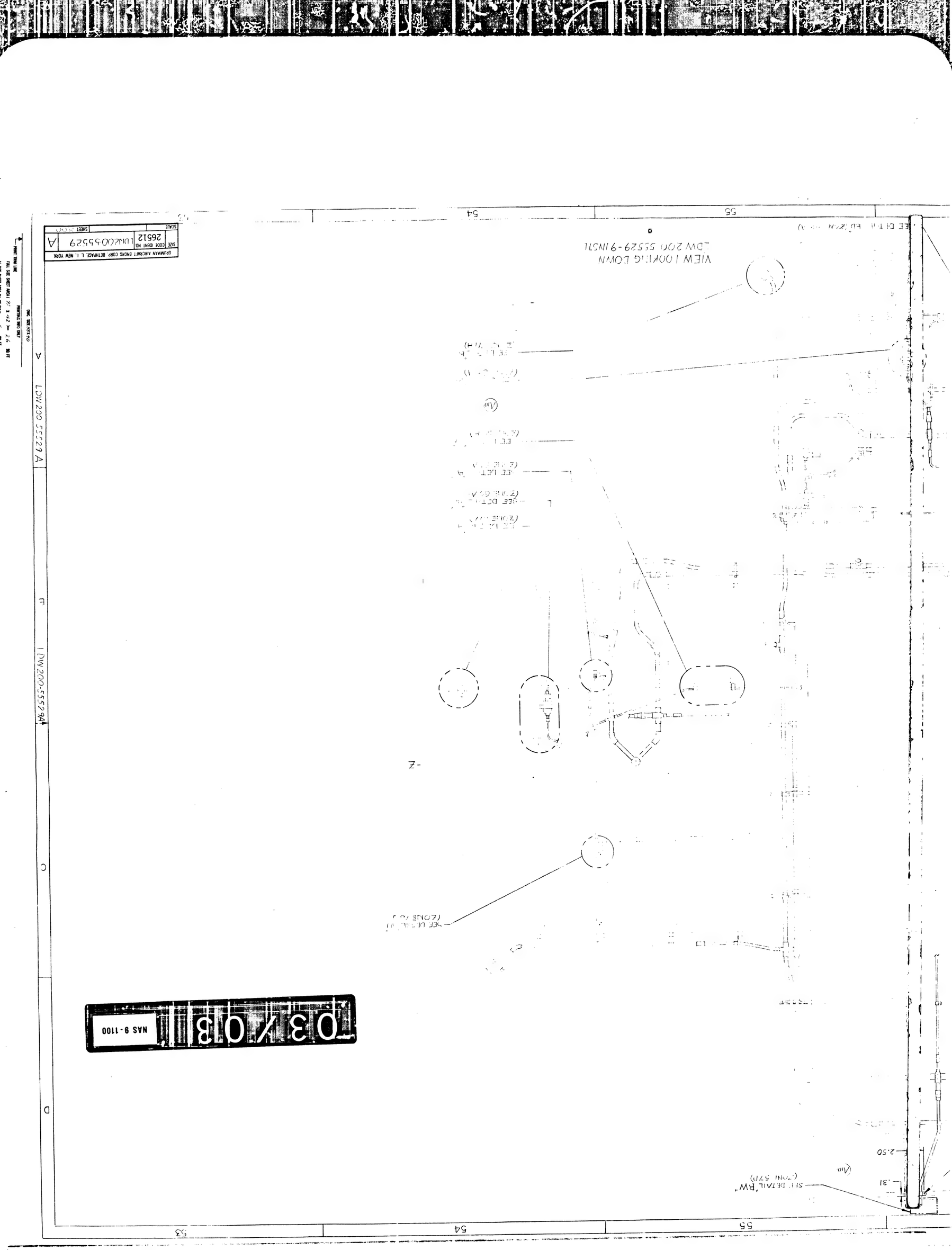
SEE DETAIL "BS" (ZONE 59A)

SEE DETAIL "BT" (ZONE 59A)

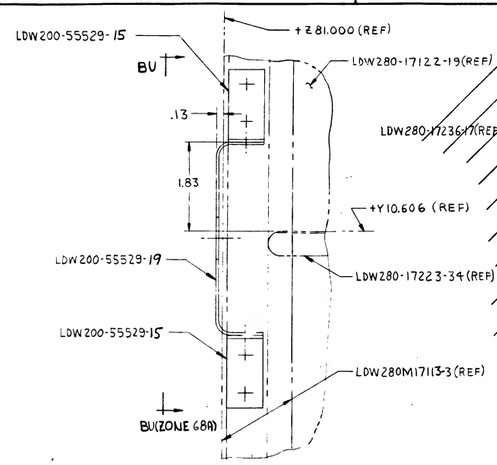
SEE DETAIL "BV" (ZONE 59A)

-Y

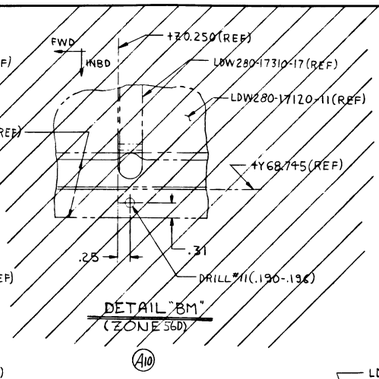
58 57 56 55



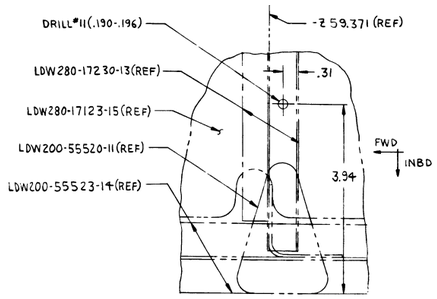
NAS 9-1100
03/03



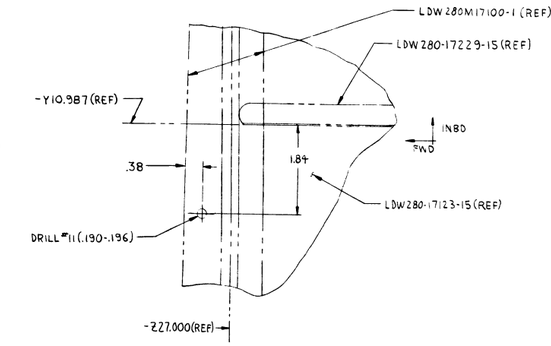
DETAIL "BJ"
(ZONE 58C)



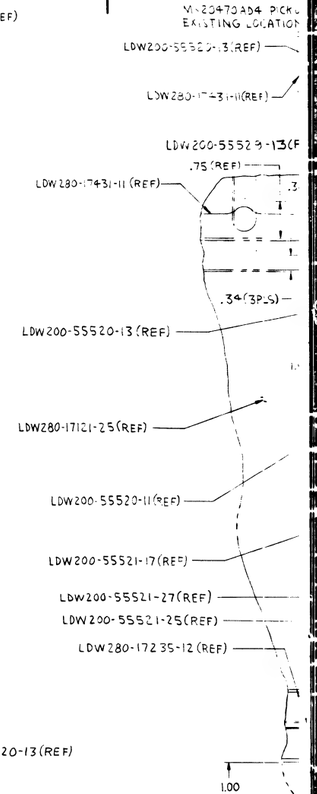
DETAIL "BM"
(ZONE 56D)
A10

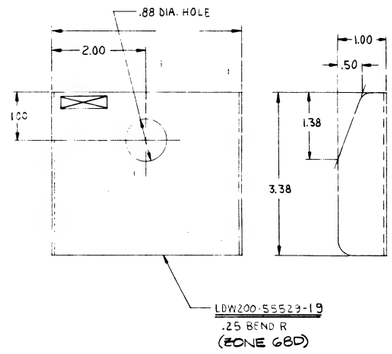


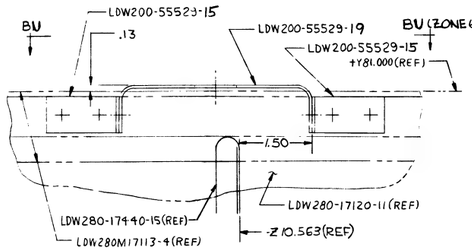
DETAIL "AU"
(ZONE 54C)



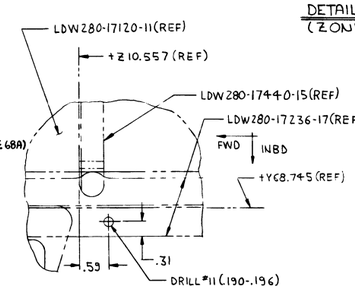
DETAIL "BA"
(ZONE 54A)



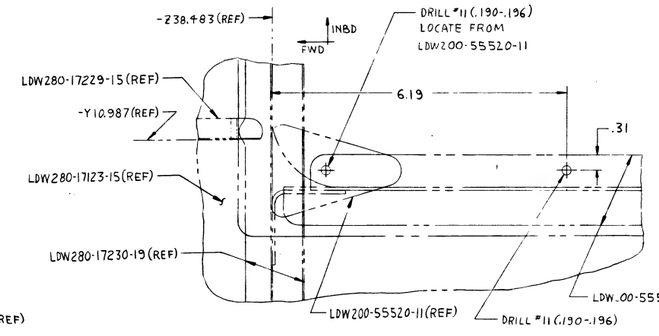




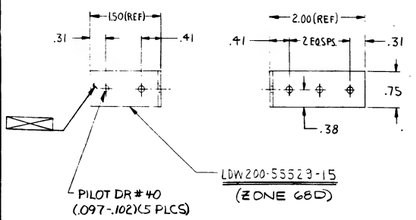
DETAIL "BK"
(ZONE 57D)
A9

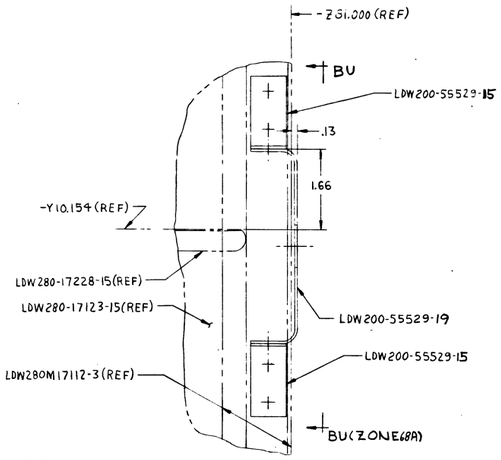


DETAIL "BL"
(ZONE 57D)

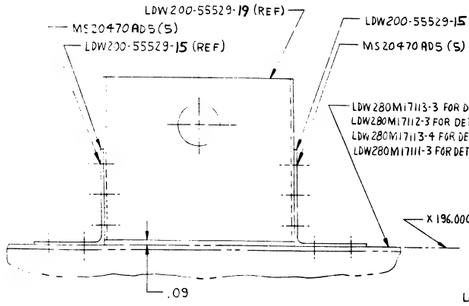


DETAIL "AZ"
(ZONE 54A)

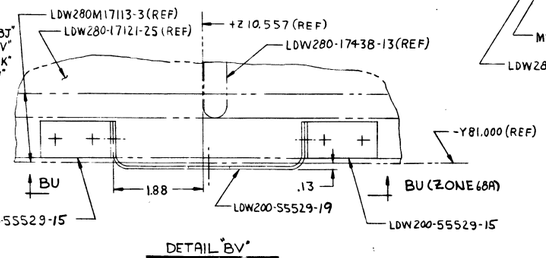




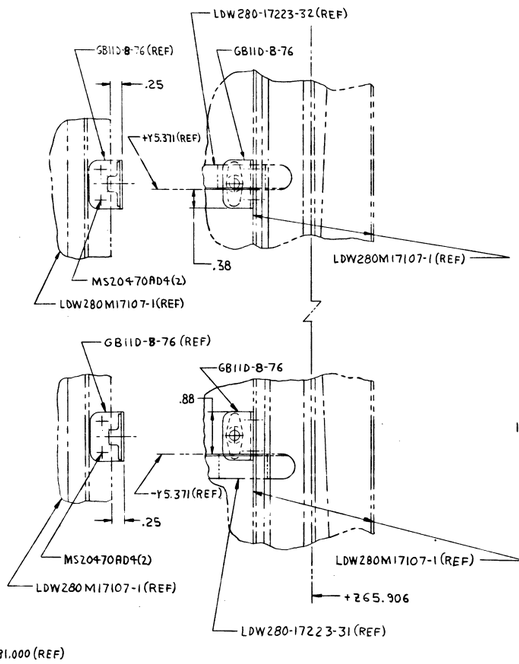
DETAIL "AV"
(ZONE 54B)



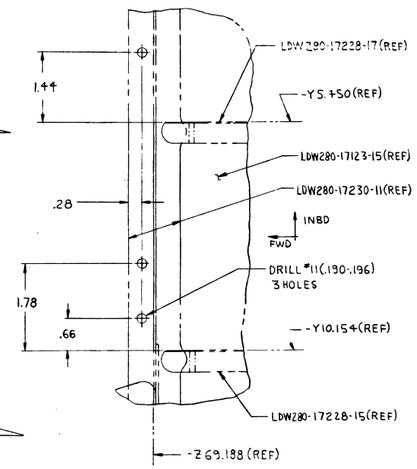
VIEW BU-BU (FOR DETAIL SHOWN)
4 PLACES (ZONE 67A)



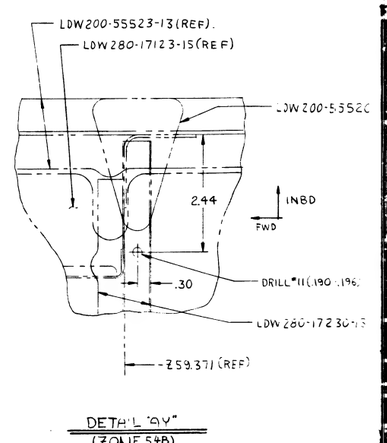
DETAIL "BV"
(ZONE 57A)



DETAIL "BH"
(ZONE 57C)

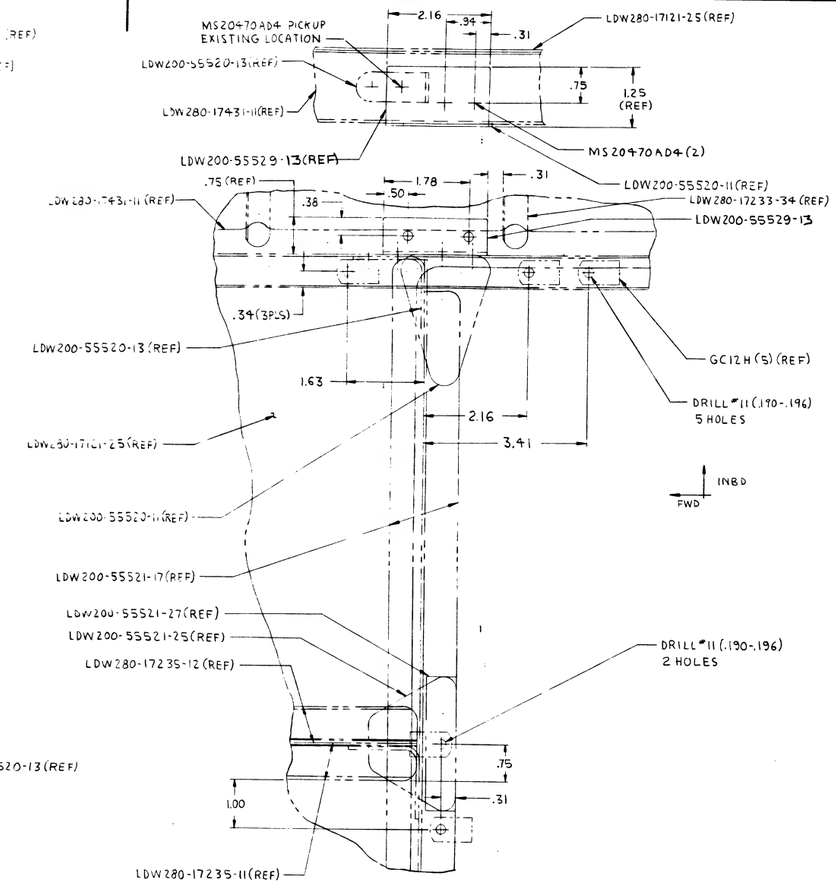


DETAIL "AW"
(ZONE 54B)

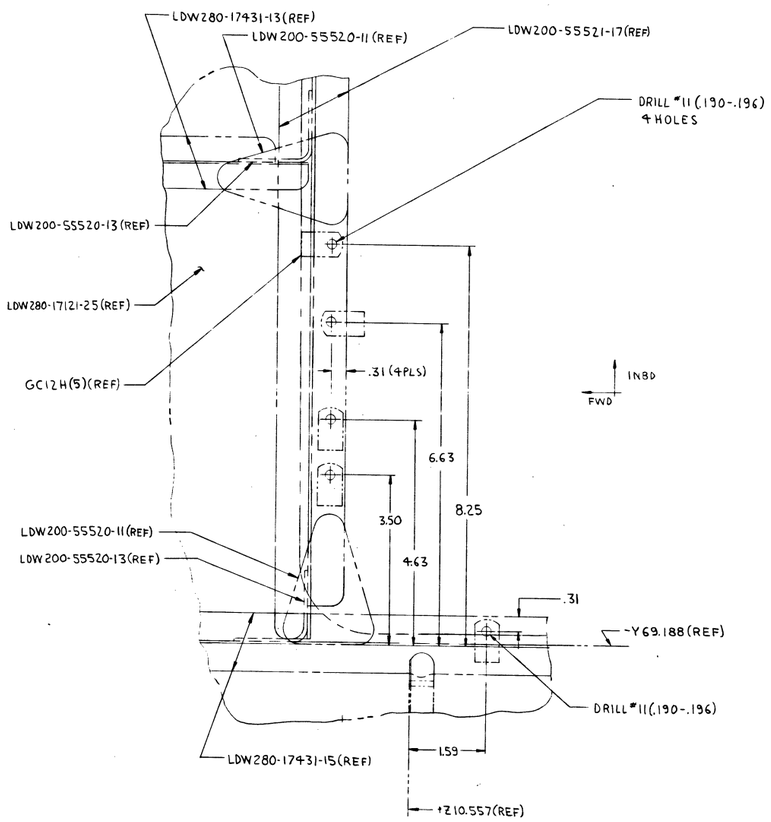


DETAIL "AV"
(ZONE 54B)

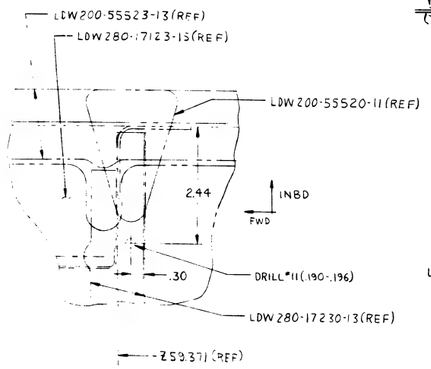
REVISIONS						
ZONE	LTR	DESCRIPTION	EFF CODE	MODEL	DATE	APPROVED



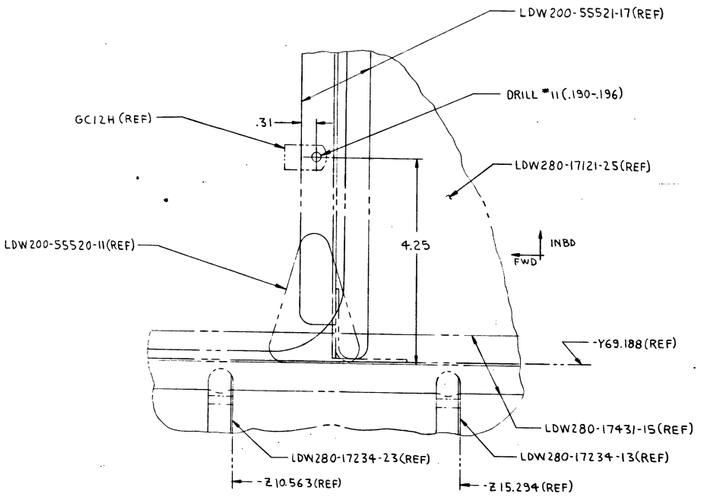
DETAIL "BE"
(ZONE 57D)



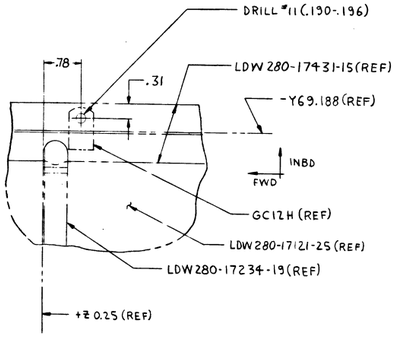
DETAIL "BE"
(ZONE 57A)



DETAIL "EY"
(ZONE 54B)



DETAIL BB
(ZONE 54A)



DETAIL "BD"
(ZONE 56A)

02702

NAS 9-1100

FOR PARTS LIST, USAGE DATA, AND DWG SH STATUS, SEE DOCUMENT SAME NUMBER PREFIXED PL

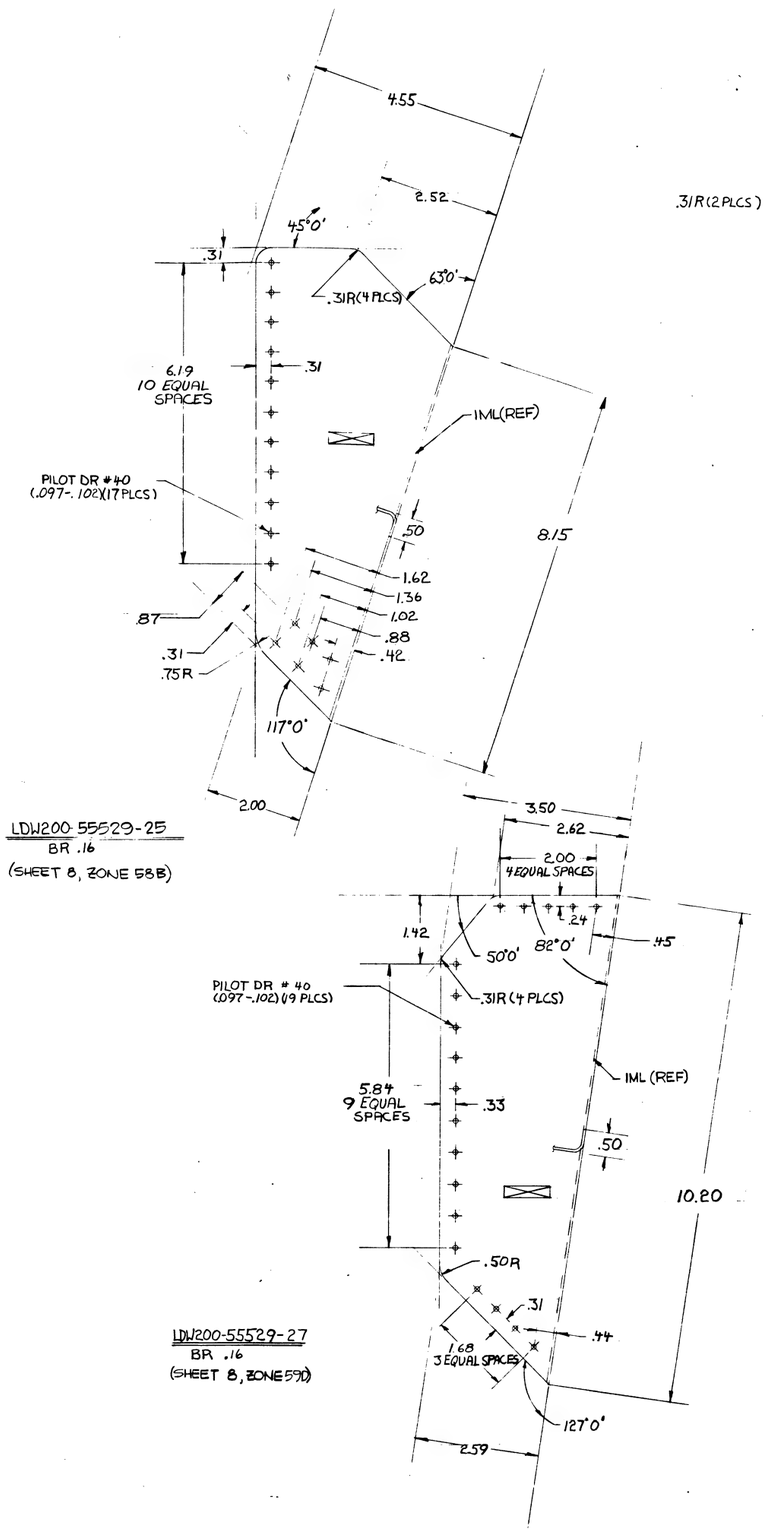
UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES			CONTRACT NO.	GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714
LINEAR TOL	XX	± .03	DRAWN BY	
	XXX	± .010	LAYOUT BY	
ANGULAR TOL		± 0°30'	CHECKED BY	
TOL ON LOFTED DELINEATIONS IS			GR LEADER	
			REL GROUP	
			PROJ ENGR	
			GOVT APPD	

SIZE	CODE IDENT NO.		
J	26512	LDW200-55529	A
SCALE FULL		SHEET 9 OF	

DISTR LIST #

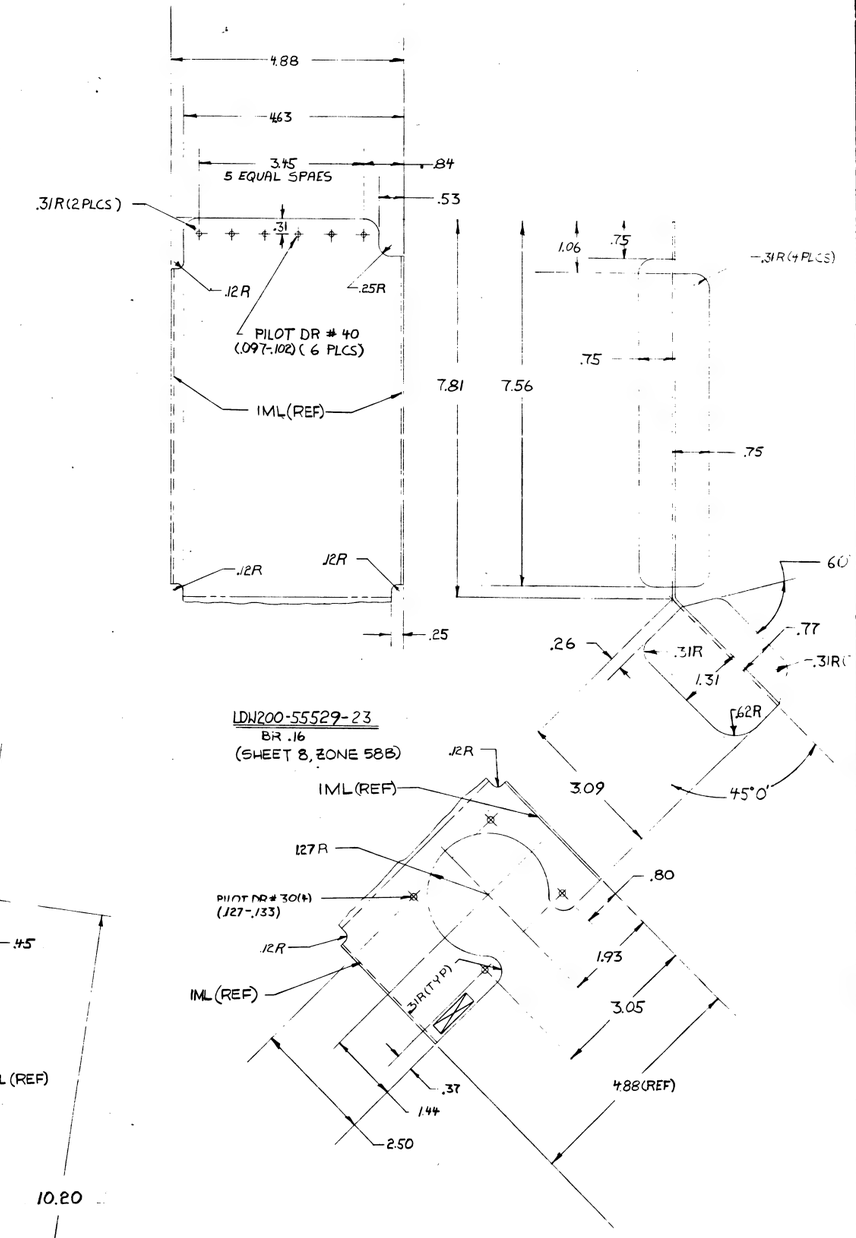
LDW200-55529 REV SHEET 9

PRINTING INFO ONLY
THIS SIZE IS X IN
FULL SIZE SHEET AREA ON X IN = 24.5 SQ FT
½ SIZE SHEET AREA (½ OF FULL) = 6.5 SQ FT



LDW200-55529-25
BR .16
(SHEET 8, ZONE 58B)

LDW200-55529-27
BR .16
(SHEET 8, ZONE 59D)



LDW200-55529-23
BR .16
(SHEET 8, ZONE 58B)

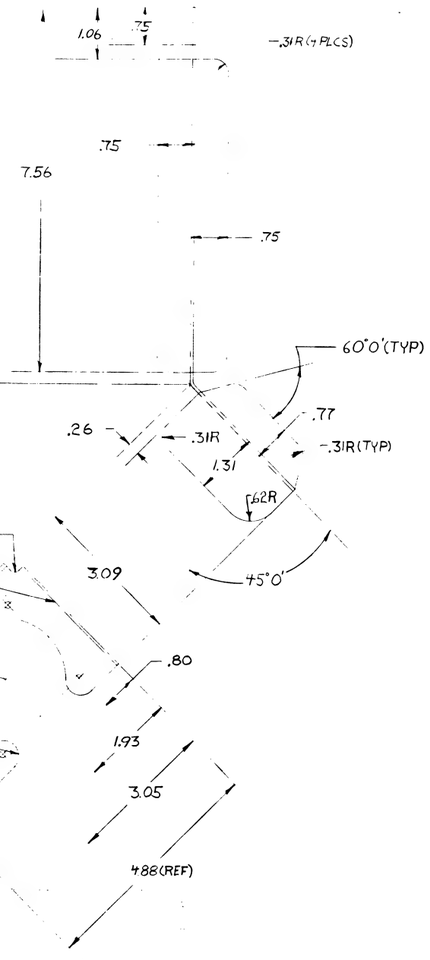
01/02

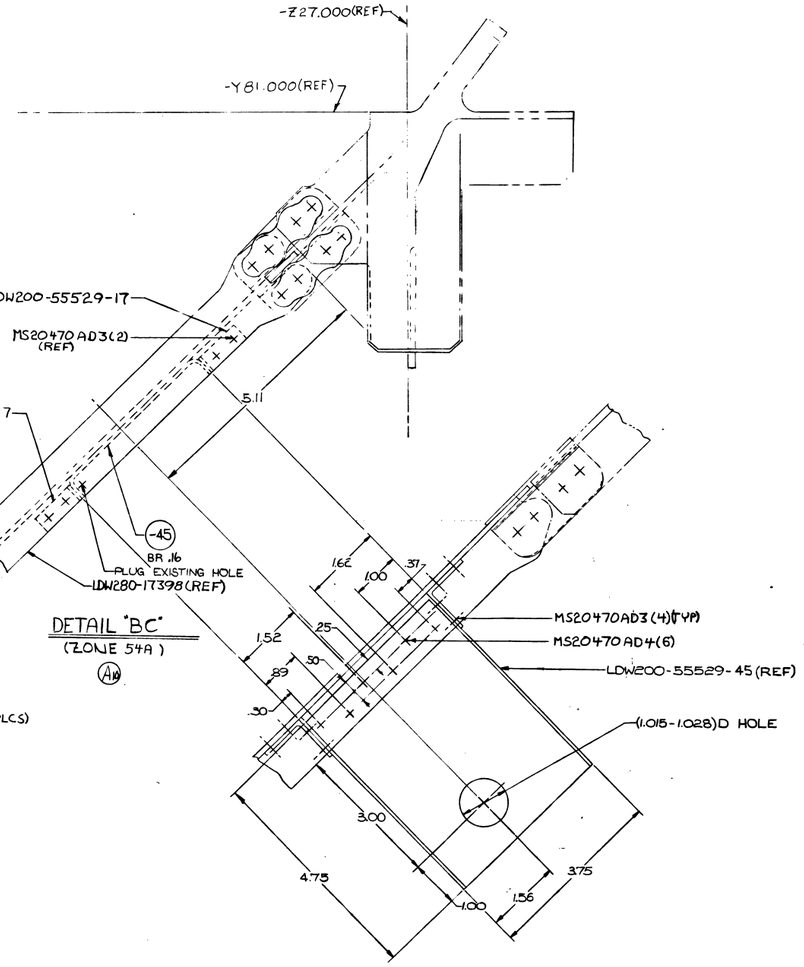
NAS 9-1100

CODE IDENT NO	DWG NO	REV	SHEET
26512	LDW200-55529		10

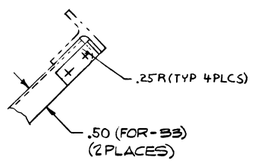
1 ← FRAME FRAME → 2

REVISIONS						
ZONE	LTR	DESCRIPTION	CPP CODE	MODEL	DATE	APPROVED





DETAIL "BC"
(ZONE 54A)
(AH)



92702 NAS 9-1100

FOR PARTS LIST, USAGE DATA, AND DWG SH STATUS, SEE DOCUMENT SAME NUMBER PREFIXED PL

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES			CONTRACT NO.	GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714		
LINEAR TOL	XX	± .01	DRAWN BY			
	XXX	.010	LAYOUT BY			
ANGULAR TOL		± 0°30'	CHECKED BY			
TOL ON LOFTED DIMENSIONS IS			GR LEADER			
			REL GROUP			
			PROJ ENGR			
			GOVT APPD			

SIZE	CODE IDENT NO		
J	26512	LDW200-55529	A

SCALE FULL | SHEET 10 OF

DISTR. LIST #

LDW200-55529 A

PRINTING INFO ONLY
ENG. SIZE 34 X 44
FULL SIZE SHEET AREA ON 8 MIL = 24.5 SQ FT
½ SIZE SHEET AREA 1/4 OF FULL = 6.5 SQ FT

LDW200-55529 | REV | SHEET 10

NOTES:

1. SHIM AS REQUIRED USING AL ALLOY QQ-A-250/4, 2024-T3, FINISH# 76.
2. TUBE NUMBERS ARE DASH NUMBERS OF DRAWING LDW280-17388.
3. ENGINE OVERBOARD DRAIN LINES SHALL BE INSTALLED WITH A DOWNWARD PITCH AND SHALL BE FREE OF ENTRAPMENTS.
4. SELECTION AND INSTALLATION OF LINE CLAMPS TO BE IN ACCORDANCE WITH LPC 280-022, EXCEPT AS NOTED.
5. COMMERCIAL PARTS, SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING.
6. INSTALL FASTENERS PER LSP-14-15306.
7. CONDUCT A 50 PSIG GASIOUS LEAK CHECK TO VERIFY INTEGRITY OF THE PROPULSION SYSTEM AS FOLLOWS:
   a) INSTALL A 0-100 PSI GAGE AND SHUT-OFF VALVE UPSTREAM OF THE OXIDIZER FILL VENT DISCONNECT COUPLING AND CONNECT TO A HELIUM SUPPLY SOURCE.
   b) OPEN SUPPLY VALVE UNTIL PRESSURE IN OXIDIZER SIDE OF SYSTEM READS 50 PSI. CLOSE SHUT-OFF VALVE AND MONITOR GAGE TO ASSURE THAT THERE IS NO PRESSURE DECAY FOR A PERIOD OF 30 MINUTES.
   c) REPEAT STEPS a AND b ON THE FUEL SIDE OF THE HELIUM PRESSURIZATION SYSTEM.
8. GAMAH CONNECTIONS PER LSP-14-17402.
9. INDUCTION BRAZE LSC269-200 & 300 SERIES FITTINGS PER LSP-14-6303.
10. REMOVE MS51957-39 SCREW PRIOR TO LEAK CHECK OF PRIMARY SEAL. AFTER LEAK CHECK HAS BEEN PERFORMED, REINSTALL SCREWS PER LPC280-047 & TORQUE TO 15-20 IN. POUNDS.
11. PROCEDURE FOR INSTALLING ORIFICE PLATES:
    a) LOOSEN SUPPORT CLAMP BETWEEN ORIFICE AND ENGINE.
    b) REMOVE THE BOLTS AND ASSOCIATED HARDWARE, SECURING THE ORIFICE PLATE AND MATING FLANGES.
    c) SPREAD FLANGE APART (APPROX. 1/8 INCH) BY ALTERNATELY ROTATING THE THREE SPREADER BOLTS. (NAS 564-23)
    NOTE : IF IT IS NECESSARY TO REMOVE SEALS, FLANGES MUST BE SPREAD FURTHER APART TO ASSIST IN REMOVAL AND REPLACEMENT.

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW200-55529	
SCALE —		SHEET 3.00	

ENG 73.1 6-64

01

NAS 9-1100

NOTES: (CONTINUED)

11. d) GRASP ORIFICE PLATE TAB AND LIFT APPROXIMATELY 1/16 INCH TO FREE PLATE FROM INDEX PINS. CAREFULLY REMOVE ORIFICE PLATE.
    e) INSTALL NEW ORIFICE PLATE (DASH NUMBER TO BE DETERMINED AT COLD FLOW AND ENGINEERING NOTIFIED OF FINAL CONFIGURATION.) BY REVERSING ABOVE PROCEDURE. (STEPS a THRU d). WHEN FINISHED, REMOVE THE THREE SPREADER BOLTS AND DISCARD.
    f) RETORQUE THE RETAINING BOLTS (PER NOTE 12).
12. PROCEDURE FOR TORQUING ORIFICE FLANGE BOLTS:
    a) USING TORQUING SEQUENCE SHOWN IN SECTION AH-AH AND AJ-AJ, WITH PHYSICAL LOCATION OF FIRST BOLT OPTIONAL, TORQUE INITIALLY TO 15-20 IN. POUNDS AND REPEAT SEQUENCE UNTIL BOLTS DO NOT TURN WHEN 15-20 IN. POUNDS OF TORQUE IS APPLIED.
    b) REPEAT STEP "a" BY APPLYING 35-40 IN. POUNDS.
    c) REPEAT STEP "a" BY APPLYING 55-60 IN. POUNDS.
    d) REPEAT STEP "a" BY APPLYING 75-80 IN. POUNDS. FOR FINAL TORQUE
    e) AFTER 48 HOURS, REPEAT STEP "d".
    f) AFTER AN ADDITIONAL 48 HOURS, REPEAT STEP "d" FOR FINAL TORQUING OPERATION
13. ADD LUBRICANT PER LSM-14-6004 TO ALL "AN" BULKHEAD FITTING THREADS.
14. INSTALL LINE ASSEMBLIES LDW280-16055-9 AND LDW280-16057-9 TO TANK BELLOWS PER LEI280-014.
15. EPOXY USING EPON 934A PER LSP-14-25000, CURE RANGE OPTIONAL.
16. LDW280P16247-11 TO BE INSTALLED AFTER COLD FLOW II, .03 MAXIUM GAP ALLOWABLE BETWEEN PLASTIC AND/OR TUBES BEFORE APPLYING EPOXY.
17. PROPELLANT BELLOWS ARE TO BE INSPECTED PER LEI280-022.
18. TUBING INSTALLATIONS SHALL BE REJECTED IF INDIVIDUAL TUBES ARE DAMAGED BEYOND THE FOLLOWING LIMITATIONS:
    a) FOR FLUID SYSTEMS WITH A WORKING PRESSURES GREATER THAN 500 PSI THERE SHALL BE NO WRINKLES OR KINKS DEEPER THAN ONE (1) PERCENT OF THE TUBE O.D. AND NO SCRATCHES DEEPER THAN FIVE (5) PERCENT OF THE NOMINAL WALL THICKNESS. SCRATCHES WITHIN THESE TOLERANCES SHALL BE BLENDED OUT. (REF: LSM 14-17400)

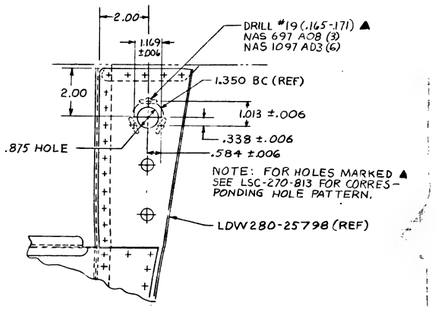
GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW200-55529	
SCALE —		SHEET 3.01	

ENG 72.1 6-64

01

NAS 9-1100

IN F/D & B/M ON-11 INSTL

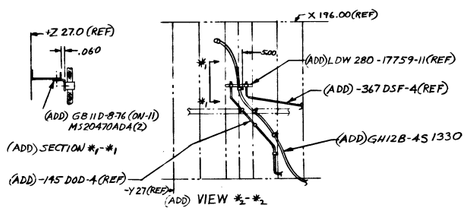


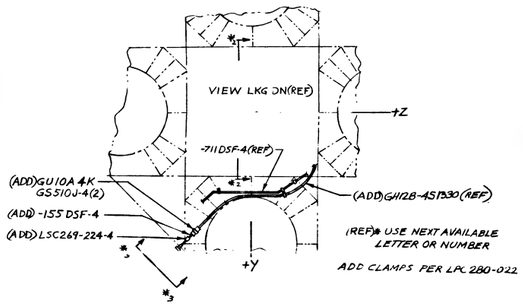
(ADD) VIEW *3 - *3

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LDW200-53329 | ED NO. B1
CONTROL INFO NO. LDW280 C 0412

IN F/D & B/M ON-3 INSTL





LFM

INITIAL SPEC ISSUE | CL 1 ENGRG CHG | CL 2 ENGRG CHG | ✓ LCD 5430 PKG 5

REASON FOR ED: ADDITION OF ENGINE PRE-VALVE TEST PROVISIONS

DESCRIPTION OF ED: FOR DESCRIPTION SEE FIELD OF E.O. ❶

EFFECTIVITY: LFM 583 | LTA-5/K(CV)

CHANGE NO. ✓ | DISPOSITION OF PARTS ✓ | APPROVED BY DPF 5-4-70 | DATE 5-4-70 | VDI | SUPPORT | RELEASE GROUP | CHART LEVELS | STRESS SHEETS | LOADING CYCLES | FINAL CHANGE

PROJECT C | TITLE: LINES INSTL-D/A PROP SYS Rework of LDW280-25608 | DRAWING NO. LDW200-53529 | ED NO. B1

ISSUED BY: L. BALDASSIN X 87222 CDR 5-4-70 | SECTION VDI EQUIP LINES | GROUP NO. 332 | PL 25

❶ DESCRIPTION OF ED
ON -3 INSTL ADDED GH12B-4S1330 HOSE, GU10AAK, GS510J-4(2), LDW 280-17388-155 DSF-4, LSC 269-224-4. F VIEW *2 - *2.
ON -11 INSTL ADDED SECTION *1 - *1. VIEW *3 - *3. GB11D-8-76 NAS 697 A08(3) NAS 1097 AD3(6).

10-1 NAS 9-1100

GRUMMAN AEROSPACE CORPORATION
CODE IDENT NO. 26512
ENG 32.1 REV 3-65 **ENGINEERING ORDER**

DWG. NO. LDW200-55529 | EO NO. B2
CONTROL INFO NO. LDW280 C0901

ON -3 INSTL IN B/M 5 IN SECTION AH-AH ZONE 31B:
REMOVE GP10T-94 (OXID), GP10T-97 (FUEL).
ADD GP10V-125 (OXID), GP10V-12 (FUEL).

LFM

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD 3994M PKG 5 PAGE 12

REASON FOR EO: FINAL BRANCH LINE ORIFICES

DESCRIPTION OF EO: ON SH 2.05 & SH 6.00 ZONE 31B SECTION AH-AH: REMOVED GP10T-94(OXID), GP10T-97(FUEL). ADDED GP10V-125(OXID), GP10V-12(FUEL).

GAEC EO RELEASE: 9 | 9 | 9

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM508	LTA-5/R(15)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	PRIORITY
✓		✓		C

DRAWING TITLE: LINES INSTL D/S PROPULSION SYSTEM (REWORK OF LDW280-25608)

DRAWING NO.: LDW200-55529 EO NO.: B2

APPROVED BY	DATE	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ. ENGRG	QAM
[illegible]	8-31-70	VDI		9/1/70	8/31/70	NM	9/2/70	9/4/70

09 09 70
ISSUED BY J. CIEZKOWSKI X87223 SECTION EQUIP LINES GROUP NO. 332 PL 25

01

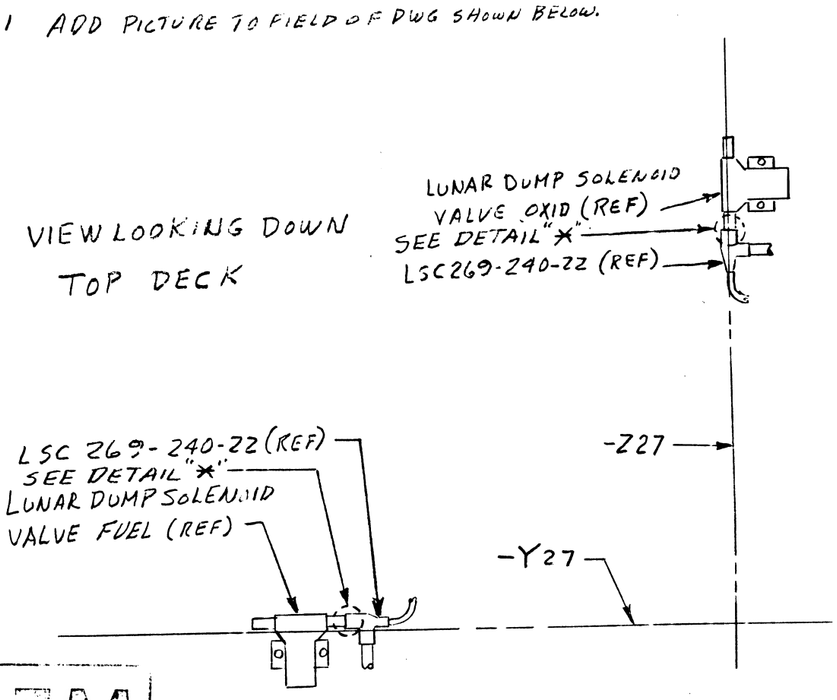
NAS 9-1100

GRUMMAN AEROSPACE CORPORATION
CODE IDENT NO. 26512
ENGINEERING ORDER

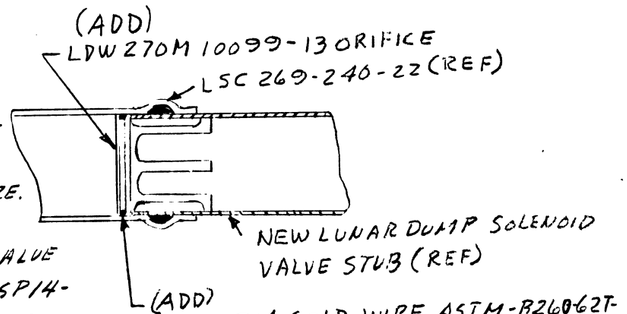
DWG. NO. LDW270-55529 | EO NO. B3
CONTROL INFO NO. LDW-B-C0923

ENG 32.2 REV 3-65

ON -1 ADD PICTURE TO FIELD OF DWG SHOWN BELOW.



LFM



ADD NOTE * *
PLACE GOLD WIRE IN LDW270M-10099-13 ORIFICE ANULUS, INSERT ORIFICE & SOLENOID VALVE STUB IN LSC 269-240-22 TEE & BRAZE. THERE SHALL BE NO GAP BETWEEN ORIFICE FLANGE & VALVE STUB. BRAZE SHALL MEET LSP14-6303 REQ. INSERTION SHALL BE DETERMINED BY SOLENOID VALVE STUB

(ADD) DETAIL *

TOL

NAS 9-1100

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCD 55542 PKG 5		GAEC EO RELEASE
REASON FOR EO: IMPROVE FLOW THRU LUNAR DUMP VALVE			DESCRIPTION OF EO: ON-1 ADD DETAIL * LDW270M10099-13 & NOTE * * IN B/M ADD .020 DIA GOLD WIRE ASTM-B260-62T BAU-4 A/R LDW 270M 10099-13 (2)		

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY / DATE	RELIAB GROUP	GROUP LEADER	ST-ESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOMC
LM	LEM 598	LTA-5R(159		✓		✓		VDI 9/2/70		9-2-70	9-2-70		9/2/70	

PRIORITY: C
DRAWING TITLE: LINES INSTL. DESCENT STAGE PROPELLANT SYSTEM
DRAWING NO.: LDW209-55529
EO NO.: B3

CDR 9-4-70
ISSUED BY K. BIRKEL X87223 SECTION EQUIP LINES (VDI) GROUP NO. 332 PL 25

LFM

LDW200-55530

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW200-55530-1	LFM 507, 508 LDW280-25508	LTA-5/K(1-69) GAEC SCH NO.	1

WORK PACKAGE FUNCTION NO. 110 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00		3.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	—
LAST DASH NO. USED	-1

GRUMMAN REQ'MTS
PRIM NO. JK(024)
207 ME-16 12/2/69

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓

LCD 3890 PKG 95 LCD 3994 P 20

CONTRACT NO. | LINE ITEM | DOCUMENTATION TYPE III

DRAWN BY	A. PROKOPETZ 11/19/69			
LAYOUT BY				
CHECKED BY	J. Thompson 11-21-69			
GRP LDR	Dick 12/1/69			
VEH DESIGN	Thorjussen 12-1-69			
STRUCT		PROJ ENGR	Thorjussen 12-1-69	
STRUCT	M/H 12/1/69	REL GROUP	[illegible] 12/2/69	

CDR 12-5-69

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

STRUCTURAL ASSY.
D/S - (REWORK OF LDW280-25508)
LFM NO. 507 & 508

SIZE	CODE IDENT NO.	
B	26512	LDW200-55530

SCALE NONE | SHEET 1.00 OF 3

ENG 77.1 12-65

OTS

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
1		LDW280-60900-1	E	PROP. TANK INSTL	SEE DWG						4D
1		LDW280-25811-1		SPT. INSTL. THRML. REF. MOD							7C
1		LDW200-55502-1		SPT. INSTL. THRML. REF. MOD							5E
1		-55526-1		SPT. INSTL. PROP. LINES							6D
1		-55525-1		DECK INSTL. LWR-AFT							7D
1		-55524-1		DECK INSTL. LWR-FWD							5C
1		-55523-1		DECK INSTL. UPPER-AFT							6F
1		-55522-1		DECK INSTL. UPPER-FWD							5G
1		-55521-1		DECK INSTL. UPPER-L.H.							5G
1		-55520-1		DECK INSTL. UPPER-R.H							5E
1		-55519-1		DECK INSTL. LWR-L.H.							5B
1		-55518-1		DECK INSTL. LWR-R.H	SEE DWG						5D
		LDW200-55530-1	E	STRUCT. ASSY.					NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

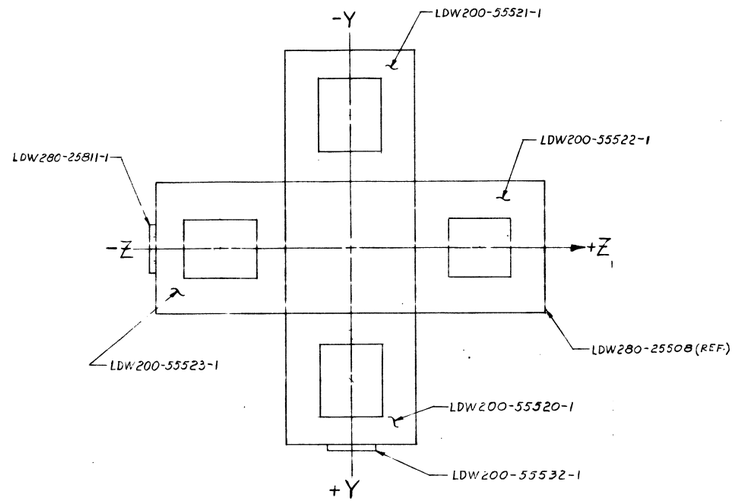
SIZE	CODE IDENT NO.	
B	26512	LDW200-55530

SCALE NONE SHEET 2.00

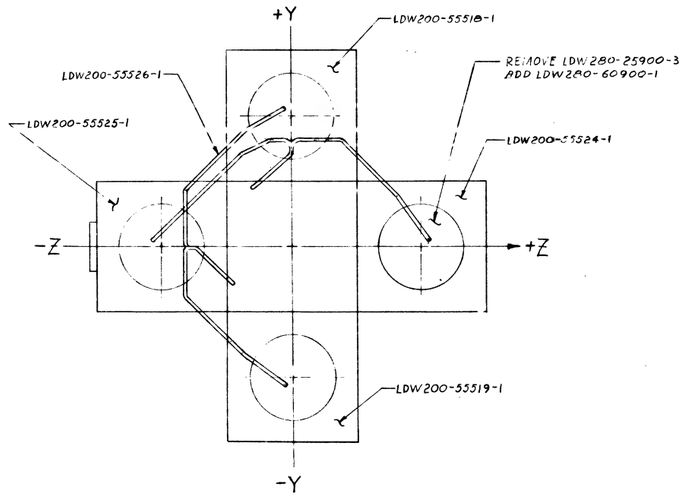
ENG 77.2 7-65

NAS 9-1100

SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH MIL STD 130	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☐☐ USE BOTH SIDES IF NECESSARY	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL RIVETS IN ACCORDANCE WITH	



LDW200-55530-1 ASSY
VIEW LOOKING DOWN



VIEW LOOKING UP

GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714		
SIZE F	CODE IDENT NO. 26512	LDW200-55530
SCALE 1/2		SHEET 3 OF

07
NAS 9-1100

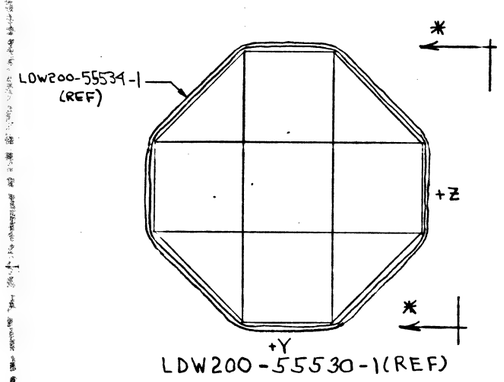
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 22.1 REV 3-65

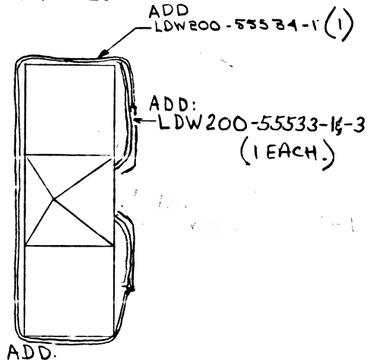
ENGINEERING ORDER

DWG. NO. LDW200-55530		EO NO. A1
CONTROL INFO NO. LDW280B9690		

IN F/D & B/M ADD THE FOLLOWING ON -1 INSTL.



LDW200-55530-1 (REF)



ADD: SECT: **

* USE NEXT AVAILABLE SECT. LETTER

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD 3890 PKG 95

REASON FOR EO: ADDITIONAL THERMAL REQ. FOR ENGINE TEST

DESCRIPTION OF EO: ON -1 ADDED LDW200-55533-1&-3 (1 EA) & LDW200-55534-1 (1).

GAEC EO RELEASE: (5) 1/14/70 (6) 1/15/70

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM#507	LTA-5/R(1 59)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: NOT REWORK	READ SCRAP
✓			

APPROVED BY	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
RST	1/14/70	1/12/70	RST	Dawson
DATE	1-13-70	1-13-70	1-13-70	1/15/70
VDI				

RELIAB. GROUP

PRIORITY: C

DRAWING TITLE: STRUCT ASSY REWORK OF LDW280-25508) LFM #507 + 508

DRAWING NO.: LDW200-55530

EO NO.: A1

ISSUED BY P. LANDRY/G. HANSMANN X86046 (COR 0206/70) SECTION VEH DES INT GROUP NO. 335 PL 25

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LDW200-55530 | EO NO. A2

CONTROL INFO NO. LDW280B9766

THIS EO CANCELS EO A1

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD 3890 PKG 95	(5)

REASON FOR EO: BLANKETS NO LONGER REQUIRED

DESCRIPTION OF EO: CANCELLED EO A1

GAEC EO RELEASE: SK 1/20/70

MODEL	EFFECTIVITY: ~~PROGRAMME ACTIVITY NO.~~ E1	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM #507	LTA-5(LS9)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓			✓

PRIORITY: C

DRAWING TITLE: BLANKET INITL DIS - BASE HEAT SHIELD

	APPROVED BY	DATE	THERMAL SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
	PBT	1-16-70	VDI		1/16/70	1/16/70	1/16/70	1/20/70
	[illegible]	1-16-70			[illegible]	[illegible]		~~DEPT~~

DRAWING NO. LDW200-55530 | EO NO. A2

CDR 012470

ISSUED BY PLANDRY/GHANSMANN X87222 SECTION VEH DES INT GROUP NO. 335 PL 25

01

NAS 9-1100

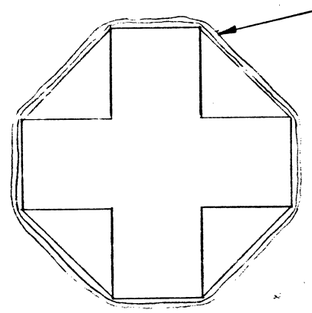
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200-55530		EO NO. A3
CONTROL INFO NO. LDW280B9832		

IN F/D & B/M ADD THE FOLLOWING ON -1 INSTL.:



* USE NEXT AVAIL NO.

(ADD)
NOTE *: THIS DRAWING AFFECTED BY LFM 562. SEE LFM FOR EFFECTIVITY & MODIFICATION).

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓ LCD 5416 PKG 50

REASON FOR EO	DESCRIPTION OF EO
ADDITIONAL THERMAL REQ. FOR ENGINE TEST	ON -1 ADDED LDW200-55534-1(1) & NOTE *

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM	LFM 562	LTA-5/8(159)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	PRIORITY
✓		✓		C

APPROVED BY	DATE	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
[illegible]	1-28-70	VDI	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	1/14/70	[illegible]	1/29/70	1/27/70	[illegible]	1/26/70

DRAWING TITLE D/S: STRUCT ASSY REWORK OF LDW280-25508 LFM # 562

DRAWING NO. LDW200-55530 EO NO. A3

GAEC EO RELEASE (5)

CDR 01/30/70

ISSUED BY N.MARK/G.HANSMANN X86096 SECTION VDI GROUP NO. 335 PL 25

01

NAS 9-1100

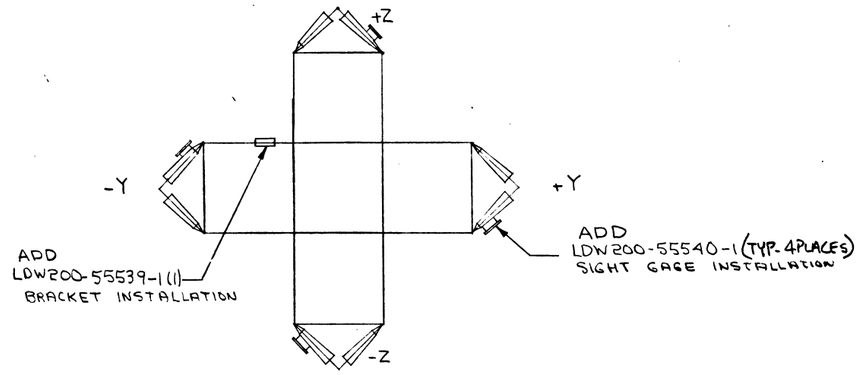
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200-55530		EO NO. A4
CONTROL INFO NO. LDW280C0002		

IN F/D & B/M ADD THE FOLLOWING ON -1 INSTL:



ADD TO LFM NOTE: IFM 563 & LFM 528

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD 5430 LFM 563 PKG 50; LCD 5288 LFM 528 PKG 50

REASON FOR EO: ADDITION OF T/C INSULATION, SIGHT GAUGES, & ΔP COMMON INTERFACE FOR LTA-5

DESCRIPTION OF EO: ON -1: IN F/D & B/M ADDED: LDW200-55539-1(1), LDW200-55540-1(4) & LDW200-55541-1(1). ADDED LFM 563 & LFM 528 TO LFM NOTE.

GAEC EO RELEASE

MODEL	EFFECTIVITY: E.I.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY / DATE									
LM	LFM 528	LTA-5/R(159)		✓		✓		2-2-70	VDI			2-7-70	3/2/70		2-7-70	3/2/70	
	LFM 563																

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	STRUCT. ASSY - O/S REWORK OF LDW280-25508	LDW200-55530	A4

CDR 03/02/70

ISSUED BY N-MARK / G. HANSMANN X87223 SECTION VDI GROUP NO. 335 PL 25

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AEROSPACE CORPORATION
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW200-55530		EO NO. A5
CONTROL INFO NO. LDW280C0096		

IN F/D & B/M

ON -1 LDW280-60900-1 SHOULD BE LDW280-60900-7

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓ LCD 3890 PKG 45

REASON FOR EO: TANK CONFIGURATION CHANGE

DESCRIPTION OF EO: ON -1 LDW280-60900-7 WAS LDW280-60900-1

GAEC EO RELEASE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM	LFM 507	LTA-S/R(1S9)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		✓	

APPROVED BY								
DATE	3-3-70			3/3/70	3/3/70		3-3-70	3/4/70
	VOI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ. ENGRG	

PRIORITY: C

DRAWING TITLE: STRUCTURAL ASSEMBLY - D/S (REWORK OF LDW280-25508) LFM 507&508

DRAWING NO.: LDW200-55530

EO NO.: A5

CDR 030670

ISSUED BY F. WOLFF X86048 SECTION VOI GROUP NO. 335 PL 25

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AEROSPACE CORPORATION

CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LDW200-55530 | EO NO. A6

CONTROL INFO NO. LDW280C0212

ON-1 LDW280-25811-1-1 REPLACES LDW280-25811-1

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | MLCD 3890 PKG 95

REASON FOR EO: TO PROVIDE SUFFICIENT EDGE DISTANCE FOR FASTENERS

DESCRIPTION OF EO: ON-1 ADDED LDW280-25811-1-1 REPLACING LDW280-25811-1

GAEC EO RELEASED

MODEL	EFFECTIVITY	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LEM 507	LTA-5/R/159)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO | DISPOSITION OF PARTS: REWORK ✓ | SCRAP

PRIORITY: C

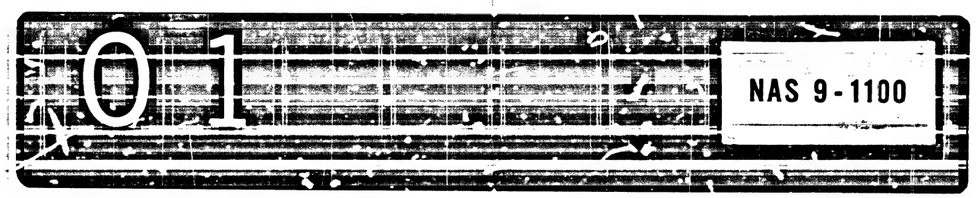
DRAWING TITLE: STRUCTURAL ASSY W D/S (REWORK OF LDW280-25508) LFM NO. 507 & 508

DRAWING NO. LDW200-55530 EO NO. A6

APPROVED BY	DATE	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
RST	3-25-70	VDI		[illegible] 3/25/70	NM 3/24/70		3/27/70

3/27/70

ISSUED BY J. PEDERSEN/G. HANSMANN X87222 SECTION VDI GROUP NO. 335 PL 25



GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200-55530 | EO NO. A7

CONTROL INFO NO. LDW280C0625

ADD TO EXISTING LFM NOTE:

LFM#590

* USE NEXT AVAILABLE NO.

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD-5568 PKG #1

REASON FOR EO: INCREASE CLEARANCE BETWEEN BOTTOM SURFACE OF WAFER AND OUTER CASE

DESCRIPTION OF EO: ADDED LFM #590

GAEC EO RELEASE

MODEL	EFFECTIVITY: PROGRAMMING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM #590 EI	LTA5/R(159)	

DRAWING CHANGE REQD: ✓ REVISE DWG | RECORD EO

DISPOSITION OF PARTS: NOT REQD REWORK | SCRAP

	APPROVED BY	DATE
	[illegible]	6-10-70
	VDI	6/10/70
SUPPORT		
RELIAB GROUP		
GROUP LEADER	[illegible]	6/10/70
STRESS GROUP	[illegible]	6/10/70
LIAISON ENGRG		
PROJ. ENGRG	[illegible]	6/10/70
CONTR		

PRIORITY: C

DRAWING TITLE: SUPPORT INSTL - D/S - SUB-SYSTEM COMPONENT

DRAWING NO.: LDW200-55530 | EO NO.: A7

CDR 061270

ISSUED BY JOHN K. LEE SECTION VDI GROUP NO. 280 PL 25

Q-1

NAS 9-1100

LDW200-55532

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM 507	LDW200-55530	LTA-5R(159)	1
PART NO. LDW200-55532-1		GAEC SCH NO.	

WORK PACKAGE FUNCTION NO. 110 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00		3.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	D
LAST DASH NO. USED	-22

GRUMMAN REL INFO
PRIM NO. JK(024)
207 ME-16 12/5/69

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
.XX ±.03 .XXX ±.010 ±0°-30'

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 3890 PKG 95	

CONTRACT NO. NAS 9-1100 LINE ITEM DOCUMENTATION TYPE III

DRAWN BY	A. PROKOPETZ 12-4-69		
LAYOUT BY			
CHECKED BY	L. ATLAS 12-4-69		
GRP LDR	12/4/69		
VEH. DES. INT	12/4/69		
STRUCT		PROJ ENGR	12/4/69
STRUCT	N.M. 12/4/69	REL GROUP	12/5/69

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SUPPORT INSTL.
D/S - R.H. BLKHD - THERMAL REF. MODULE

SIZE	CODE IDENT NO.	
B	26512	LDW200-55532
SCALE NONE		SHEET 1.00 OF 3

ENG 77.1 12-65

12-5-69

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
AR		MS20470AD5	E	RIVET	GOVT STD						
2		MS27039-1-23		SCREW	↕						
4		MS27039-1-21		SCREW							
6		MS27039-1-11		SCREW							
42		MS27039-1-10		SCREW							
8		MS27039-1-09		SCREW	GOVT STD						
AR		NAS1097AD3		RIVET	IND STD						
4		NAS43DD3-44		SPACER	↕						
2		NAS43DD3-40		SPACER							
10		NAS697A3		PLATE NUT							
52		NAS680A3		PLATE NUT	↕						
AR		NAS1097AD5		RIVET	IND STD						
8		GR500A-4J		BLIND RIVET	GRUMMAN STD						
13		GR500A-4G		BLIND RIVET	GRUMMAN STD						
2		LDW200-55532-22		CLIP	AL ALY SH	QQ-A-250/4	2024-T3	.063 X 3 X 3	NONE	88	1B
2		-21		CLIP	↕	↕	↕	.063 X 3 X 3	↕	↕	1B
2		-19		ANGLE				.063 X 5 X 12			2B
4		-17		FILLER				.093 X 1 X 2			3C
2		-15		FILLER				.156 X 2 X 58			2A
1		-13		PLATE	↕	↕	↕	.063 X 4 X 11	↕	↕	3C
2		-11		PLATE	AL ALY. SH	QQ-A-250/4	2024-T3	.063 X 5 X 58	NONE	88	4A
		LDW200-55532-1	E	SUPPORT INSTL					NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
88	ANODIZE	LSP-14-9030

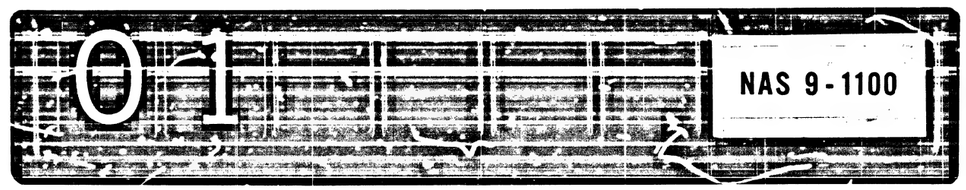
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55532

SCALE NONE SHEET 2.00

ENG 77.2 7-65



X 196.00(REF.)

.190-.196 DIA. (6 HOLES)
NAS697A3 (2)
NAS1097AD3 (4)
MS27039-1-10 (2)

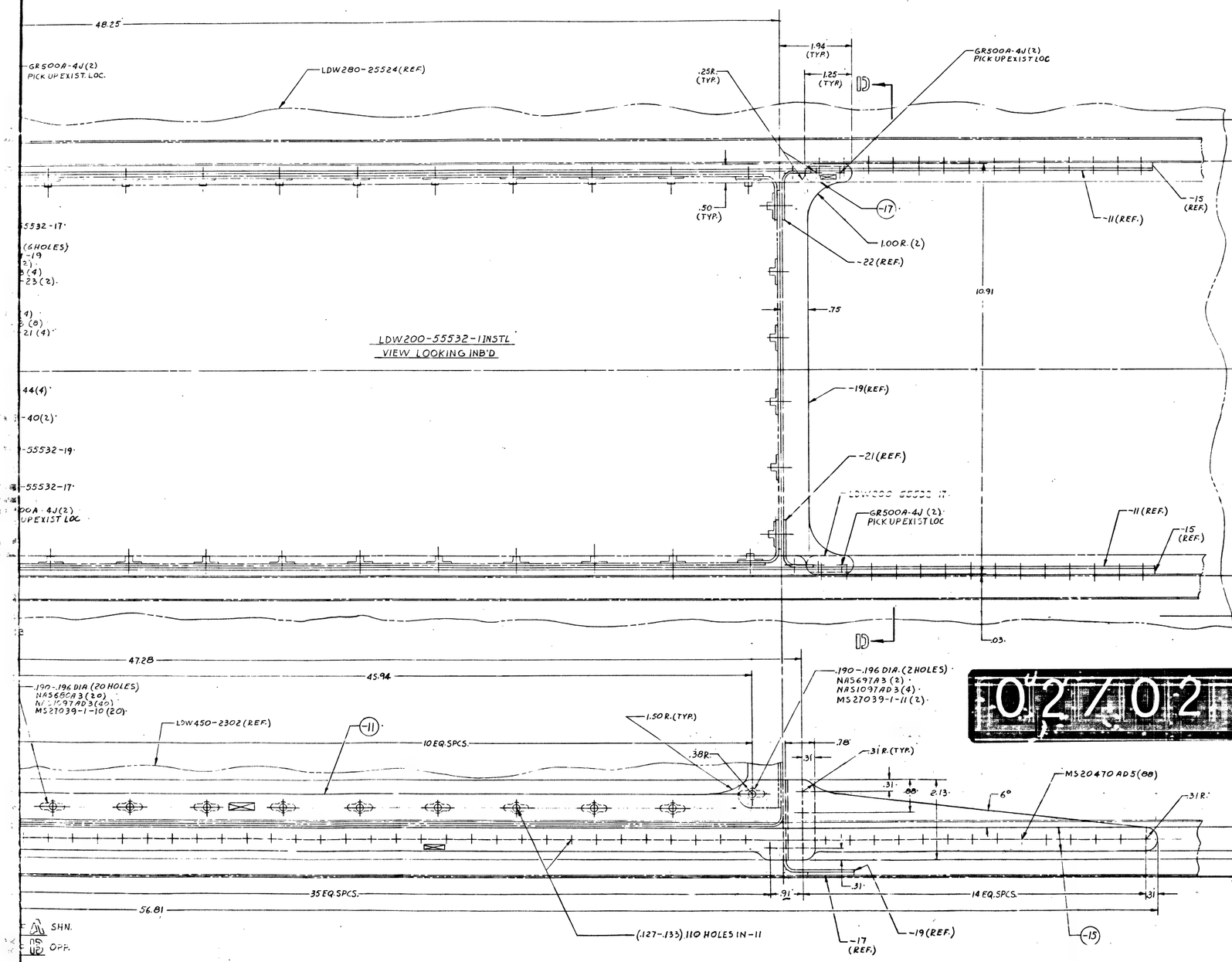
2.91
.38
GR500A-4G (13)
LDW450-2302(REF.)
±Z 9.562
.25
.25R. (2)
-13
NAS680A3(4)
NAS1097AD3(8)
MS27039-1-07(4)
.25
9.56
12 EQ. SPCS.
5 EQ. SPCS.
.38R. (TYP.)
-13 (REF.)
.38 (TYP.)
.25
.75
±Z 5.525
.097-.107
19 HOLES IN -13
.50(REF.)
.50(REF.)
.41
±Y 81.00 (REF.)

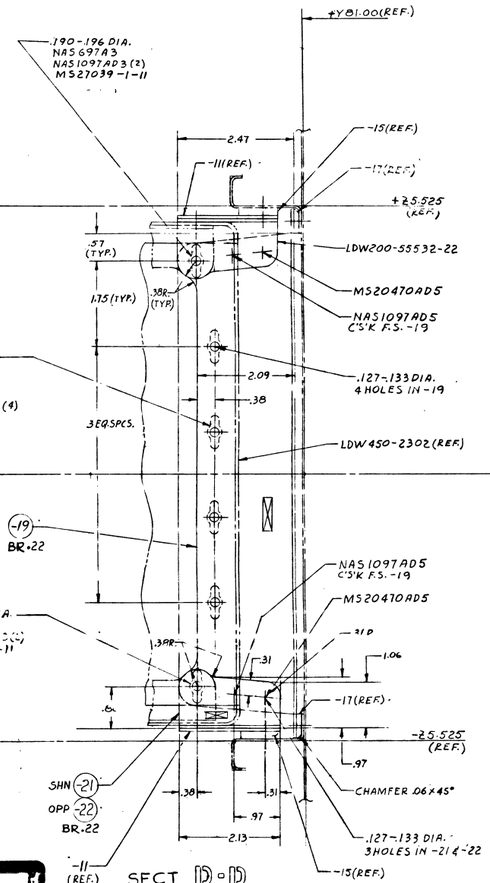
VIEW C○C

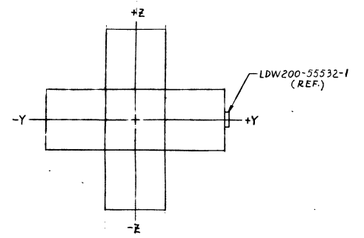
48.25
23.75
GR500A-4J(2)
PICK UP EXIST. LOC.
LDW200-55532-17
LDW200-55532-22
.190-.196 DIA. (6 HOLES)
LOCATE FROM -19
NAS697A3 (2)
NAS1097AD3(4)
MS27039-1-23(2)
NAS680A3(4)
NAS1097AD3 (8)
MS27039-1-21(4)
±Z 0.000
NAS 9-1100
NAS543DD3-44(4)
NAS543DD3-40(2)
LDW200-55532-19
LDW200-55532-17
LDW200-55532-21
GR500A-4J(2)
PICK UP EXIST LOC.
.03
47.28
24.88
22.78
21.44
10 EQ. SPCS.
.532
-21 (REF.)
.38R.
.190-.196 DIA (20 HOLES)
NAS680A3(20)
NAS1097AD3(40)
MS27039-1-10 (20)
LDW450-2302 (REF.)
LDW450-2302 (REF.)
.38R.
1.91
1.53
.38
.50
.31
.50
.31R
±Y 81.000 (REF.)
-13 (REF.)
.38
32 EQ. SPCS.
.91
56.81
.31R. (TYP.)
-19 (REF)
-17 (REF.)

VIEW A○A SHN.
B○B OPP.

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS
2. INSTALL RIVETS IN ACCORDANCE WITH LSP-14-15302 & -15303
3. RUBBER STAMP PART NUMBER IN REGION MARKED







FOR ENGINEERING REF. ONLY

02702 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK		
SIZE	CODE IDENT NO.	LDW200-55532
	26512	
SCALE		SHEET 3 OF

LDW200-55532 LDW200-55532 LDW200-55532

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LEO 280		EO NO. 1840
CONTROL INFO NO. LDW280 B9313		

ADD NOTE * (* USE NEXT AVAILABLE NOTE NUMBER) ON DWGS LISTED BELOW

NOTE * ON -1 INSTL. ALL PARTS MAY BE TRIMMED .25 INCH MAXIMUM ON ALL DIMENSIONS WITH A MIN OF 1½ DIA. EDGE DISTANCE MAINTAINED ON ALL FASTENERS UNLESS OTHERWISE NOTED.

DRAWING NO.	DASH NO.	EFFECTIVITY	TITLE	E.O. NO.
LDW200-55518	-1	LTA5/R(159)	SEE DWG.	A1
-55519	-1			A1
-55520	-1			A1
-55521	-1			A1
-55522	-1			A1
-55523	-1			A1
LDW200-55532	-1	LTA5/R(159)	SEE DWG.	A1

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | LCD 3890 PKG 95 (5)

REASON FOR EO: LM-10 TANK EXPANSION FOR LTA-5

DESCRIPTION OF EO: ADDED NOTE *

GAEC EO RELEASE: 2-11-70

MODEL	EFFECTIVITY	GAEC UNIT NO.	SUB CONTR UNIT NO.
	E.I. [redacted]		
LM	LEM507	LTA5/R(159)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO | DISPOSITION OF PARTS: REWORK ✓ | SCRAP

PRIORITY: C

DRAWING TITLE: NOTED

DRAWING NO.: LEO 280

EO NO.: 1840

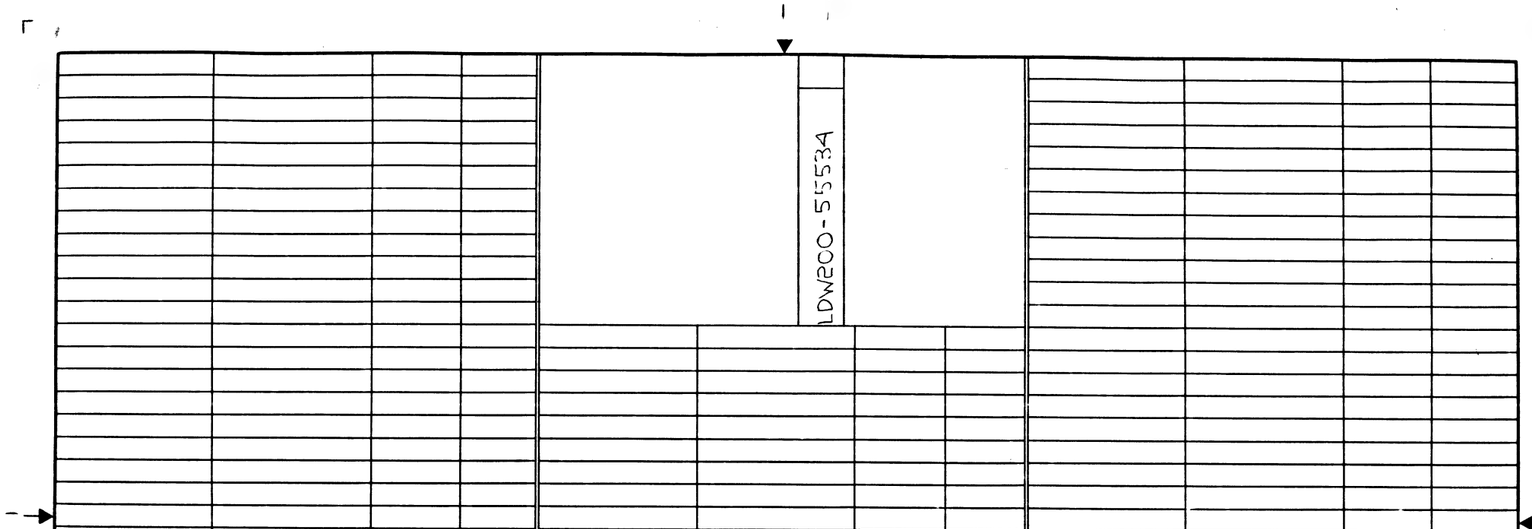
	APPROVED BY	DATE	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
	RSH	2-9-70	2/10/70		2-10-70	2/11/70	
		YDI	SUPPORT	RELIAB GROUP			

CDR 2-12-70 ED COLEMAN/G. HANSMANN X87222

ISSUED BY ED COLEMAN/G. HANSMANN X87222 SECTION VDI GROUP NO. 335 PL 25

01

NAS 9-1100



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW200-55534-1		GAEC SCH NO.	

WORK PACKAGE FUNCTION #110 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH											
SHEET	1.00				200	300					
REV											
SHEET											
REV											
SHEET											
REV											

		GRUMMAN REL INFO	
LAST SECT LTR USED	C	PRIM NO.	UK(024)
LAST DASH NO. USED	-13	207	11/E-16 1/28/70

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
~~FRACTIONS — DECIMALS — ANGLES~~

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCN 5916 PKG 50	

CONTRACT NO. NAS9-1100		LINE ITEM	DOCUMENTATION TYPE II
DRAWN BY	N. MARK		
LAYOUT BY	N. MARK		
CHECKED BY	W. Sutherland 1/26/70		
STRESS	GELDER 1/28/70		
VDI	Thogmartin 1-28-70		
STRUCTURES		PROJ ENGR	1/26/70
THERM	1/26/70	REL GROUP	1/26/70

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

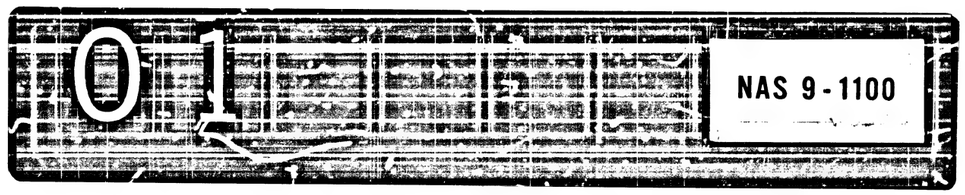
SHIELD INSTALLATION
DESCENT STAGE-THERMAL INSULAT.
(REWORK OF LDW280-25508(LFM562)

SIZE	CODE IDENT NO.	
B	26512	LDW200-55534

SCALE NONE SHEET 3 OF 3

ENG 77.1 12-65

CDR 01/30/70



QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
						17		GB511J08-3		SCREW	GRUMMAN STD						
						AR		GI835BE-8	E	TAPE	GRUMMAN STD						
					A/R			GS577A-1		STAPLES	GRUMMAN STD						
						17		AN960C8		WASHER	GOVT STD						
						34		MS20426AD3		RIVET	GOVT STD						
						17		NAS697C08		PLATE NUT	GOVT STD						
						35		LDW200-55534-13		BLANKET ASSY	SEE NOTES 1&3						
					AR			LDW200-55534-11		INSULATION	SEE NOTE 2						
						1		LDW200-77257		SEAL DEFLECTOR	SEE DWG						
								LDW200-55534-1	E	SHIELD INSTL							
				-13	-1												

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

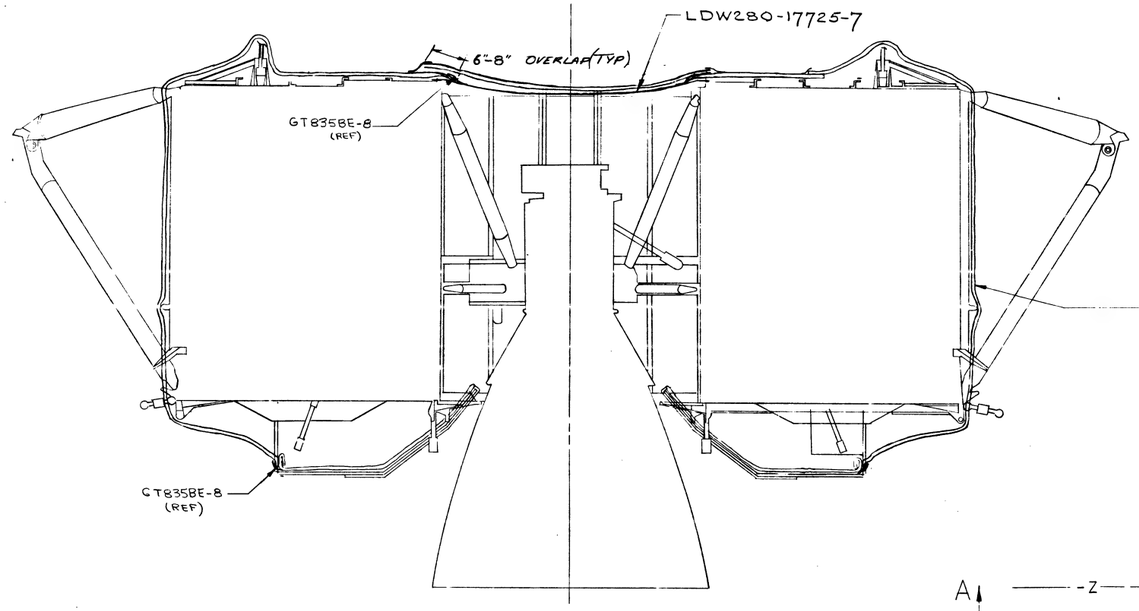
SIZE	CODE IDENT NO.	
B	26512	LDW200-55534

SCALE NONE SHEET

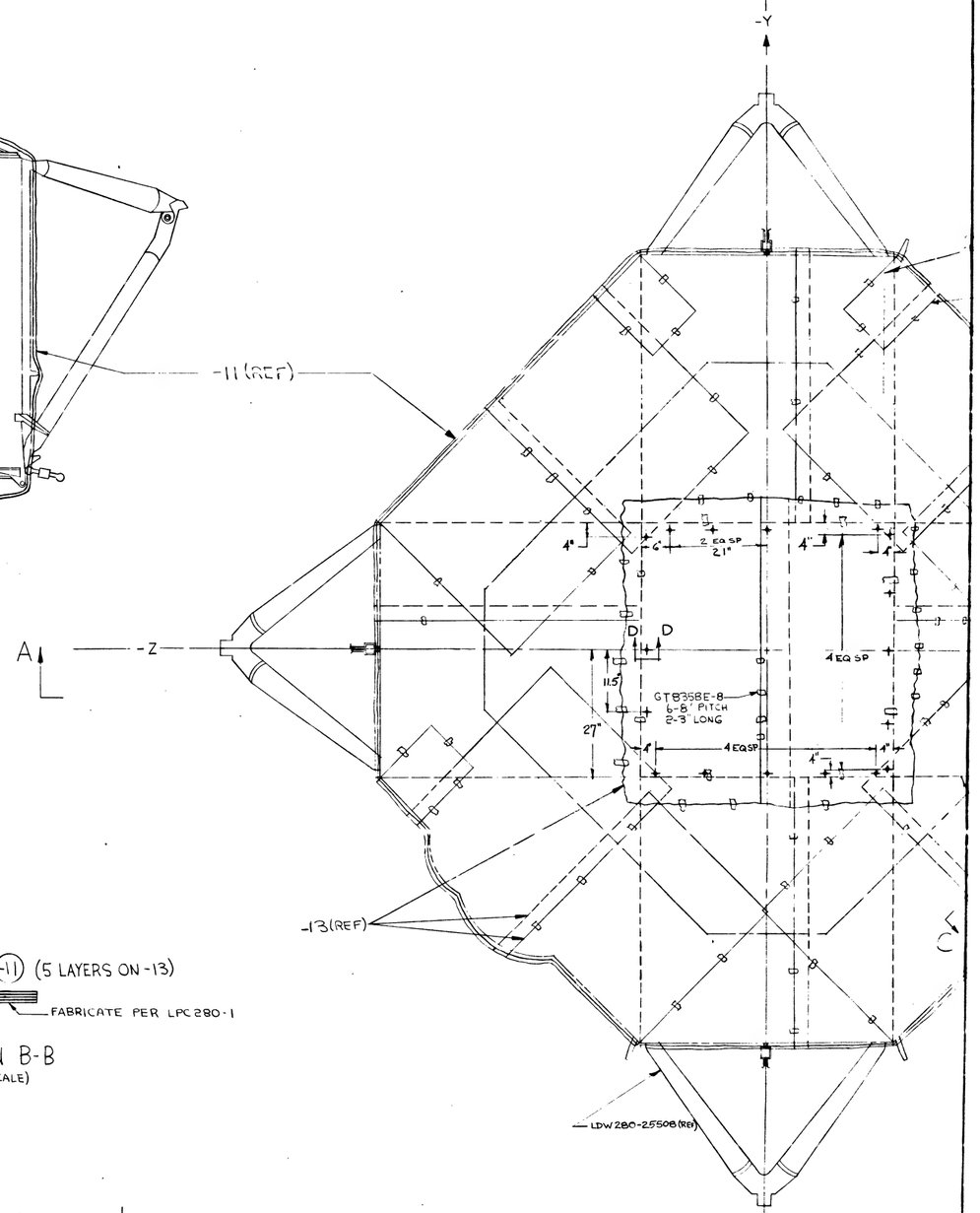
ENG 77.2 7-65

Q1

NAS 9-1100



SECTION A-A

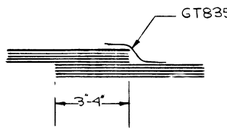


LDW200-55534-1 INSTL

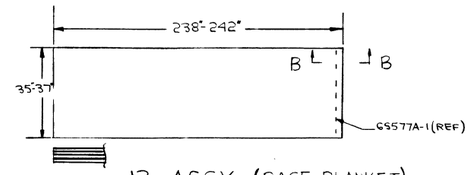
-11 (5 LAYERS ON -13)

FABRICATE PER LPC280-1

SECTION B-B
(NOT TO SCALE)

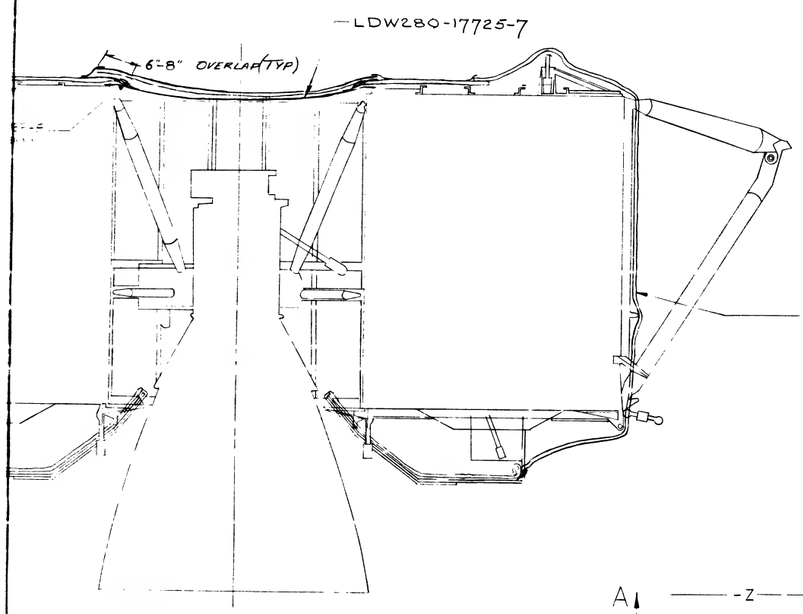


SECT C-C (TYP OVERLAP)
(NOT TO SCALE)

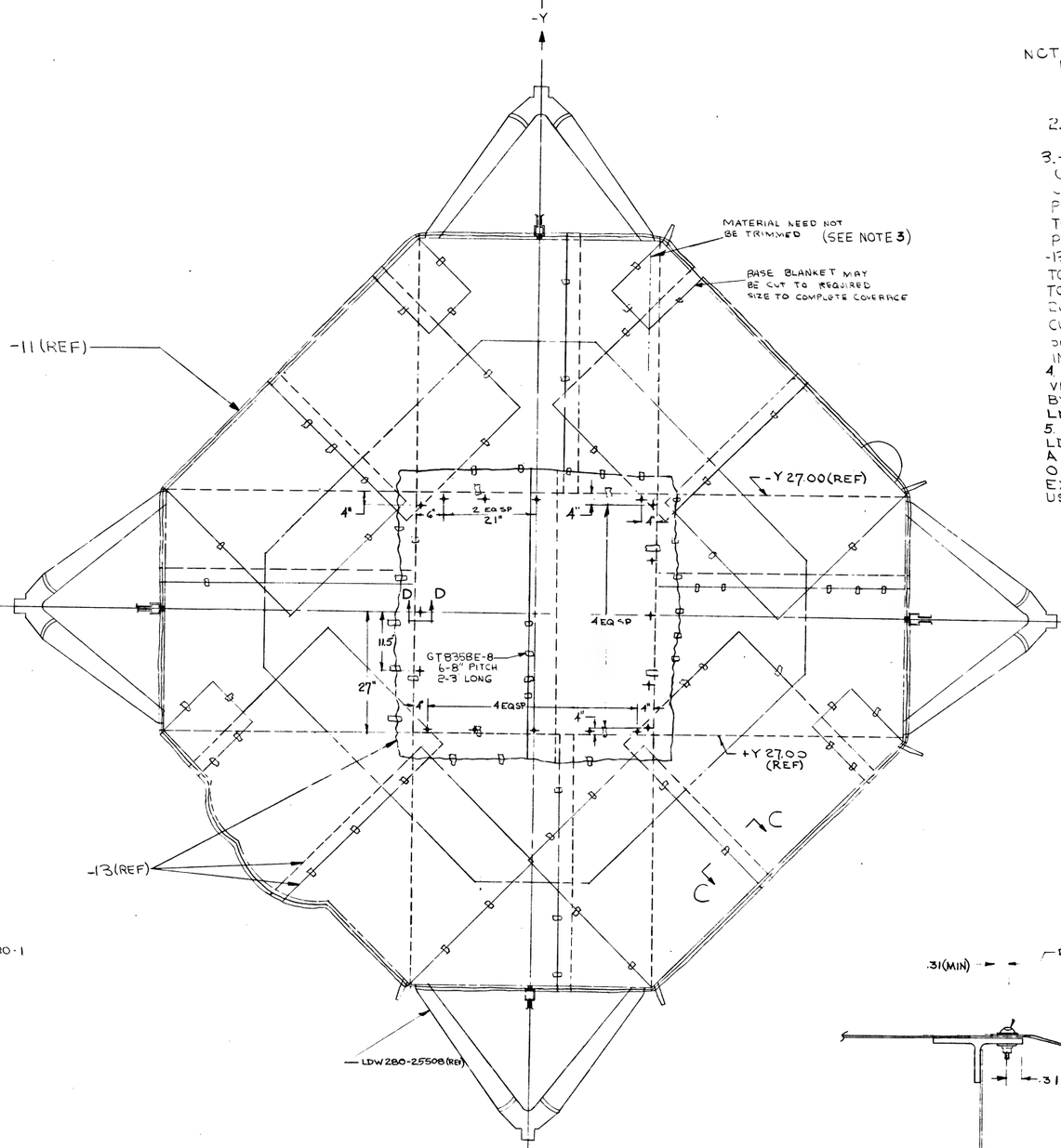


-13 ASSY (BASE BLANKET)
(NOT TO SCALE)

01/02 NAS 9-1100



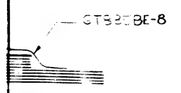
SECTION A-A



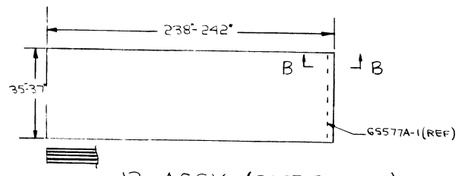
NOTES:
1. APPLICABLE PROCEDURES
   LPC280-1 FABRICATION
   LPC280-6 CUTTING & PATCHING
   LPC280-7 PROTRUSION
2. -11 ALUMINIZED POLYIMIDE (.00025) PER LSN 14-5301 TYPE II A, CL 2
3. -13 BASE BLANKET TO BE USED IN CONTINUOUS LENGTHS OR PIECES TO COVER VEHICLE COMPLETELY AS SHOWN. PROTRUSIONS FOR GSE EQUIPMENT TO BE COVERED OR WRAPPED WITH PIECES CUT FROM -13 BASE BLANKET. -13 BASE BLANKET SHALL BE SPLICED TO ONE ANOTHER AS SHOWN IN SECT C-C TO FABRICATE LENGTHS GREATER THAN 20 FT OR WIDTHS GREATER THAN 3 FT. CUTTING AND SPLICING LOCATIONS SHALL BE DETERMINED ON INSTALLATION.
4. APPLY TAPE PER LPC280-45. VERIFY EMITTANCE VALUE BY MEASUREMENT PER LMO-510-1390 & LMO-510-1474.
5. PERMISSIBLE TO NOTCH LDW280-17725-7 BLAST DEFLECTOR A MAXIMUM OF $\frac{1}{4}$ IN. CLEAR OF PROTRUSIONS. TAPE EXPOSED REWORKED EDGES USING GT835BE-8 TAPE.



SECTION B-B
(NOT TO SCALE)

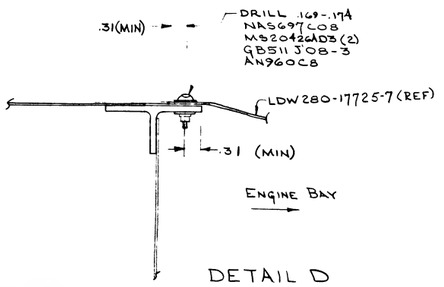


(TYP 2 LAYER LAP)
ALE)



-13 ASSY (BASE BLANKET)
(NOT TO SCALE)

LDW200-55534-1 INSTL



DETAIL D
(TYP 17 PLCS)

02/02E NAS 9-1100

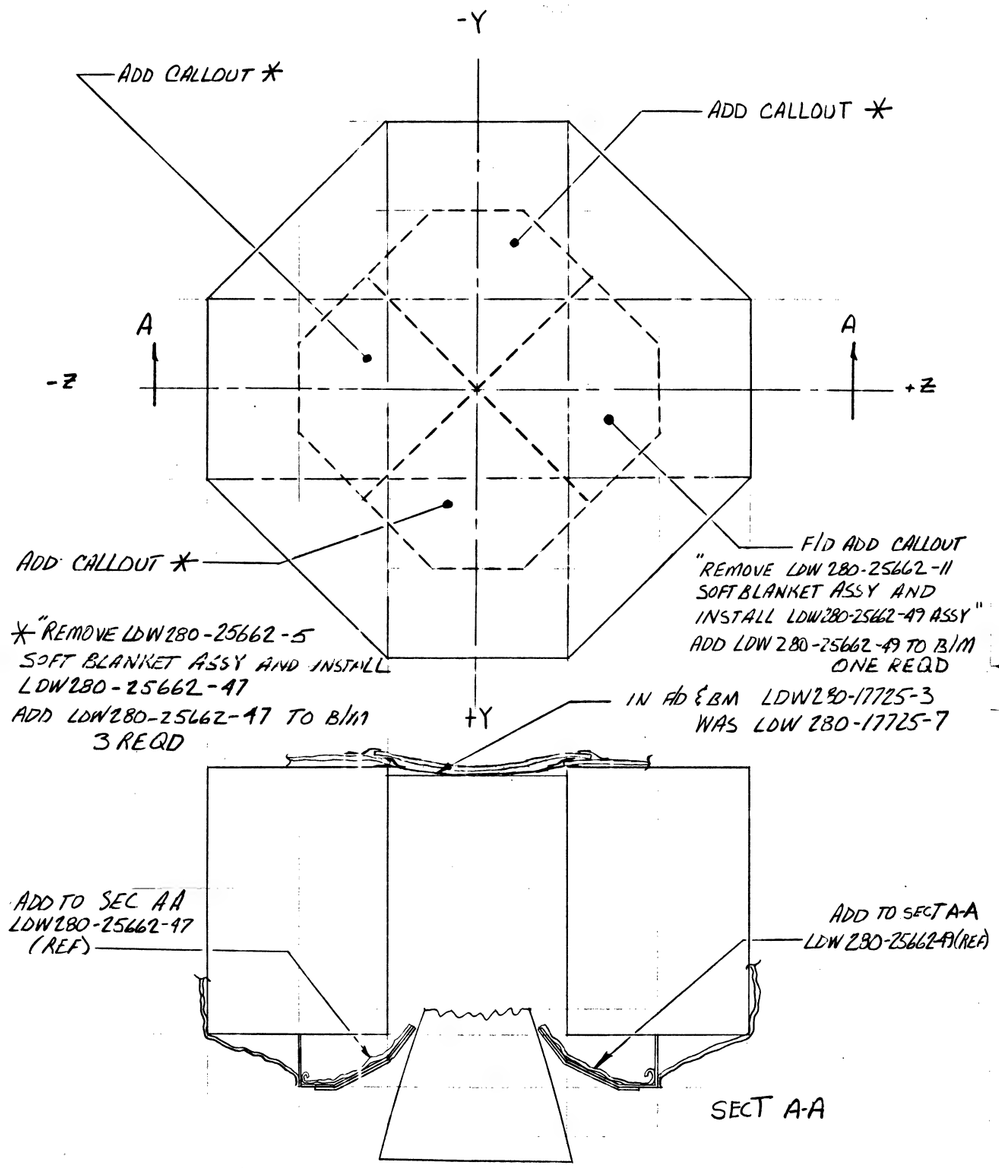
GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK			
SIZE	CODE IDENT NO.	LDW200-55534	
J	26512		
SCALE NONE		SHEET 3 OF	

LDW200-55534 A

DWG SIZE B PRINTING ONLY
PRINT TRIM LINE
FULL SIZE SHEET AREA 15 X 10 — 18 SQ FT
½ SIZE SHEET AREA (¼ OF FULL) — 4½ SQ FT

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENG 32.2 REV 3-65
ENGINEERING ORDER

DWG. NO. LDW200-55534 | EO NO. A1
CONTROL INFO NO. LDW280 B9916



DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCD 5416 PKG 50

REASON FOR EO: UTILIZATION OF LM-1 SPARE BLANKET ON LTA-SR

DESCRIPTION OF EO: IN F/D AND B/M ADDED LDW280-25662-47 ONE REQD AND LDW280-25662-49 (3) REQD REMOVED LDW280-17725-7 ADDED LDW280-17725-3

GAEC EO RELEASE: 3-11-70

MODEL	EFFECTIVITY			DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
	EI PROGRAMMING ACCESSION NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	REVISE DWG	RECORD EO	REWORK	SCRAP	DATE	2-9-70			3/9/70	3/6/70		2-10-70	3/11/70
									VDI	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
LM	LFM 507	LTA SR (159)		PRIORITY C	DRAWING TITLE: SHIELD INSTLLATION DESCENT STAGE ~THERMAL INSULATION (REWORK OF LDW280-25508)							DRAWING NO. LDW 200-55534				EO NO. A1

CDR 2-12-70 ISSUED BY ED COLEMAN / G. HANSMANN X87222 SECTION V DI GROUP NO. 335 PL 25

NAS 9-1100

LDW200-55535 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW200-55535-1	LFM 547	LDW280-54508 LM-8(39)	1
	LFM 547	LDW280-54508 LM-7(37)	1

WORK PKG FUNCTION NO. 110 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	A-A
LAST DASH NO. USED	-1

GRUMMAN REL INFO A
PRIM NO. (K(22V)) 207 ME-16(7-2/12/70

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
XX±.06 XXX±.030 ±½°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
	LCD5383 PKG #50

CONTRACT NO. NAS9-1100 LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	BILL OPITZ 1-29-70			
LAYOUT BY	TAYLOR			
CHECKED BY				
VDI	FST 1-9-70			
GP LEADER	GWH 1-9-70			
STRUCT	WJH 1-9-70	PROJ ENGR	RVP 1-9-70	
STRUCT		REL GROUP	J.GROD 1-9-70	

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CABLE INSTL
DESCENT STAGE - (REWORK OF LDW280-54508 LFM547)

SIZE	CODE IDENT NO.	
B	26512	LDW200-55535 A

SCALE NONE SHEET 1.00 OF 4

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00 1.10 2.00 3.00		LFM547		√		EOA1 LCD5383 PK.#50	INITIAL DWG RELEASE PARTS MADE PER E.O.	LM-7(37) LM-8(38)	NOT	REQD	BILL OPITZ 1-29-70		

CHG APPROVED	LTR	GROUP LDR	VDI	STRUCT	STRUCT
	A				

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW200-55535	A

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
									NONE	NONE	
-1		LDW200-55535-1	E	CABLE INSTL							
1		LDW280-60549-1	E	LANYARD	SEE DWG						

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW200-55535	A

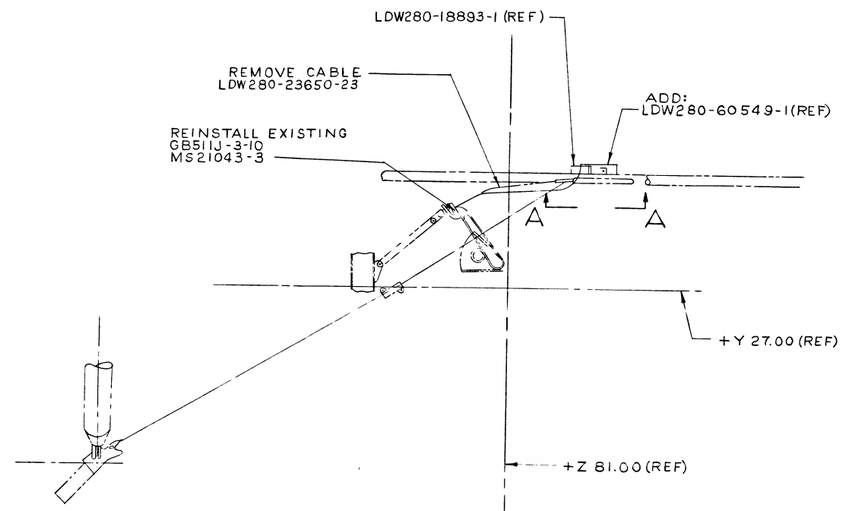
SCALE NONE SHEET 2.00

ENG 77.2 7-65

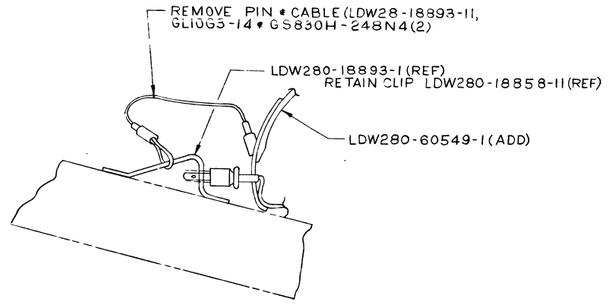
01

NAS 9-1100

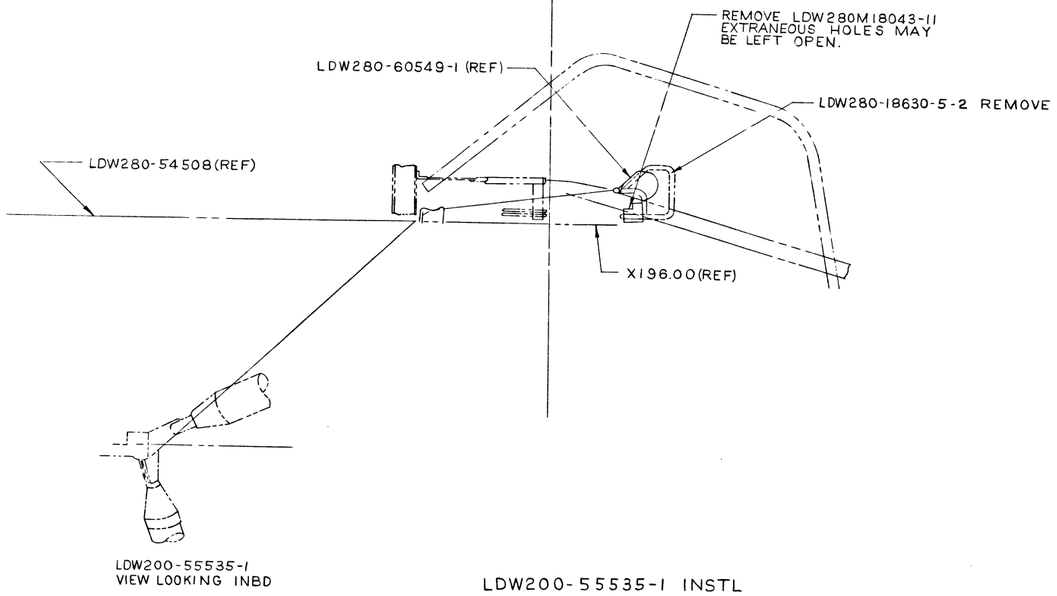
SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☐ USE BOTH SIDES IF NECESSARY	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL RIVETS IN ACCORDANCE WITH	



VIEW LOOKING DOWN



SECTION A-A



LDW200-55535-1
VIEW LOOKING INBD

LDW200-55535-1 INSTL
VIEW LOOKING INBD

01

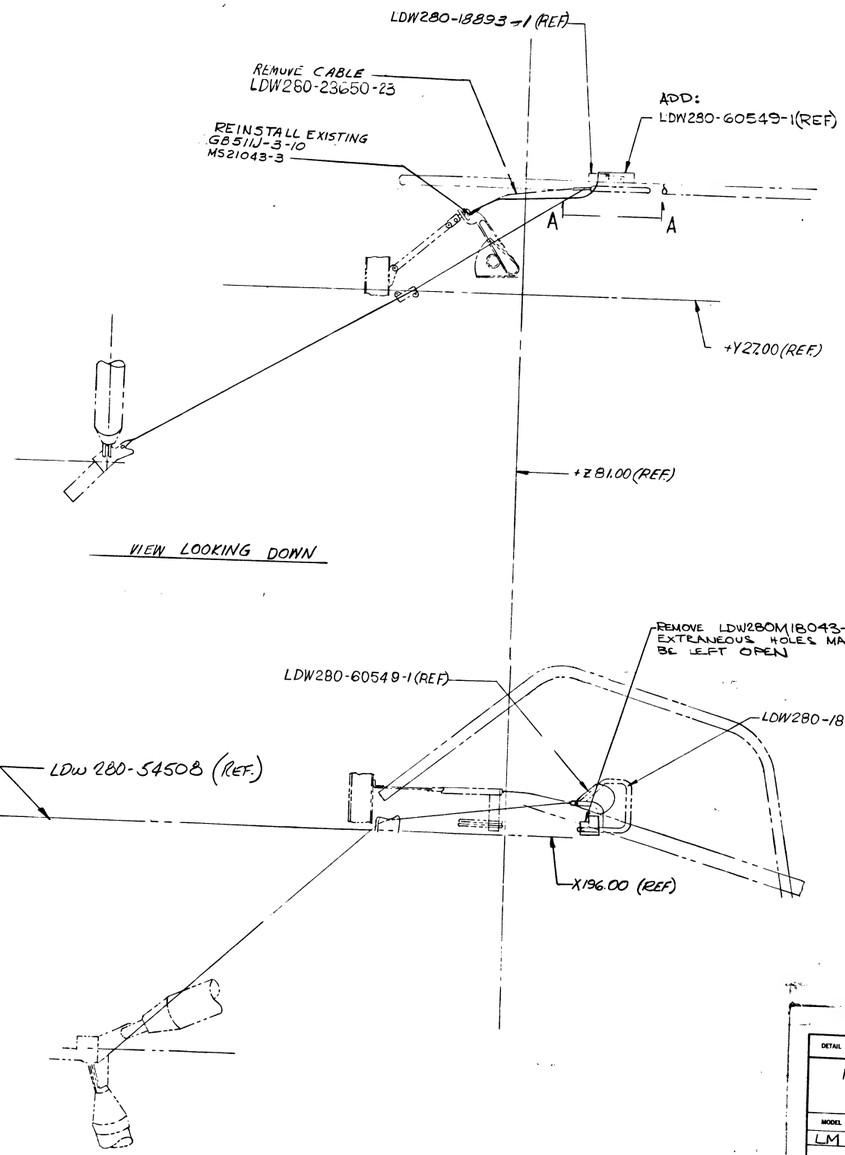
NAS 9-1100

GRUMMAN AEROSPACE CORPORATION BETHPAGE, NEW YORK 11714			
SIZE E	CODE IDENT NO. 26512	LDW200-55535	A
SCALE NONE		SHEET 3 OF 6	

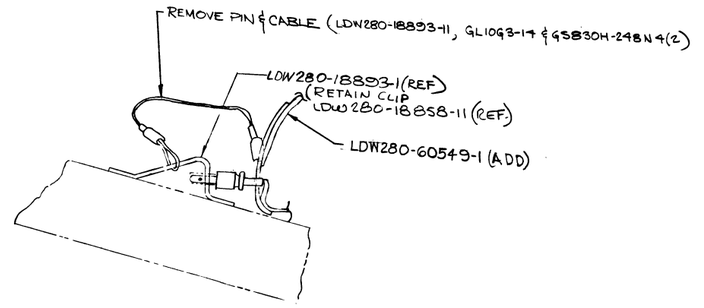
ENG. 764 REV. AUG

LDW200-55535 A

FULL SIZE DWG ~ 30 x 36 = 9 FT²
½ SIZE SHEET = 2¼ FT²



NAS 9-1100



SECTION A-A

QTY	PART NO.	NOMEN	RE	MATL	FINISH	PROCESS
1	LDW280-60549-1	LANYARD		SEE DWG		
-1	LDW200-55535-1	INSTL			NONE	NONE

ADD -1 INSTL N/A LDW280-54508 EFF LFM 547 LM-7(37) & LFM 547 LM-8(38) ALL PARTS I & T = E WORK PACKAGE FUNCT III
DWG TOL: FRACT ± .06 DEC ± .030 ANGLES ± ½°
CONT NO NAS9-1100 DOC TYPE II

* DWG NOT MADE

DETAIL SPEC REQD	CLASS II ENGRG CHG	CLASS I ENGRG CHG ✓	LCD 5383 PKG #50

CONTROL INFO NO. LDW280B96333

REASON FOR ED: REDESIGN OF 'D' HANDLE

DESCRIPTION OF ED: ED A1 INITIAL DWG RELEASE PARTS MADE PER ED.

GRUMMAN ED RELEASE 1-9-70

MODEL	EFFECTIVITY: PROCURING ACT. NO.	QAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 547	LM7(37) & LM-8(38)	

DRAWING REVISION REQD: ED ✓ DWG RECORD ED

DISPOSITION OF PARTS: NOT REQD ✓ REWORK SCRAP VDI SUPPORT DELUB GROUP

DATE: 1-9-70 1-9-70

GROUP LEADER: 1-9-70 STRESS GROUP: 1-9-70 LIAISON ENGRG: 1/9/70 PROJ ENGR: 1/9/70

PRIORITY: C

DRAWING TITLE: CABLE INSTL. STOWAGE RELEASE D/S (REWORK OF LDW280-54508) LFM 547

ENGINEERING ORDER

DRAWING NO. LDW200-55535 ED NO. A1

CDR 010970

ISSUED BY A.R. TAYLOR SECTION VDI X86046 GROUP NO. 335 PL 25

CODE IDENT NO. 26512 GRUMMAN AIRCRAFT ENGINEERING CORP BETHPAGE, L. I., N. Y.

GRUMMAN AEROSPACE CORPORATION

CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200 55535		EO NO. B1
CONTROL INFO NO. LDW280C1107		

ON-1 LDW280-60549-1-1 REPLACED LDW 280-60549-1

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓ LCD 56388 PKG 50

REASON FOR EO

TO REPLACE EXISTING PIP PIN WITH FULLY INSPECTED PIP PIN

DESCRIPTION OF EO

ON-1 INSTL LDW280-60549-1-1 REPLACED LDW280-60549-1

GAEC EO RELEASE: W RK 11-7-70

MODEL	EFFECTIVITY			DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	REVISE DWG	RECORD EO	REWORK	SCRAP	DATE		SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
LM	LFM622	LM-8(38)		✓		✓		11-6-70	VDI			11/7/70	11-7-70	NM	11-7-70	11-9-70

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	CABLE INSTL, D/S (REWORK OF LDW280-54508 LFM547)	LDW200-55535	B1

CDR 11-9-70

ISSUED BY A. TIENKEN / G. HANSMANN X87222 SECTION VDI GROUP NO. 0335 PL 025

01

NAS 9-1100

LDW200-55536 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.			LEM 515	LDW280-54508 LFM-515 (37)	1
								PART NO. LDW200-55536-1		GAEC SCH NO.	

WORK PKG FUNCTION NO. 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

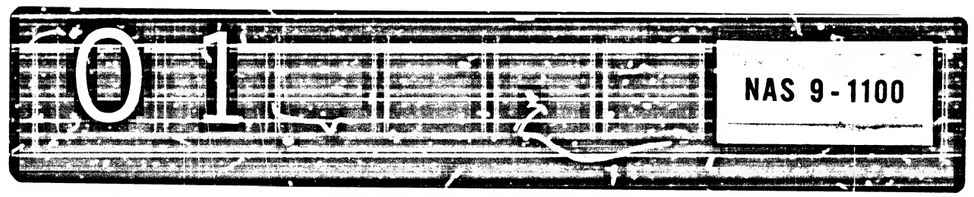
LAST SECT LTR USED		GRUMMAN REL INFO
LAST DASH NO. USED	-1	PRIM NO. 207

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS — ANGLES
XX ± .03 XXX ± .010 ± 0°30

ORIG DWG AUTH		CONTRACT NO. NAS 9-1100		LINE ITEM	DOCUMENTATION TYPE II
DETAIL SPEC REQUIREMENT		DRAWN BY	M. SMALL		GRUMMAN AIRCRAFT ENGRG CORP
CLASS II ENGRG CHANGE		LAYOUT BY	TAMRES		BETHPAGE, L. I., NEW YORK
CLASS I ENGRG CHANGE	✓	CHECKED BY	W Gubelman 2-27-70		SHIELD INSTL.
LCD5382, PKG 50		GP LEADER	SP 1-12-70		DESCENT STAGE - QUAD IV
		VDI	PST 1-12-70		REWORK OF LDW280-54508 LFM-515
		STRUCT	WJH 1-12-70	PROJ ENGR PST 1-12-70	SIZE B / CODE IDENT NO. 26512 / LDW200-55536 A
		STRUCT		REL GROUP GB 1-12-70	SCALE NONE / SHEET 1 OF 4
		THERMO	JJH 1-12-70		

ENG 77.1 12-65

CDR 2-13-70



REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00.1.10 2.00 3.00		LFM545 (12)		✓		EO A1 LCD 5382	EO A1 - INITIAL DWG RELEASE - INSTL MADE PER EO W. Gullan 3-27-70	LM-7	NOT	REQD	SMALL 2-20-70		

CHG APPROVED	LTR	GROUP LDR	VDI	STRUCT	STRUCT	THERMO
	A					

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW200-55536	A

SCALE NONE SHEET 1.10 (A)

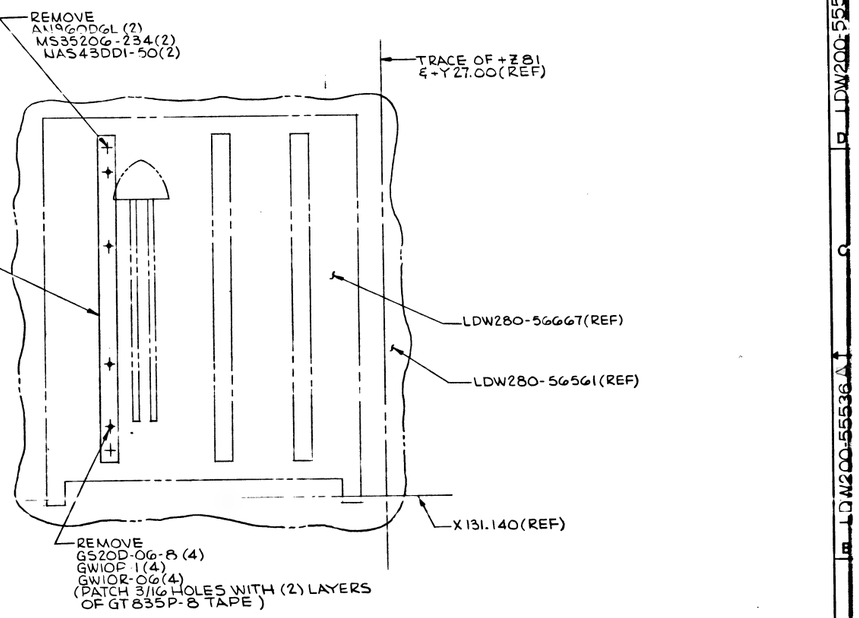
ENG 77.16 3-66

01

NAS 9-1100

| | | |

SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE with MIL-STD-130	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED CHECKED USE BOTH SIDES IF NECESSARY	
LENGTHS 'A' AN, MAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
INSTALL RIVETS IN ACCORDANCE WITH	



LDW200-55536-1 INSTL

LDW200-55536 A

GRUMMAN AEROSPACE CORPORATION BETHPAGE, NEW YORK 11714			
SIZE C	CODE IDENT NO. 26512	LDW200-55536	A
SCALE NONE		SHEET 3.00	

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

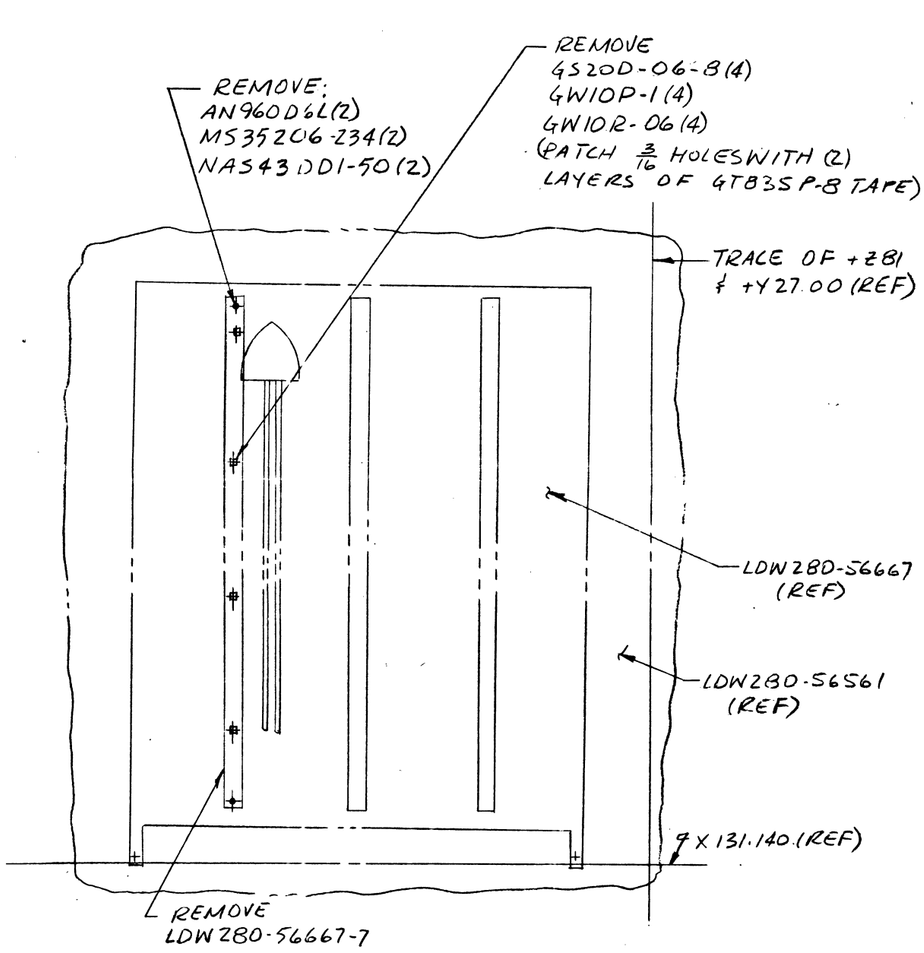
DWG. NO. LDW200-55536 | EO NO. A1
CONTROL INFO NO. LDW280B9710

BMO 32.2 REV 3-65

CREATE -1 INSTL AS SHN
N/A LDW280-54508 LM-7(37) 1REQD/MOD, LFM 545
CONTRACT NO NAS 9-1100, WORK PACKAGE NO. 111,
DOC TYPE II, I & T=E

TO

NAS 9-1100



*PARTS NOT MADE

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCD 5382 PKG 50

REASON FOR EO: TO PROVIDE CLEARANCE FOR MESA SHOVEL

DESCRIPTION OF EO: E.O. A1 INITIAL DWG RELEASE, INSTL MADE PER E.O.

GAEC EO RELEASE: 1-13-70

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP	APPROVED BY	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
LM	LFM 545	LM-7(37)						DATE 1-12-70		1/12/70			1-12-70
								VDI					

PRIORITY: C

DRAWING TITLE: SHIELD INSTL - D/S - QUAD II - (RWK OF LDW280-54508)

DRAWING NO.: LDW200-55536

EO NO.: A1

CDR 011270
ISSUED BY S. TAMRES/G. HANSMAIN x86096 SECTION VD1 GROUP NO. 335 PL 25

GRUMMAN AEROSPACE CORPORATION

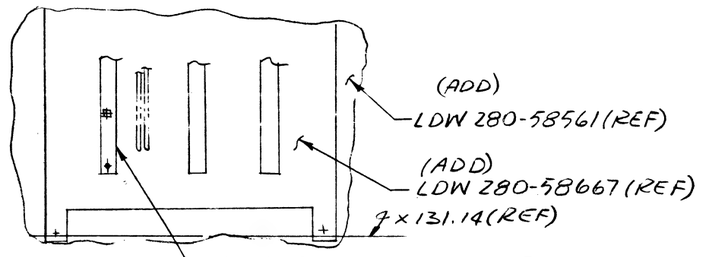
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200-55536		EO NO. B1
CONTROL INFO NO. LDW280C0128		

FOR -1 INSTL, ADD LM-8 EFF FOR N/A LDW280-54508, 1 REQD/MOD.



DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓ LCD 5382 PKG 50

REASON FOR EO: TO PROVIDE CLEARANCE FOR MESA SHOVEL

DESCRIPTION OF EO: FOR -1, ADDED LM-8 (38) EFF IN F/D, ADDED REMOVE LDW 280-58667-11, LDW280-58561 (REF) & LDW 280-58667 (REF)

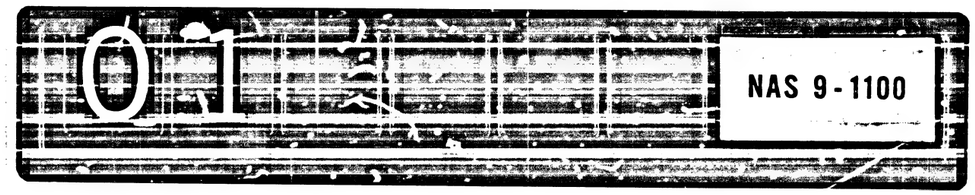
GAEC EO RELEASE

MODEL	EFFECTIVITY			DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY	884								
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	REVISE DWG	RECORD EO	REWORK	SCRAP	DATE	3-10-70								
LM	LFM545	LM-8(38)							VDI	THERARD	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG		

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SHIELD INSTL - D/S - QUAD III (RWK OF LDW 280-54508)	LDW200-55536	B1

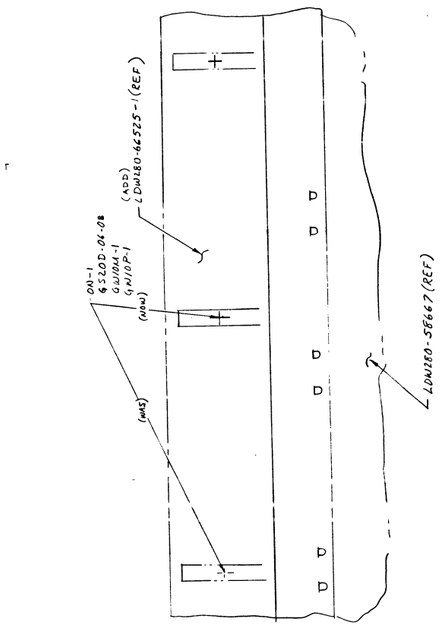
CDR 03/370

ISSUED BY S. TAMRES/G HANSMANN x87222 SECTION VD1 GROUP NO. 335 PL 25



GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW200-55536 | ED NO. 82
CONTROL INFO NO. LDW280C0340



DETAIL SPEC REQ. | CL IV ENGNG CHG | CL V ENGNG CHG | LCD 5382 PK 50

REASON FOR ED: REMOVAL OF LDW280-59507 -11 STRAP FOR SHAVEL ON HOSE.

DESCRIPTION OF ED: ON-1 RELOCATED (GS20D-0608, GNIDM-1, GNIOP-1) ADDED LDW280-64525-1 (REF) CALLOUT

MODEL	EFFECTIVITY: EFFECTIVE ON AIRCRAFT	BASIC UNIT NO.	NEXT HIGHER UNIT NO.
LM	LPM 545	LM 8138	

DRAWING NOW: YES | SPECIFICATION NOW: YES | SHIPMENT OF PARTS: NOW

PRIORITY: C

APPROVED BY: BF | MH | KM
DATE: 4-5-74 | 4-10-74 | 4-10-74

DRAWING TITLE: SHIELD ASSY - EWS - QUAD II - (PART OF LDW280-59507)

DRAWING NO.: LDW200-55536 | ED NO.: B2

CDP: 1222
ISSUED BY: DON HAGAS X87222 SECTION: VDI GROUP NO. 280 PAGE 2C

NAS 9-1100

LDW200-55539

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LEM 563	LDW200 55530	ITA ERICO	1
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW200-55539-1		GAEC SCH NO.	

WORK PACKAGE FUNCTION #110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00		2.00		3.00	4.00				
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED	G-G	GRUMMAN REL INFO	
LAST DASH NO. USED	-19	PRIM NO.	207

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
~~FRACTIONS~~ - DECIMALS - ANGLES
XX±.03 XXX±.010 ±0°30'

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
	LCD5430 PKG50

CONTRACT NO. NAS9-1100 | LINE ITEM | DOCUMENTATION TYPE II

DRAWN BY	G. BARNES		
LAYOUT BY	G. BARNES 6-8-70		
CHECKED BY	2-27-70		
GR LEADER	2/27/70		
VEH DES INT	2-27-70		
STRUCT		PROJ ENGR	2-27-70
STRUCT	w/att 2/27/70	REL GROUP	2-27-70

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BRACKET INSTL
DESCENT STAGE-ΔP COMMON INTERFACE
(REWORK OF LDW280-25508) LFM563

SIZE	CODE IDENT NO.	
B	26512	LDW200-55539

SCALE NONE | SHEET 1.00 OF 4

CDR 2-27-70

ENG 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
AR		SEE NOTE 1	E	SHIM							
AR		MS20470AD4	E	RIVET	GOVT STD						
26		GR500A-4H		RIVET	GRUMMAN STD						
2		GR501A-4E		RIVET	GRUMMAN STD						
17		GR500A-4F		RIVET	GRUMMAN STD						
15		GB11D-8-76		BRACKET ASSY	GRUMMAN STD						
13		LDW200-55539-19		ZEE	AL ALLOY SH	QQ-A-250/4	2024-T3	.050×2×3	NONE	76	4A
2		-17		CLIP				.050×2×2			3A
2		-15		CHANNEL				.050×3×5			3A
1		-13		FILLER				.040×1×17			5C
1		LDW200-55539-11		BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3	.080×7×24	NONE	76	5B
-1		LDW200-55539-1	E	BRACKET INSTL							8A

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
76	ALODINE	LSP14-9010

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55539

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130.	
AND ALL OTHER MARKINGS IN REGION MARKED ⊏⊐ USE BOTH SIDES IF NECESSARY.	PART NUMBER
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	✓
INSTALL RIVETS IN ACCORDANCE WITH LPS P19-15302, 15303	✓

NAS 9-1100

FO1L703

-Y

SEE DETAIL (ZONE 5A)

-Y48.538(REF)

-Y38.48?(REF)

.25
9.75
8.62
7.50
19.00
.25

G
G (ZONE 7A)

3.44
11.50
19.25
16.88
.25
3.25
19.00
33.68
49.38
49.25

2.25
17.31
33.38
.25

LDW200-55539-19(3)

39.12
22.88
19.25

F
F (ZONE 8A)

.165-.171
7 HOLES

.25

-Z81.000(REF)

-Z27.000(REF)

.25(MIN)
.25(MIN)

+Z27.000(REF)

-Z

+Y

CODE IDENT NO.	DWG NO.	SHEET
26512	LDW200-55539	3

FRAME 4 FRAME 5

CODE IDENT NO	DWG NO	SHEET
26512	LDW200-55539	3

FRAME 1 | FRAME 2 | FRAME 3

LDW200-55539-1 INSTL-VIEW LOOKING DOWN AT UPPER DECKS

SCALE 1/4

8 | 7 | 6 | 5

+Z27.000(REF)

+Y81.000 (REF)

SECTION F-F
(ZONE 9B)
(TYPICAL 9 PLACES)

BEND R .16

-19

.66

.59

.165-.171 HOLE IN -19

.25R(TYP)

.25(MIN)

.66

L31

.25

REMOVE MS20470DD4(2)
ADD GR500A-4H(2)

SECTION G-G
(ZONE 9C)
(TYPICAL 4 PLACES)

-19(REF)

.25

-19(REF)

REMOVE MS20470DD4(2)
ADD GR500A-4H(2)

.25(MIN)

.25(MIN)

-Z81.000(REF)

+Y27000(REF)

F

Z+

18.25

.25

TYPICAL BOTH ENDS

2.25

.13 (REF)

.94

2.62

.44

.44

.44

.75

MS20470AD4(5)

DETAIL D (ZONE 8D)

.59

REMOVE MS20470DD4(2)
ADD GR500A-4E(2)
CSK NEARSIDE
OF LDW280-25521

.68-.695
4 HOLES

L50

2.50

.68

A

2.38

(ZONE 3A)

A

.88

-Y384.35(REF)

LDW280-17431-11 (REF)

-15(REF)

-17(REF)

+Z27.000(REF)

10.18

BEND R .28

-11

-15(REF)

B

(ZONE 5D)

B

-Y48.475 (REF)

-Y48.538 (REF)

-17(REF)

1.78

2.68

-13

.25 R(TYP)

.50

.25

3.12

REMOVE MS20470DD4(4)
ADD GR500A-4F(7)

MS20470AD4(21)

VIEW C-C (ZONE 8D)
(LOOKING IN8D @ 5:0 PANEL)
SCALE 1/4

-Y27000(REF)

.165-.171
12 HOLES

.25(TYP)

.25(TYP)

.25(TYP)

875

X196.000(REF)

25.00

4.50

X131.140(REF)

1.00

5725

SECTION B-B
(ZONE 5C)

MS20470AD4(3)

.25

.38

.75

SEE DETAIL D (ZONE 5A)

C

(ZONE 6C)

C

-Y384.83(REF)

-Y48.538(REF)

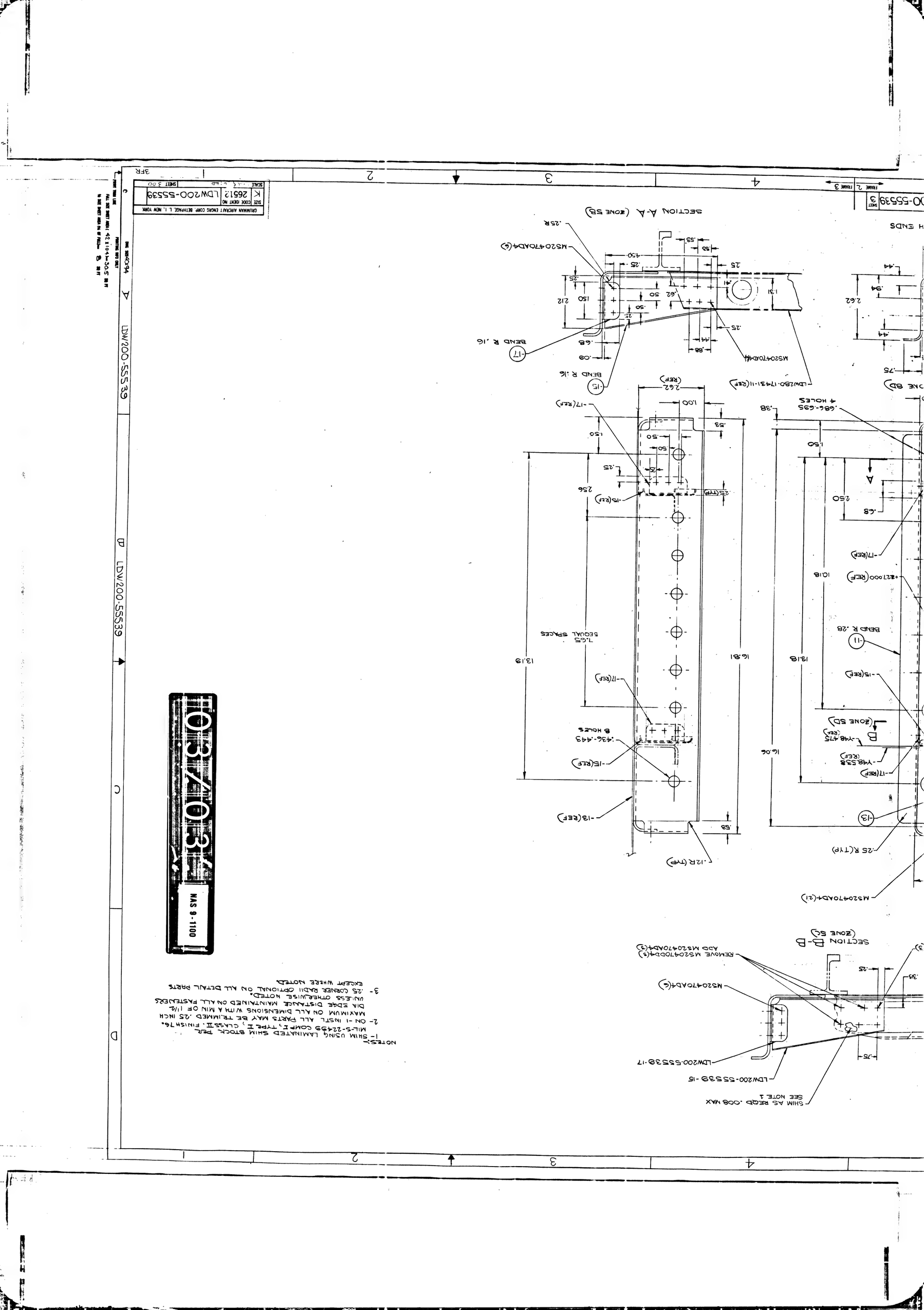
SEE DETAIL D (ZONE 5A)

NAS 9-1100

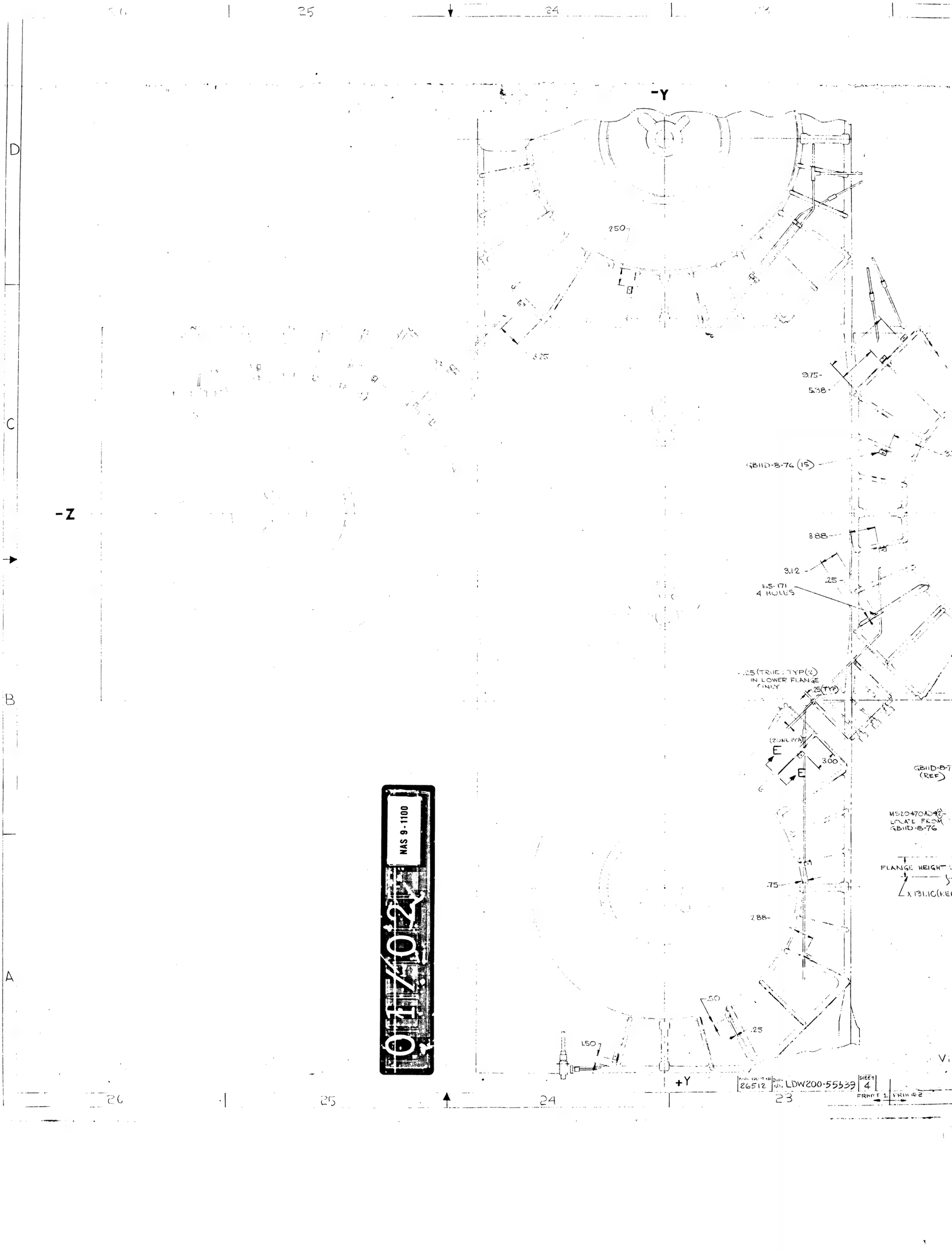
8 | 7 | 6 | 5

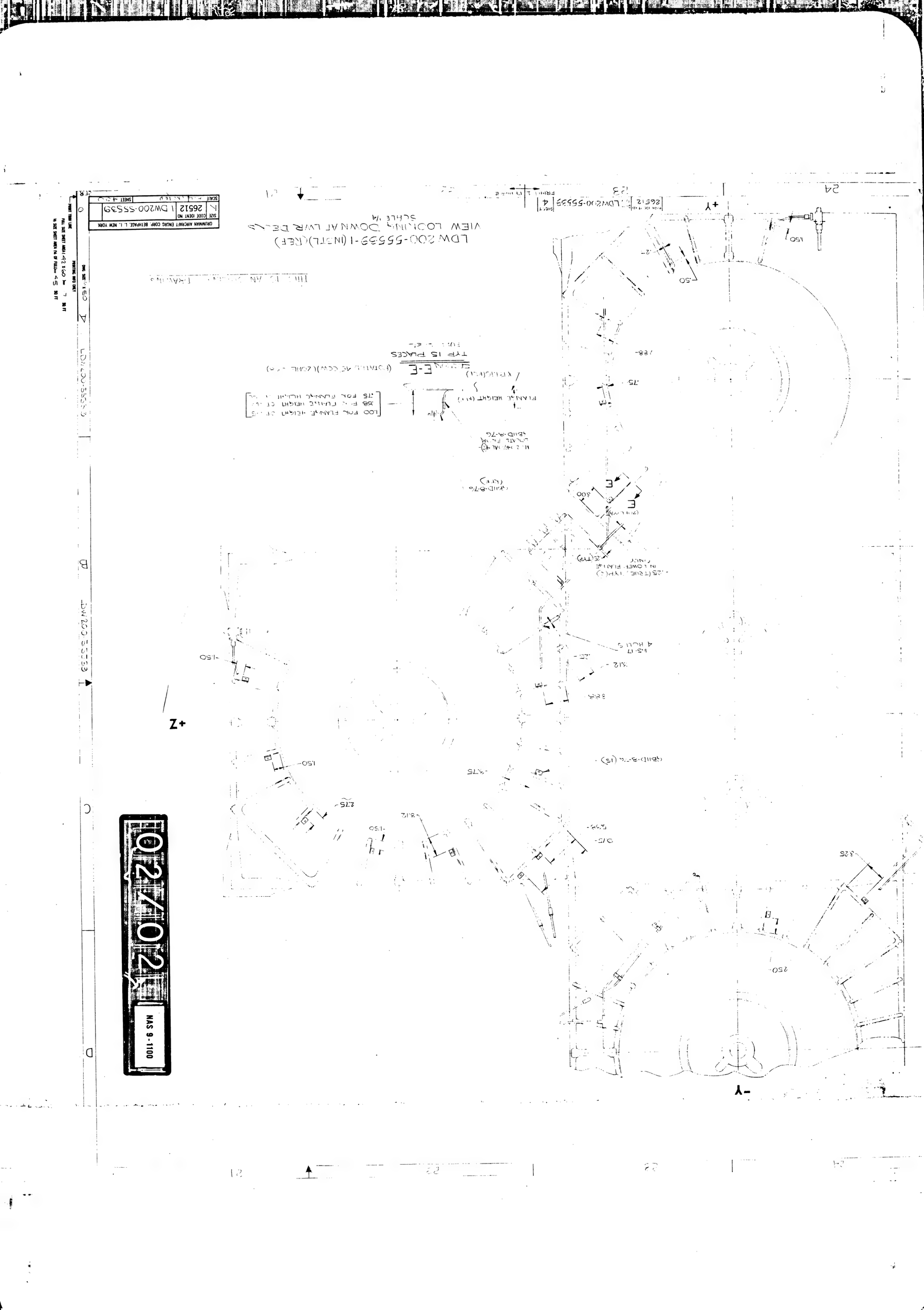
FRAME 2 | FRAME 3

LDW200-55539 SHEET 3


NOTES:
1- SHIM USING LAMINATED SHIM STOCK PER MIL-S-22499 COMP I, TYPE II, CLASS II. FINISH 76.
2- ON -1 INSTL ALL PARTS MAY BE TRIMMED .25 INCH MAXIMUM ON ALL DIMENSIONS WITH A MIN OF 1/2- DIA EDGE DISTANCE MAINTAINED ON ALL FASTENERS UNLESS OTHERWISE NOTED.
3- .25 CORNER RADII OPTIONAL ON ALL DETAIL PARTS EXCEPT WHERE NOTED.
#03710034
NAS 9-1100
SECTION A-A (ZONE 5B)
SECTION B-B (ZONE 5C)
SECTION C-C (ZONE 5D)
SHIM AS REQD .008 MAX SEE NOTE 1
LDW200-55539-15
LDW200-55539-17
REMOVE MS20470DD4(3) AND MS20470AD4(3)
MS20470AD4(6)
MS20470AD4(21)
LDW280-17431-11(REF)
MS20470AD4(4)
MS20470AD4(6)
BEND R .16
BEND R .28
.12R (TYP)
.25R (TYP)
.25 R (TYP)
.68-.695 4 HOLES
.436-.443 8 HOLES
.748-.758 (REF)
.748.538 (REF)
7.65 SEQUAL SPACES
13.19
16.81
16.06
13.18
10.18
2.62
2.56
1.50
1.00
2.50
2.12
1.31
.62
.50
.53
.44
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-86
-87

NAS 9-1100


-Y
-Z
+Y
.250
.625
.975
.538
3.88
3.12
.25
4 HOLES
.25 (TRUE) TYP(2)
IN LOWER FLANGE
ONLY
.25 (TYP)
(ZONE 9A)
3.00
.75
2.88
.50
.25
1.50
GB11D-8-76
(REF)
FLANGE HEIGHT
GB11D-8-76 (15)
26512
LDW200-55539
SHEET 4
26
25
24
23


LDW200-55539-1 (INSTL)(REF)
VIEW LOOKING DOWN AFT LWR DECK
SCALE 1/4
CRUMMAN AIRCRAFT ENGNG CORP. BETHPAGE, L.I., NEW YORK
SIZE 26512
CODE IDENT NO
LDW200-55539
SHEET 4 OF 4
SCALE - FULL
DWG SIZE A
LDW200-55539
PRINTING INFO ONLY
PRINT THIS LINE
FULL SIZE SHEET AREA IS 42.240 sq. IN.
IF SIZE IS NOT FULL 4-5 SIZE
+Y
-Y
+Z
-Z
NAS 9-1100
0270202

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

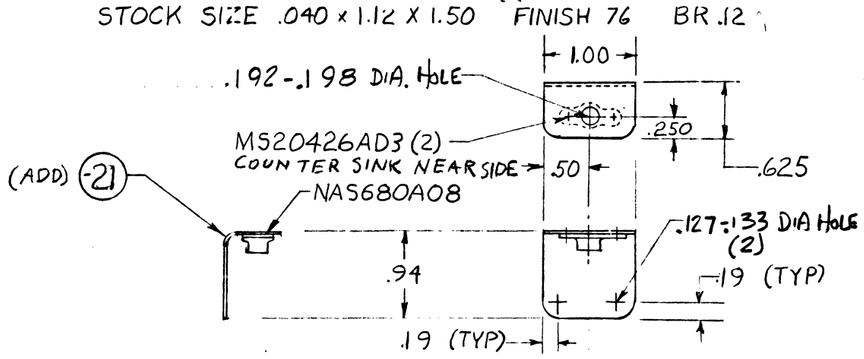
ENG 32.2 REV 3-65

ENGINEERING ORDER

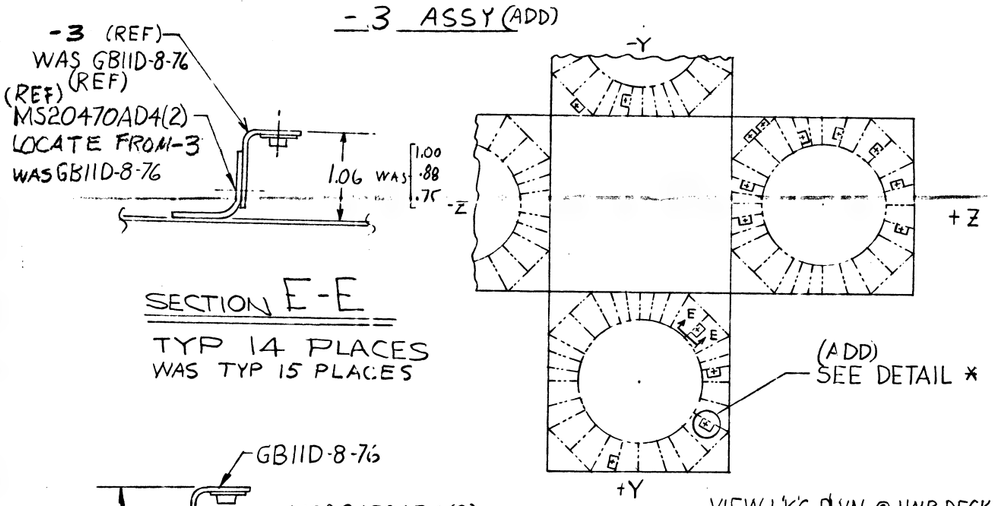
DWG. NO. LDW200-55539 | EO NO. A1

CONTROL INFO NO. LM 52-2642

ON-1 IN F/D & B/M CREATE -3 ASSY & -21 BRACKET
-3 ASSY CONTAINS -21 BRACKET (1), MS20426AD3 RIVET (2),
NAS680A08 NUT PLATE (1).
-21 BRACKET MATERIAL AL ALLOY SHT QQ-A-250/4 2024-T3
STOCK SIZE .040 x 1.12 X 1.50 FINISH 76 BR .12



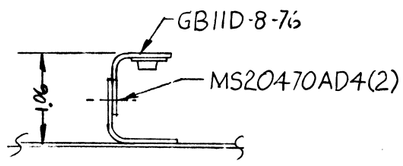
-3 ASSY (ADD)



SECTION E-E

TYP 14 PLACES
WAS TYP 15 PLACES

VIEW L'K'G DWN @ LWR DECK



(ADD) DETAIL *

ON-1 IN B/M REMOVE GB11D-8-76 (14) ADD -3 (14) (PLUG HOLES)
* USE NEXT AVAILABLE NUMBER OR LETTER

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHK	✓ LCD 5430

REASON FOR EO: TO MAKE TUBING LEVEL

DESCRIPTION OF EO: ON-1 IN F/D & B/M CREATED -3 & -21 ADDED DETAIL * IN Sect E-E TYP 14 PLACES WAS TYP 15 PLACES IN B/M REMOVED GB11D-8-76 (14)

GAEC EO RELEASE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LEM 563	LTA5/R (159)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		✓	

APPROVED BY	DATE
[illegible]	4-7-70
[illegible]	4/8/70
[illegible]	4 7 70
[illegible]	3-26-70
[illegible]	3/27/70

RELIAB. GROUP | GROUP LEADER | STRESS GROUP | LIAISON ENGR | PROJ ENGR

PRIORITY: C

DRAWING TITLE: BRACKET INSTL D/S ~ΔP COMMODITY INTERFACE (REWORK OF)

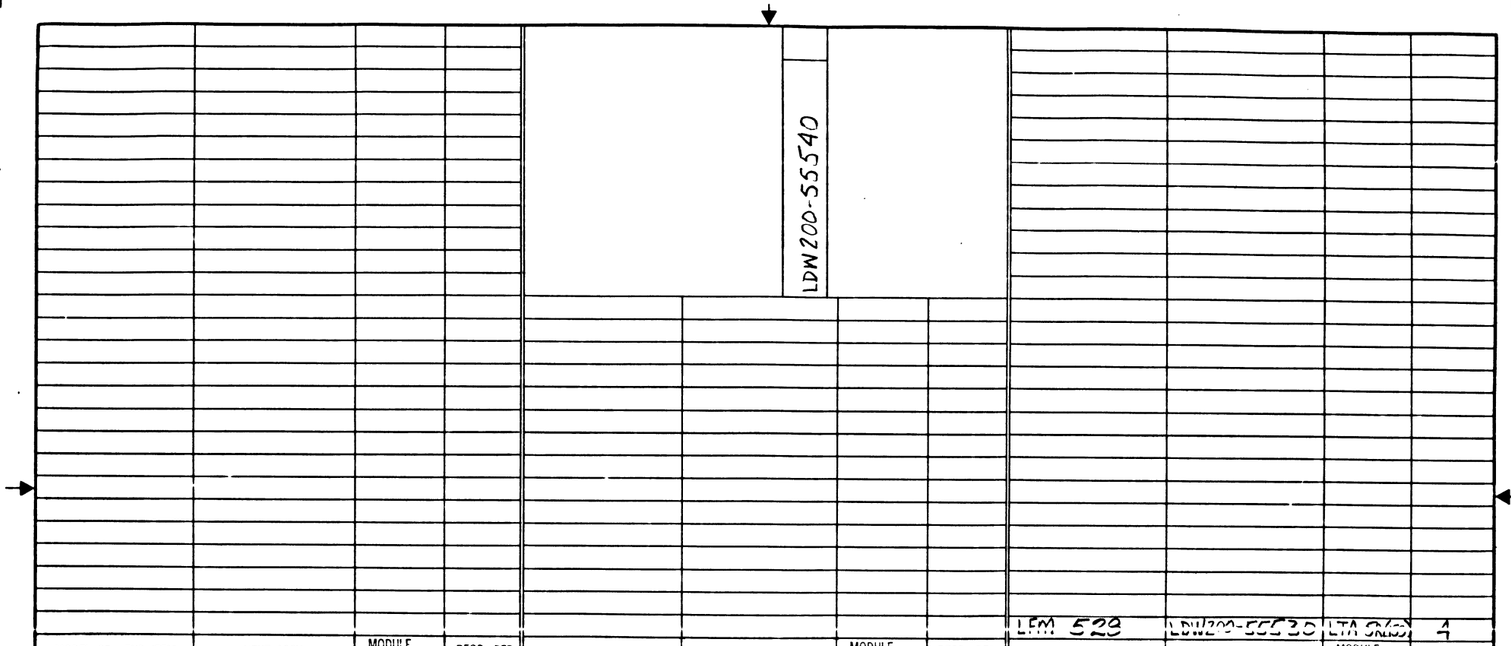
DRAWING NO.: LDW200-55539

EO NO.: A1

ISSUED BY H. RYAN X86046 SECTION VDI (EQUIP LINES) GROUP NO. 332 PL 52

T10

NAS S-1100



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		LEM 520	LDW200-55530	LTA SKIN	4
								PART NO. LDW 280-55540 -1		GAEC SCH NO.	

WORK PACKAGE FUNCTION # 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00		2.00		3.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	BB
LAST DASH NO. USED	-35

GRUMMAN REL INFO: PRIM NO. 207

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ±.06 ± 1/2°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 5289 PKG 50	

CONTRACT NO. NAS9-1100 LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	E. COLEMAN				
LAYOUT BY	E. COLEMAN				
CHECKED BY	G. BAUMAN 2-27-70				
GR LEADER	[signature] 2/27/70				
VEH DES INT	[signature] 2-27-70				
STRUCT	L.G. 2-27-70	PROJ ENGR	[signature] 2-27-70		
STRUCT	[signature] 2/27/70	REL GROUP	[signature] 2-27-70		

CDR 2-27-70

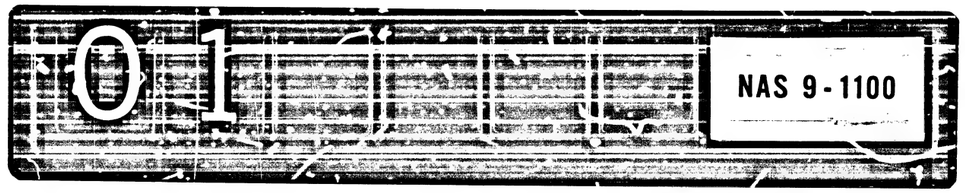
(R) GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SIGHT GAUGE INSTALLATION
DESCENT STAGE
(REWORK OF LDW280-25508 LFM563)

SIZE	CODE IDENT NO.	
B	26512	LDW 200-55540

SCALE NONE SHEET 1.00 OF 3

ENG 77.1 12-65



QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
AR		MS20470DD6	E	RIVET	GOVT STD.						
AR		SEE NOTE 1		SHIM							
1		GR500A-6M		RIVET	GRUMMAN STD						
9		-6L									
1		-6K									
1		-6H									
1		-6F									
18		GR500A-6C	E	RIVET	GRUMMAN STD.						
2		LDW200-555403	E	PLATE	AL ALLOY SH	QQ-A-250/4	2024-T3	.190 X 3 X 14	NONE	76	2B
1		-33		CLIP				.080X 4X 5			6D
1		-31						.080X 4X 5			7D
2		-29						.080X 4X 5			7C
2		-27						.080X 4X 5			8D
1		-25						.080X 4X 5			8C
1		-23		CLIP			2024-T3	.080X4X 5			8B
1		-21		SHIM			2024-T351	.250X1X 17			3B
1		-19		SHIM			2024-T351	.375X1X 12			6C
3		-17		ANGLE			2024-T3	.080X2X 14			6B
8		-15		CLIP			2024-T3	.080X2X 3			4C
2		-13		HAT	AL ALLOY SH	QQ-A-250/4	2024-T3	.080X8X 11	NONE	76	3B
1		LDW200-555401		CHANNEL	AL ALLOY SH	QQ-A-250/4	2024-T3	.080X17X 83	NONE	16	3B
		LDW200-555401	E	SIGHT GAGUE INSTL							4A

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
76	ALODINE	LSP14-9010

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

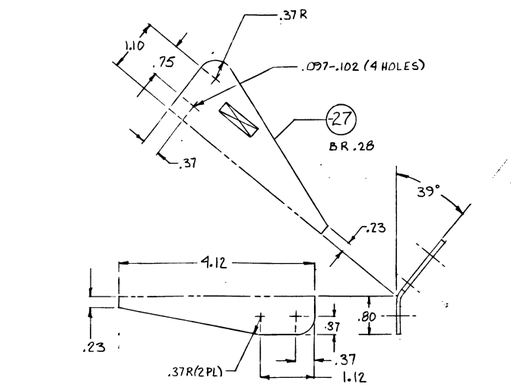
SIZE	CODE IDENT NO.	
B	26512	LDW200-55540

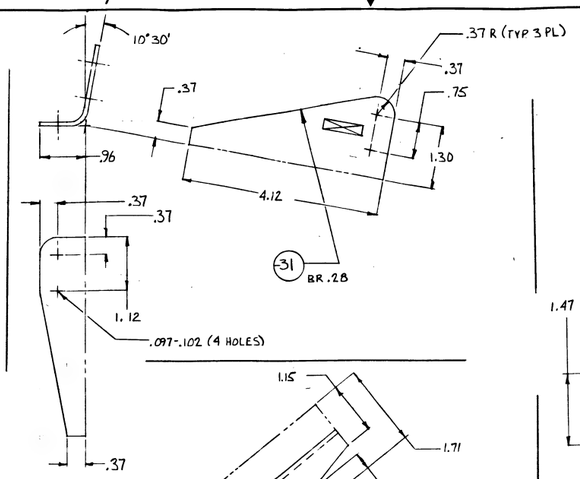
SCALE NONE SHEET 2.00

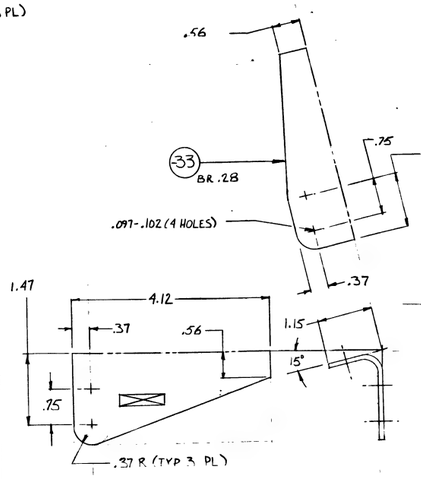
ENG 77.2 7-64

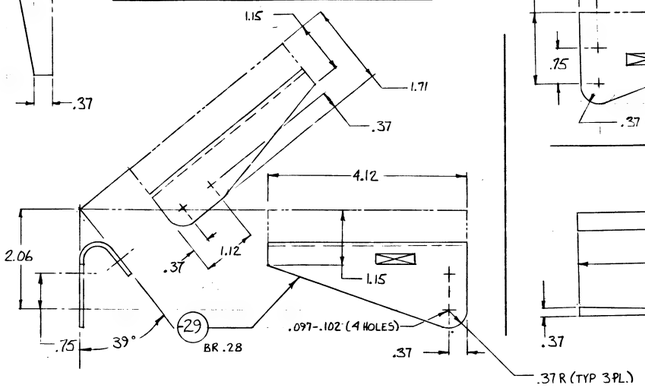
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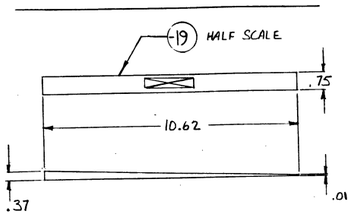
NAS 9-1100

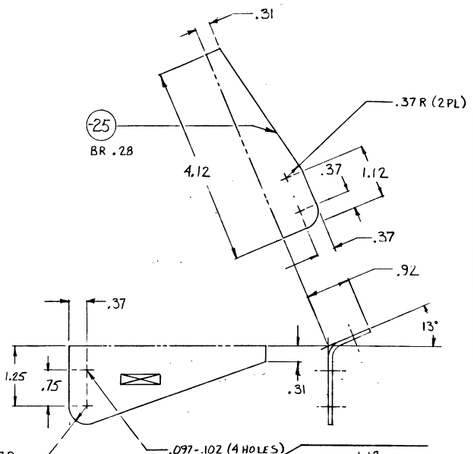


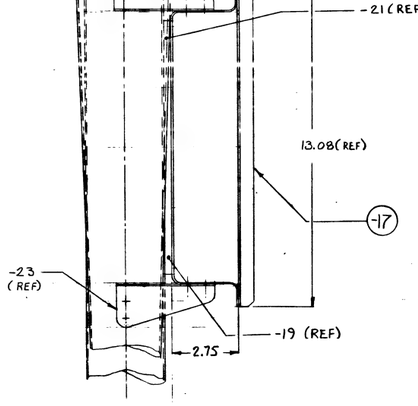


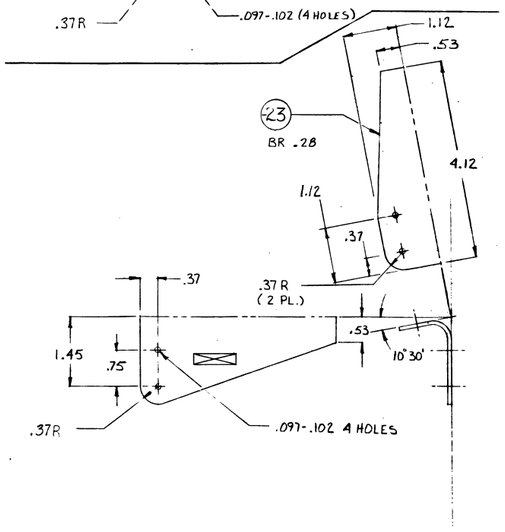


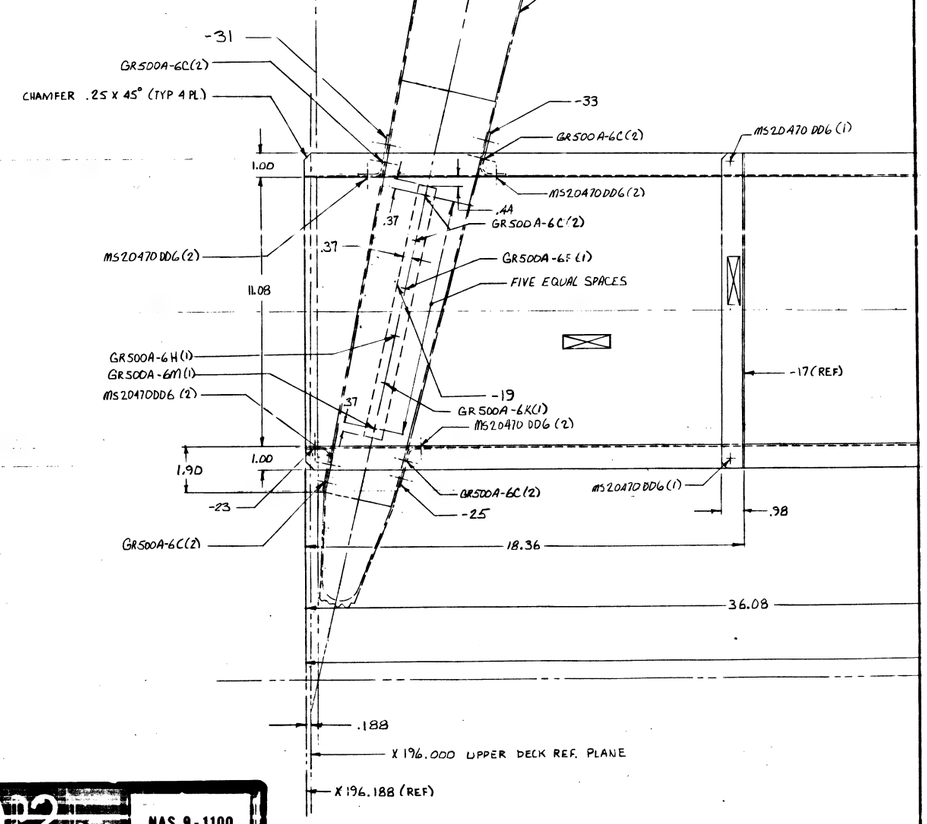












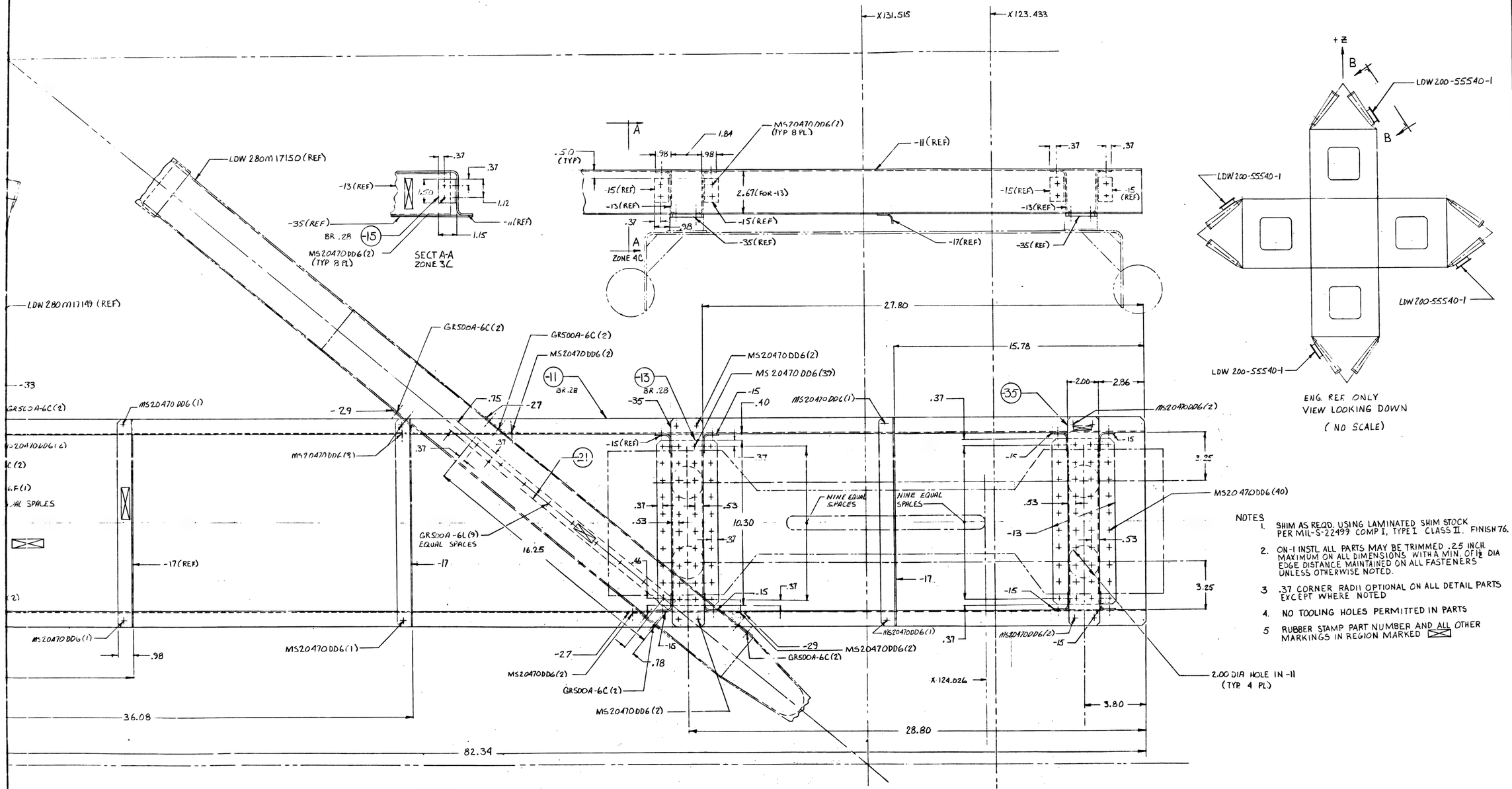
01/02

NAS 9-1100

CODE IDENT NO	DWG NO	REV	SHEET
26512	LDW 200-55540		3

FRAME FRAME

REVISIONS						
ZONE	LTR	DESCRIPTION	CPF CODE	MODEL	DATE	APPROVED



NOTES

1. SHIM AS REQD. USING LAMINATED SHIM STOCK PER MIL-S-22499 COMP I, TYPE I CLASS II. FINISH 76.
2. ON-I INSTL ALL PARTS MAY BE TRIMMED .25 INCH MAXIMUM ON ALL DIMENSIONS WITH A MIN. OF 1½ DIA EDGE DISTANCE MAINTAINED ON ALL FASTENERS UNLESS OTHERWISE NOTED.
3. .37 CORNER RADII OPTIONAL ON ALL DETAIL PARTS EXCEPT WHERE NOTED
4. NO TOOLING HOLES PERMITTED IN PARTS
5. RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☒

LDW 200-55540-1 INSTL
VIEW BB (TRUE VIEW OF OUTRIGGERS)
(HALF SCALE)

REF. PLANE

02/02 NAS 9-1100

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES			CONTRACT NO.	GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714	
LINEAR TOL	XX	± .03	DRAWN BY		
	XXX	± .010	LAYOUT BY		
ANGULAR TOL		± 0° 30'	DESIGNED BY		
TOL ON LOFTED DELINEATIONS IS			GR LEADER		
			REL GROUP		
			PROJ ENGR		
			GOVT APPD	SIZE J	CODE IDENT NO. 26512
				SCALE FULL	SHEET 3.00 OF

FOR PARTS LIST, USAGE DATA, AND DWG SH STATUS, SEE DOCUMENT SAME NUMBER PREFIXED PL

DISTR LIST #

W 200-55540 | REV | SHEET 3

PRINTING INFO ONLY
DWG SIZE 34 x 88
FULL SIZE SHEET AREA ON 8 MI = 24.5 SQ FT
½ SIZE SHEET AREA ¼ OF FULL = 6.5 SQ FT

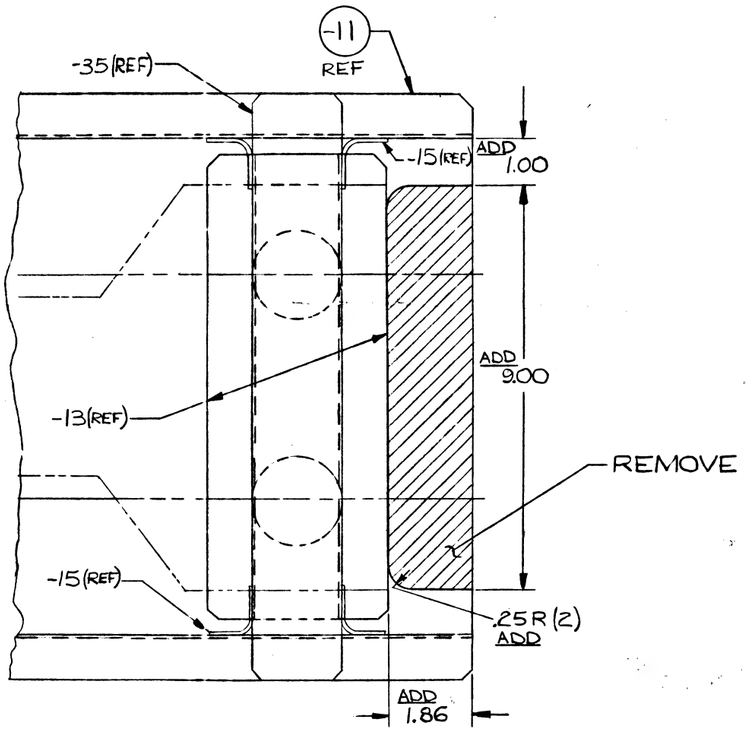
LDW 200-55540

GRUMMAN AEROSPACE CORPORATION
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.2 REV 3-68

DWG. NO. LDW200-55540 | EO NO. A1
CONTROL INFO NO. LDW280C0238

ON -11 ADD CUTOUT AS SHOWN



ZONE 2B SH 3 (REF)

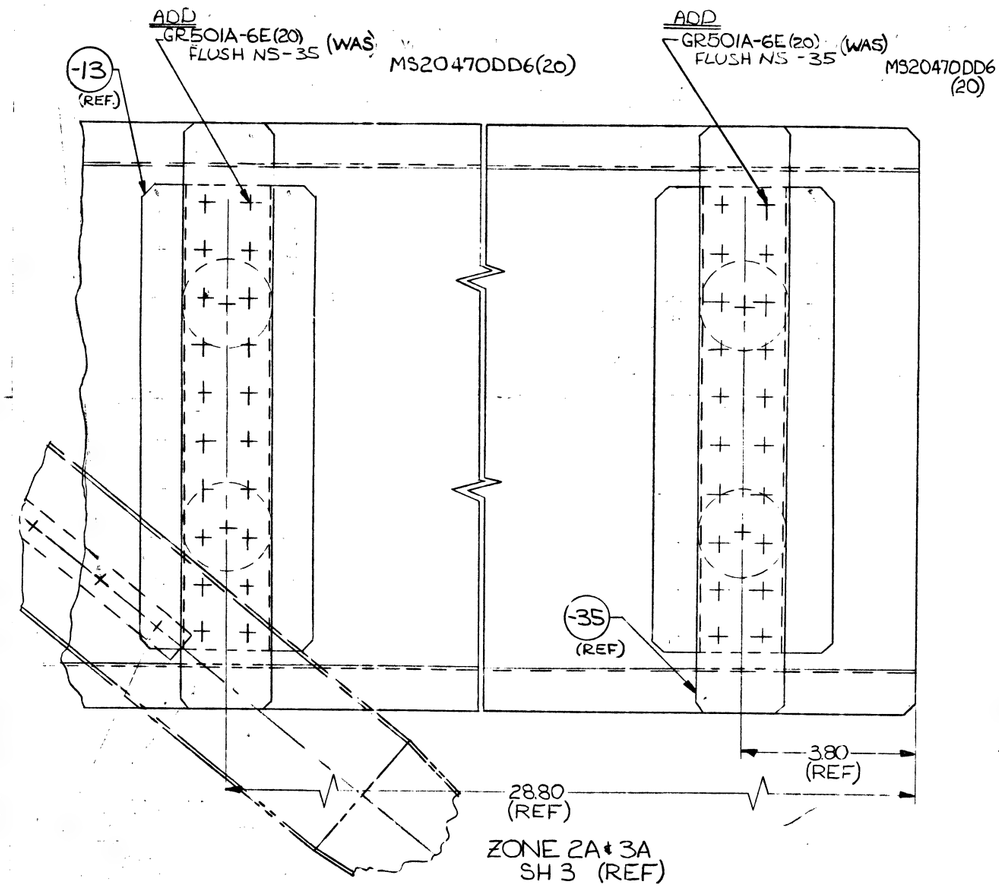
| | | |

GRUMMAN AEROSPACE CORPORATION
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.7 REV 3-66

DWG. NO. LDW200-55540 | EO NO. A2
CONTROL INFO NO. LDW280C0344

ON -1:
ADD GR501A-6E (4C) REPLACING MS20470DD6 (40)



DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	☑ LCD 5288 PKG 50

REASON FOR EO: TO PROVIDE FOR FLUSH MOUNT OF SHOCK MOUNTS

DESCRIPTION OF EO: ON -1: ADDED GR501A-6E(40) REPLACING MS20470DD6 (40)

MODEL	EFFECTIVITY E. [redacted] I.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LEM 528	LTA-5R(1B)	

DRAWING CHANGE REQD	DISPOSITION OF PARTS	APPROVED BY							
REV. SE DWG ✓	RECORD EO	REWORK ✓	SCRAP	DATE	4-17-70	V.D.I.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGR.	PROJ ENGR.
									NM 4/17/70	4/17/70		

PRIORITY C | DRAWING TITLE: SIGHT GAUGE INSTL ~ D/S (REWORK OF LDW280-25508 LFM563) | DRAWING NO. LDW200-55540 | EO NO. A2

4/17/70 ISSUED BY J. PEDERSEN/G. HANSMANN X87222 SECTION V.D.I. GROUP NO. 335 PL 25

GAEC EO RELEASE

NAS 9-1100

GRUMMAN AEROSPACE CORPORATION

CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO.	EO NO.
LDW200-55540	A3
CONTROL INFO NO. LDW280C0402	

ADD NOTE *:

NOTE * MS20470AD4 & MS20470AD5 RIVETS MAY BE SUBSTITUTED FOR MS20470DD4 & MS20470DD5 RIVETS RESPECTIVELY.

* USE NEXT AVAILABLE NOTE NO.

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	V	LCD 5288 PKG 50

REASON FOR EO: NO HEAT-TREAT FACILITIES AT WSTF

DESCRIPTION OF EO: ADDED NOTE *

GAEC EO RELEASE

MODEL	EFFECTIVITY	GAEC UNIT NO.	SUB CONTR UNIT NO.
	E. [redacted] I		
LM	LEM 528	LTA-5R(159)	

DRAWING CHANGE REQD: V REVISE DWG; RECORD EO

DISPOSITION OF PARTS: NOT REWORK; REQD SCRAP

APPROVED BY								
DATE	4/25/70							
	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ. ENGRG	
				[illegible] 4/27/70	NM 4/24/70	4/27/70	4/24/70	

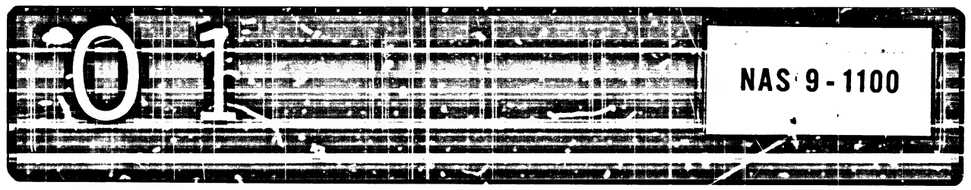
PRIORITY: C

DRAWING TITLE: SIGHT GAUGE INSTALLATION-D/S

DRAWING NO.: LDW200-55540

EO NO.: A3

05/01/70 ISSUED BY J.PEDERSEN/G.HANSMANN X87222 SECTION V.D.I. GROUP NO. 335 PL 25



LDW200-55542 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM 567	LDW200-55549	LM-8(38)	1
PART NO. LDW200-55542-1		GAEC SCH NO.	

WORK PKG FUNCTION NO. 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		1.10							
REV	A		A							
SHEET	2.00	2.01	2.02							
REV	A	A	A							
SHEET	3.00	4.00								
REV	A	A								

LAST SECT LTR USED	K	GRUMMAN REL INFO (R)	
LAST DASH NO. USED	-47	PRIM NO.	207

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
~~FRACTIONS~~ · DECIMALS – ANGLES
XX ±.03 XXX ±.010 0°30'

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 5456 PKG 50	

CONTRACT NO. NAS 9-1100 | LINE ITEM | DOCUMENTATION TYPE II

DRAWN BY	R. CLARK		
LAYOUT BY	R CLARK		
CHECKED BY	[illegible] 3-21-70		
SP. LDR	RC for [illegible]		
ENG DESIGN	[illegible] 3-20-70		
	[illegible]	PROJ ENGR	[illegible] 3-20-70
STRUCTURES	DR (R)	REL GROUP	[illegible] 3/21/70
STRUCTURES	WB 3-20-70		

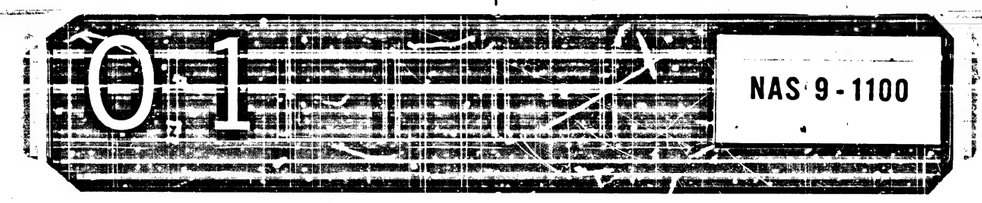
(R) GRUMMAN AEROSPACE CORPORATION
BETHPAGE, L. I., NEW YORK

ADAPTOR INSTALLATION
DESCENT STAGE-LASER RANGING
RETRO REFLECTOR-QUAD I

SIZE	CODE IDENT NO.		
B	26512	LDW200-55542	A
SCALE NONE		SHEET 1.00 OF 7	

CDR 3-20-70

ENG 77.1 12-65



REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	3.00	6B 6C	LFM-567		✓		EO-A1 LCD5456	ON-3 ADDED .249÷.255 DIA HOLE(3) @ 13.07, 1.18, 2.25, 2.6.140, .68 (TYP) & 10.18 DIMS, ON-39 DIMS .94 WAS 1.00 & 28.58 WAS 28.45. ADDED SH1.10 & 2.02	LM-8	✓		V NARONIS 7-13-70		
	2	4.00 2.00		LFM-567		✓		EO-A2 LCD5456	ON-31, 15.63 WAS 16.56 & GH11F-50(3) WAS GH11F-36(3). ON-3 REPLACED -23 WITH -49. RELOCATED SEC. D-D.		✓	-23			
	3	3.00 2.02 2.01	2A 6A 6D	LFM-567		✓		EO-A3 LCD5456	FOR-3, ADDED -51, -53, -59 (4 EA) REQD/MOD, -55 & -57 (1 EA) REQD/MOD, NOTE 10 & GN512CF3L NUT. GB511J-3-16(10) REQD WAS (2) REQD REMOVED -39 & -41. LDW280-66540-7 WAS -3 (2 PLACES)			-39 -41			
	4	3.00 2.00	1D	LFM-567		✓		EO-A4 LCD5456	REVISED NOTE *3: LID360-22830 WAS LDW200-55549. CHANGED CALLOUT; LDW200-55549 (REF) WAS LDW360-58311 (REF)		NOT	REQD			
	5	3.00 2.00	4A	LFM-567		✓		EO-A5 LCD5456	ON-3, ADDED -61, REMOVED -47 (1)		✓	-47			
	6	3.00 2.00	2C	LFM-567		✓		EO-A6 LCD5456	ADDED -63 REMOVED -43, REVISED NOTE *2 FINISH 76 PER LSP14-9010 WAS 88.			-43			
	7	3.00	9A	LFM-567		✓		EO-A7 LCD5456	ON-1, GR500A-4F(2) WAS MS20470DD4(2) GR500A-5E(3) WAS MS0470DD5(3).		✓				
	8	3.00 2.00 2.01	9A 9C 8B 9B	LFM-567		✓		EO-A8 LCD5456	REF EOA7: IN ZONE 9C AN960D416(4) WAS(2), ADDED .139-.145 DIA HOLE, GB511J-06-16, MS21042-06, REMOVED GB511J-3-16 & MS21042-L3 FOR-29; FINISH PER NOTE 9 WAS NOTE 5, ADDED NOTE 9, MS20470DD5(3) WAS GR500A-5E(3) NS, MS20470DD4(2) WAS GR500A-4F(2) NS.		✓		L. SCHWETER 8-21-70		
	9	1.10 3.00	7B 7C			✓		EO A9 LCD 5456	ON-3 MS20426DD4(1) WAS MS2047DD4 MS20470DD4(26) NS WAS MS0470DD4(27) NS	LM-8	✓				
	10	1.10		LFM 567		✓		EO A10 LCD 5456	REF EO A9: ADDED TO EFFECTIVITY 'LFM 567'						

CHG APPROVED	LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES
	A				

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW200-55542	A

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY		CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
A/R		SEE NOTE 2	LDW200-55542-47	E	DOUBLER	AL ALY SH	QQ-A-250/4	2024-T3	.125 X 3.00 X 4.00	NONE	76	4A
1			-45		WEB	AL ALY SH	QQ-A-250/4		.040 X 24.00 X 32.00		76	3B
7			-43		CLIP	AL ALY SH	QQ-A-250/4		.050 X 2.00 X 2.00		76	5B
1			-35		CHANNEL	AL ALY SH	QQ-A-250/4		.050 X 4.00 X 15.00		76	8A
1		LDW200-55542-37			CHANNEL	AL ALY SH	QQ-A-250/4		.050 X 4.00 X 15.00		76	8A
2		LDW280-66540-7			FASTENER							5A
22		GR501A-4			GR501A-4C	RIVET	GRUMMAN STD					
1		LDW200-55542-31			WEB	AL ALY SH	QQ-A-250/4		.050 X 18.00 X 32.00		76	3B
2			-29		PLATE	AL ALY SH	QQ-A-250/4		.063 X 1.00 X 3.00		SEE NOTE 2	14B
1			-27		PLATE	AL ALY SH	QQ-A-250/4	2024-T3	.090 X 3.00 X 3.00		SEE NOTE 5	13D
1			-25		TUBE	AL ALY TUB	WW-T-700/3	2024-T3	.875 O.D. X .049 X 1.00		SEE NOTE 5	14C
1			-21		TUBE	AL ALY TUB	WW-T-700/3	2024-T3	.75 O.D. X .065 X 11.25		SEE NOTE 5	14D
1			-20		CHANNEL	AL ALY SH	QQ-A-250/4	2024-T3	.050 X 4.00 X 8.00		76	7A
1			-19		CHANNEL				.050 X 4.00 X 8.00			7A
1			-17		ZEE				.050 X 4.00 X 32.00			9B
1			-16		CHANNEL				.050 X 4.00 X 24.00			8A
1			-15		CHANNEL				.050 X 4.00 X 24.00			8A
1			-13		ANGLE				.050 X 4.00 X 33.00			9B
1			-12		CHANNEL				.050 X 4.00 X 32.00			9B
1		LDW200-55542-11			CHANNEL	AL ALY SH	QQ-A-250/4	2024-T3	.050 X 4.00 X 32.00	NONE	76	9B
1		LDW200-55542-3			ADAPTOR ASSY					NONE	NONE	3A
		LDW200-55542-1		E	ADAPTOR INSTL					NONE	NONE	3A

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
76	ALODINE	LSP14-9010

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW200-55542	A

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

QTY PER ASSEMBLY		CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
1			GB511J-3-14	E	BOLT	GRUMMAN STD						
3			GT535GHCS0010		TAPE	GRUMMAN STD						
2			MS21042-L3		NUT	GOVT STD						
10			GB511J-3-16		BOLT	GRUMMAN STD						
4			AN960D416		WASHER	GOVT STD						
6			MS21042-L4		NUT							
✓			MS20470DD5		RIVET							
✓			MS20470DD4		RIVET							
✓			MS20426DD4		RIVET							
8			AN960L10L		WASHER	GOVT STD						
3			GB511J-3-7		BOLT	GRUMMAN STD						
2			MS21043-3		NUT	GOVT STD						
1			LDW280-665403		FASTENER ASSY	SEE DWG						14B
2			LDW280M18308-11		FITTING	SEE DWG						
2			AN960D416L		WASHER	GOVT STD						
2			LDW280M18307-11		FITTING	SEE DWG						
2			GR501A-5D		RIVET	GRUMMAN STD						
1			LDW280M18306-13		FITTING	SEE DWG						
1			LDW280M18306-11		FITTING	SEE DWG						
4			GR500A-4E		RIVET	GRUMMAN STD						
1			LDW280M18305-16		STANDOFF	SEE DWG						13A
1			LDW280M18305-11		STANDOFF							14A
1			LDW280M17761-17		SLIDE BAR							12A
1			LDW280M18304-11		COLLAR							13C
2			LDW280M18145-29		BOLT							13A
1			LDW280M18303-11		BELLCRANK							14C
2			LDW280M17778-23		BUSHING							14B
2			LDW280M18302-13		LINK							13A
1			LDW280M17761-15		SLIDE BAR							14B
2			LDW280M17741-19		PIN							7A
4			LDW280M17741-17	E	PIN	SEE DWG						3A
-3	-1											

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW200-55542	A

SCALE NONE SHEET 2.01

ENG 77.2 7-65

01

NAS 9-1100

QTY PER ASSEMBLY		CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
1			MS21042-06	E	NUT	GOVT STD						
8			GN512CF3C		NUT	GRUMMAN STD						
1			GB511J-06-16		BOLT	GRUMMAN STD						
8			GB511J3-16		BOLT	GRUMMAN STD						
7			LDW200-55542-63		CLIP	AL ALLOY SH	QQ-A-250/4	2024-T3	.050 x 2 x 2	NONE	T6	2C
1			-61		DOUBLER	AL ALLOY SH	QQ-A-250/4	2024-T3	.125 x 3 x 5	NONE	T6	4A
4			-59		TUBE	AL ALLOY TUBE	WW-T-700/3	2024-T3	.50 OD x .049 x 6.0	NONE	T6	6A
1			-57		TUBE	AL ALLOY TUBE	WW-T-785	2024-T3	1.00 OD x .035 x 62.0	NONE	NOTE 10	6B
1			-55		TUBE	AL ALLOY TUBE	WW-T-785	2024-T3	1.00 OD x .035 x 66.0	NONE	NOTE 10	10B
4			-53		ROD	AL ALLOY ROD	QQ-A-225/6	2024-T351	.50 OD x 3.00	NONE	T6	2A
4			-51		SLEEVE	AL ALLOY ROD	QQ-A-200/3225/6	2024-T351	1.00 OD x 3.00	NONE	T6	2A
1			LDW200-55542-49	E	TUBE	AL ALLOY TUBE	WW-T-700/3	2024-T3	1.00 OD x .120 x 6.00	NONE	T6	14C
-3	-1											

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW200-55542	A

SCALE NONE SHEET 2.02

ENG 77.2 7-64

11 10 9 8

D C B A

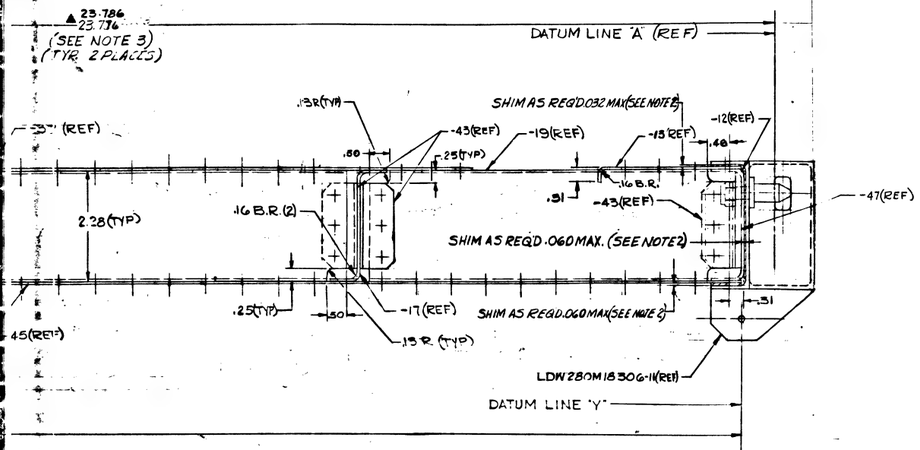
MS20470DD4(3)
.25 .625 .50 .25
(A6)
MS20470DD4(6)(TYP)(EXCEPT)
.190-.194 DIA HOLE
GB511J-3-16
MS21042-L3(FS)
LDW200-55542-51
LDW200-55542-53 (A3)
LDW200-55542-59
.190-.194 DIA HOLE (2)
(A3) GN512CF3L(2)
(4 PLACES)
MS20470DD5(2)
.25 (A6) .625 .25 .25
MS20470DD4(6)
▲18.902
18.898
(SEE NOTE 3)
▲▲18.252
18.248
(SEE NOTE 4)
DATUM LINE "C"
28.70 (REF)
(-55) (A3)
31.08 (A3)
DATUM LINE "Z" (REF)
▲▲ 1.939
1.935
(SEE NOTE 4)
▲1.584
1.580 (SEE NOTE 3)
MS20470DD4(6)
LDW280M18307-11 (REF)
.25 (A6) .625 .25
DATUM LINE "X" (REF)
.142 ▲▲
.138
(SEE NOTE 4)
▲.652
.648 (SEE NOTE 3)
DATUM LINE "B"
LDW280M18308-11 (REF)
LDW200-55542-51 (A3)
MS20470DD5(2)
(A3) LDW200-55542-59
.139-.145 DIA HOLE
(A8) GB511J-06-16
MS21042-06
.25 .625 .25 .25
(A6) 1.50R
MS20470DD4(3)
.100
3.06 (TYP)
11.75 (TYP)
LDW200-55542-53 (A5)
22.54 (TYP)
3.00 (4)
14.19 (TYP)
1.49
NAS 9-1100
Q14 Q13

-Y52.281 (REF)
.12 (TYP)
(A3) -55 (REF)
MS20426DD4(3) CSK NS
LDW200-55542-G3 (A6)
MS20426DD4(21) NS (CSK NS)
(21) FS (CSK FS)
-3 (REF)
MS20426DD4(2) (NS)
MS20426DD4(5) (CSK NS)
MS20426DD4(4) (NS) (CSK FS)
(A3) -57
LDW200-55542-
45°
.25
20 EQ. SP.
LDW200-55542-43
5 EQUAL SPACES
344
3.25
MS20470DD4(5)
LDW200-55542-20
MS20470DD4(5) NS
.94
MS20470DD4(7)
6 EQUAL SPACES
.25
.75
1.48
LDW200-55542-43
LDW200-55542-63
(A6)
7.50
LDW280M18308-11
LDW280M18307-11
623
10 EQUAL SPACES
MS20470DD4(11) NS
(11) FS
5.13
30.85
(A1) 10.18
MS20470DD5(3) NS
3 (FS)
LDW280M17741-17(2)
MS21042-L4(2)
(A8) AN960D416 (4)
.250-.254 DIA HOLE
LDW200-55542-38
MS20470DD4(18) NS
(18) FS
LDW200-55543 (REF)
.25
17 EQUAL SPACES
.25
7.50
LDW200-55542-43
MS20470DD4(40) (NS)
LDW200-55542-63 (A6)
GH11F-50 (3) (A2)
(FLANGE DOWN IN -31)
.25
MS20470DD4(22 NS.)
(22 FS.)
-45
MS20470DD4(40) (FS)
-31 (REF)
30.58
-31 (REF)
.70
.51
.05
30.57
-11 SHOWN
-12 OPP
39 EQUAL SPACES
8.25
-47
.68
8.00
-31
-13
25.00
15.63 (A2)
15.63
21 EQUAL SPACES
MS20470DD5(3) (NS)
(3) (FS) (A7) (A8)
7.75
14.69
LDW280M18307-11
.139-.145 DIA
(A8) GB11J-06-16
MS21042-06
LDW200-55542-63 (A6)
17 EQUAL SPACES
LDW280M17741-17(2)
MS21042-L4(2)
.250 .254 (HOLE)
LDW280M18308-11
4.23
-37 SHOWN (18) NS
-38 OPP
MS20470DD4(18) FS
.25
LDW200-55542-43
MS20470DD4(3NS) (3FS)
LDW200-55542-43
MS20470DD4(7)
MS20470DD4(5) N.S.
6 EQUAL SPACES
7.50
.25
.63
.38R (4)
-19 SHOWN
-20 OPP
5 EQ SP.
2.94
.25 (4 PLCS)
MS20426DD4(4) (NS) (4 FS)
.75
.35
MS20426DD4(2) (CSK FS)
.25 (TYP)
LDW200-55542-63
3 EQ SPS.
(A6)
H
J
(ZONE 3A)
(ZONE 2B)
.18 (TYP)
.62
.12 (TYP)
.55 (REF)
.05
-31 (REF)
.63
22.78
MS20426DD4(3) CSK NS
VIEW: A-A

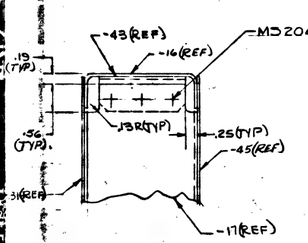
CODE IDENT NO.	DWG NO.	SHEET
26512	LDW200-55542	3

FRAME 1 FRAME 2

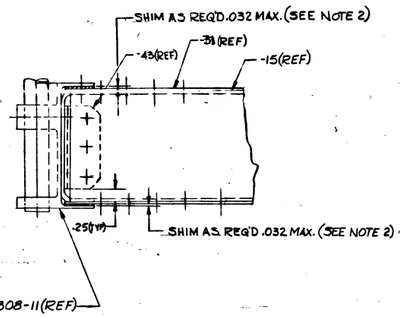
5 EQUAL SPACES
6 EQUAL SPACES
17.60 23 EQUAL SPACES
6 EQUAL SPACES
SHOWN
OPP SIDE
LDW200-55542-63
LDW200-55542-12
LDW200-55542-43
LDW200-55542-61
LDW280M18306-13
LDW280M18305-12(REF)
LDW280M18306-11
LDW200-55542-47
LDW280M17741-19
MS21042-L4 .250-.254 HOLE
MS20426DD4(3)(CSK NS)
MS20470DD5(5)NS (5)FS
MS20426DD4(4)(NS) (CSK NS)
MS20470DD5(3)NS (5)FS
MS20470DD4(40)(NS)
MS20470DD4(40)(FS)
MS20470DD4(26)NS (21)FS
MS20426DD4(1)
MS20470DD4(3NS) (5FS)
MS20470DD4(7)
MS20470DD4(6)N.S.
MS20426DD4(4N.S.) (4 FS.)
MS20470DD4(6)
MS20426DD4(8)
LDW200-55542-57(REF)
LDW200-55542-59
LDW200-55542-53
LDW200-55542-51
3.00 R (4)
GT535G-HCS0010 (SEE NOTE 6)
LDW280-66540-7 (SEE NOTE 7)
LDW280M18306-11(REF)
LDW280M18307-11(REF)
LDW280M17741-17(REF)
LDW280M18306-11(REF)
LDW200-55543 (REF)
XIGG303(REF)
MS20470DD4(9)
SHIM AS REQ'D.032 MAX. (SEE NOTE 2)
SHIM AS REQ'D.060 MAX. (SEE NOTE 2)
16 B.R.(2)
-43(REF)
-37(REF)
-31(REF)
-45(REF)
-11(REF)
-19(REF)
-15(REF)
-17(REF)
.13R(TYP)
.13 R (TYP)
.25(TYP)
.50
.31
.56
.18
.79(REF)
.10(REF)
.68(TYP)
.70(REF)
.656
.51
.75
.94
.63
.38R(4)(TYP)
.13R(TYP)
.19(TYP)
.156(TYP)
.97-1.02 HOLE(6)
CHAMFER .16 x 45° (4)
CHAMFER .062 x 45°
.125(REF)
14.19(TYP)
11.75(TYP)
3.06(TYP)
4.85(TYP)
2.70(TYP)
1.19
1.18
1.53(TYP)
5.75
.31(TYP)
3.31
2.28(TYP)
2.25
2.562
3.00
8.00
7.56
4.28
4.66
3.28
2.94
1.50
1.75
1.68
1.344
.344
.122(TYP)
.25
.35
.38
.39
.70(REF)
.656
.68(TYP)
.79(REF)
.10(REF)
.16 BR (2)
.16 BR (10)
.16 BR (2)
.16 B.R.
.16 R
.16 BR (2)
.16 BR (2)
.16 BR (2)



SECTION **H-H**
(ZONE 7A)



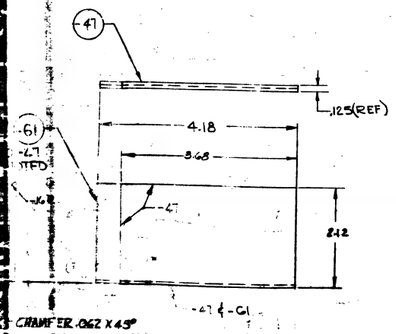
SECTION K-K



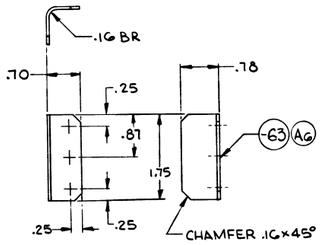
.097-.102 HOLE (6)

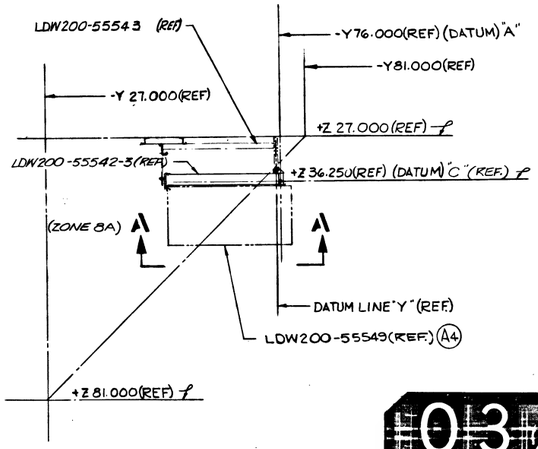
MFER .16 x 45° (4)

VIEW **J-J**
(ZONE 9A)

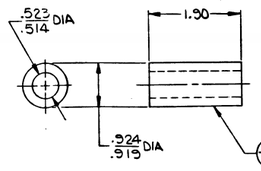


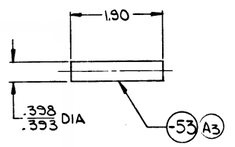
LDW280-55542 -1 INSTL.
-3 ASSY.





VIEW LOOKING DOWN
SCALE: 1/10





NOTES:
1. INSTALL FASTENERS PER LSP14-15302, LSP14-15306 & LSP14-15303
2. SHIM AS REQUIRED USING AL ALY 5H GQ-A-250/4 2024-T3, FINISH 7G PER LSP14-3010.
3. DIMENSIONS MARKED ▲ FORM PART OF AN INTERCHANGABLE INTERFACE SEE LID360-22830 FOR CORRESPONDING INTERFACE DIMENSIONS.
4. DIMENSIONS MARKED ▲▲ FORM PART OF AN INTERCHANGABLE INTERFACE SEE LDW200-55543 FOR CORRESPONDING INTERFACE DIMENSIONS.
5. FINISH ENTIRE PART PER LSP14-10300, TYPE II
6. BOND USING EPON 934 PER LSP14-22500, CURE RANGE NO. 1
7. DRILL .190-.192 NEAR SIDE FITTING & NEAR SIDE TUBE ONLY
8. CREW HAZARD PARTS REQUIRE SPECIAL HANDLING TO INSURE REMOVAL OF ALL SHARP EDGES AND BURRS.
9. FINISH ENTIRE PART PER LSP14-10300, TYPE I.
10. APPLY WITH NARMCO 2343/7133 HARDENER (LSM 14-4352 ADHESIVE) PER LSP14-22602.

03/03 NAS 9-1100

CODE IDENT NO.	DWG NO.	SHEET
26512	LDW200-55542	3

FRAME 2 FRAME 3

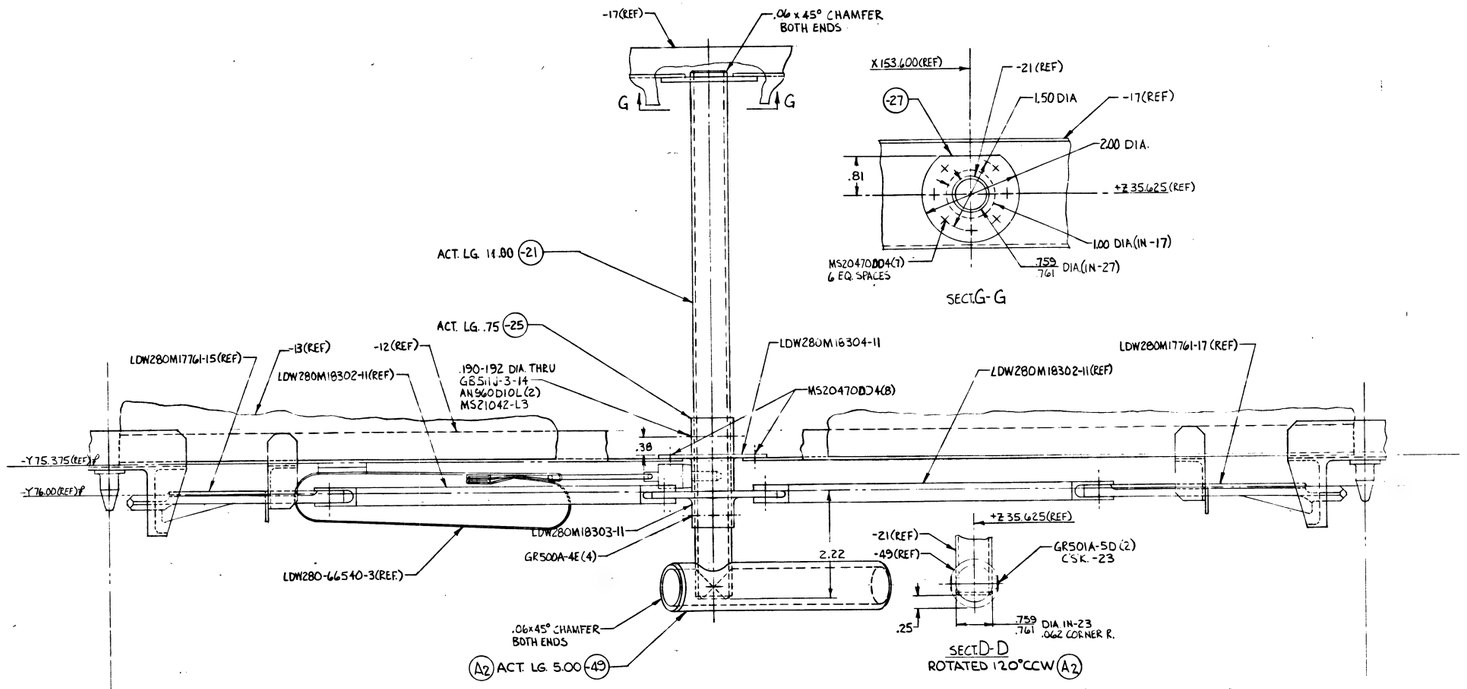
GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
	26512	LDW200-55542 A
SCALE FULL & METRIC		SHEET 3.00

C LDW200-55542 A
B LDW200-55542 A
A LDW200-55542 A

DWG SIZE A
PRINT TRIM LINE
FULL SIZE SHEET AREA: 36.1/30 = 5.2:4.88 IN
¼ SIZE SHEET AREA (¼ OF FULL) = 9.1 / 8.88 IN

D 11-12



NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE L. I. NEW YORK

SIZE	CODE IDENT NO.		
J	26512	LDW200-55542	A

SCALE 1:1 SHEET 4.00

B LDW200-55542 A

A LDW200-55542 A

DWG SIZE CHECK - PRINTING INFO ONLY
FULL SIZE SHEET AREA IS 16 x 49 in. - 12 SQ FT
½ SIZE SHEET AREA IS ½ OF FULL = 6 SQ FT

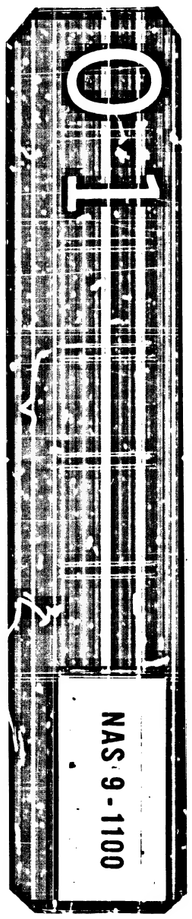
GRUMMAN AEROSPACE CORPORATION
CODE IDENT NO. 26512
ENGINEERING ORDER

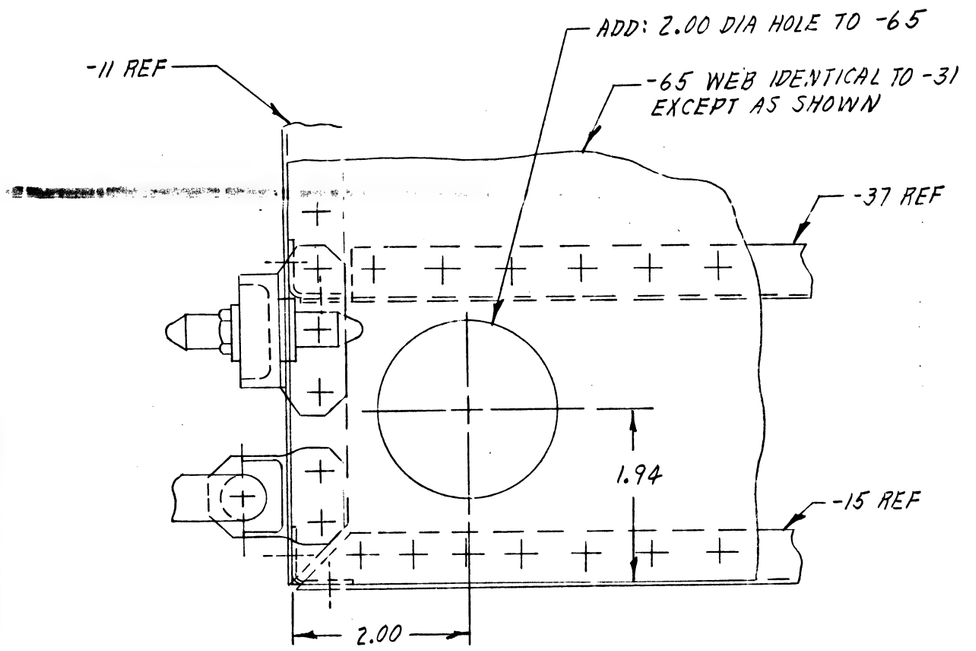
ENG 22.2 REV 3-68

DWG. NO. LDW200-55542		EO NO. 31
CONTROL INFO NO. LDW260C0837		

CREATE -5 INSTL., IDENTICAL TO -1 INSTL EXCEPT -7 ASSY. REPLACES -3 ASSY.
NEXT ASSY. LDW200-55549 ~ 1 REQD.

CREATE -7 ASSY., IDENTICAL TO -3 ASSY. EXCEPT -65 WEB REPLACES -31 WEB.
-7 ASSEMBLES INTO -5 INSTL. ~ 1 REQD.





I & T = E

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCD 5627A PKG. 50

REASON FOR EO: PROVIDE HEAT FLOW EXPERIMENT MOUNTING PROVISIONS ON LM-9

DESCRIPTION OF EO: CREATED -5, -7 & -65

GAEC EO RELEASE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LEM-599	LM-9(39).	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: NOT REQD. REWORK	SCRAP
✓			

APPROVED BY: PBF — DATE: 8-27-70 — VD1 — SUPPORT — RELIAB. GROUP

GROUP LEADER: 8/27/70 — STRESS GROUP: 8/28/70 — LIAISON ENGRG — PROJ ENGRG: 9/16/70 — GOVT

PRIORITY: C

DRAWING TITLE: ADAPTOR INSTALLATION DESCENT STAGE-LASER RANGING RETRO REFLECTOR

DRAWING NO.: LDW200-55542 — EO NO: B1

CDR 9-4-70
ISSUED BY FRED STEINMETZ X86048 SECTION VD1 GROUP NO. 280 PL 25

c0537

GRUMMAN AEROSPACE CORPORATION

CODE IDENT NO. 26512

ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG. NO. LDW200-55542 | EO NO. B2

CONTROL INFO NO. LDW280C1118

ON -3 & -7

LDW280-66540-3-1 & LDW280-66540-7-1 FASTENER ASSY

REPLACED

LDW280-66540-3 & LDW280-66540-7 RESPECTIVELY.

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓ LCD 5688 MC PKG # 50

REASON FOR EO: REPLACE PINS WITH FULLY INSPECTED PINS.

DESCRIPTION OF EO: NOTED

GAEC EO RELEASE: 11 PM, 11-7-70

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP	APPROVED BY	DATE								
														NM			
LM	LFM 622	LM-8(38),							11-6-70			11/7/70	11/3/70		11-7-70	11-9-70	
LM		LM-9(39)							VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG		
				PRIORITY C				DRAWING TITLE: ADAPTER INSTL, D/S, LASER RANGING RETRO REFLECTOR-QUAD I				DRAWING NO. LDW200-55542			EO NO. B2		

CDR 110970

ISSUED BY F. WOLFF/G. HANSMANN x87223 SECTION VDI GROUP NO. 0335 PL 025

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NAS 9-1100

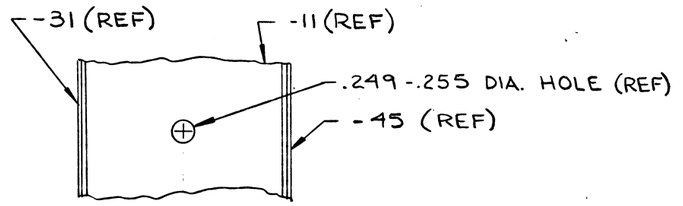
GRUMMAN AEROSPACE CORPORATION

CODE IDENT NO. 26512

ENG 32.1 REV 3-65 **ENGINEERING ORDER**

DWG. NO. LDW200-55542		EO NO. B3
CONTROL INFO NO. LDW280C1173		

REF: EO A1



LOCATION ZONE 6B S/B 11B

DETAIL SPEC REQ		CL II ENGRG CHG	✓	CL I ENGRG CHG	

REASON FOR EO: EO A1 INCORPORATED INCORRECTLY

DESCRIPTION OF EO: LOCATION OF .249-.255 DIA. HOLE IN -11 ZONE 11B WAS ZONE 6B.

GAEC EO RELEASE: CP CO

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		NOT REQ'D	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: NOT REWORK	REQ'D SCRAP	APPROVED BY	DATE	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GROUP
✓				RHF	12-2-70		12/2/70	12/3/70		12/4/70	12-7-70
					VDI	SUPPORT					

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
E	ADAPTOR INSTL ~D/S~ LASER RANGING REFLECTOR ~QUAD I	LDW200-55542	B3

ISSUED BY J. BACKOFEN / G. HANSMANN X87222 SECTION VEH. DES. INT. GROUP NO. 0335 PL 025

01

NAS 9-1100

A

LDW200-55543

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
PART NO.				PART NO. LDW280-55543-5				PART NO. LDW200-55543-1			
LFM 599	LDW280-54508	LM-9 (39)	1	LFM 567	LDW280-54508	LM-8 (38)	1				

WORK PACKAGE FUNCTION 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH (A)									
SHEET	1.00	1.10	2.00	2.01	2.02	2.03	1.11		
REV	A	A	A	A	A	A	A		
SHEET	3.00		4.00		5.00		6.00		7.00
REV	A		A		A		A		A
SHEET									
REV									

		GRUMMAN REL INFO (A)				
LAST SECT LTR USED	W	PRIM NO.				
LAST DASH NO. USED	-135	207				

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
XX ±.03 .XXX ±.010 ±0°30'

ORIG DWG AUTH			
DETAIL SPEC REQUIREMENT			
CLASS II ENGRG CHANGE			
CLASS I ENGRG CHANGE	V		
LCD 54-- PKG 50			

CONTRACT NO. NAS 9-1100

DRAWN BY	WINK, GREEN LANG BELEV		
LAYOUT BY	WINK LANG GREEN BELEV		
CHECKED BY	[signature] 3-21-70		
GROUP LEADER	[signature] for Gwk 3/20/70		
STRUCTURES			
STRUCTURES	WB 3/21/70	PROJ ENGR	[signature] 3-20-70
VDI	[signature] 3-20-70	REL GROUP	[signature] 3/21/70

LINE ITEM

DOCUMENTATION TYPE II

(K) GRUMMAN AEROSPACE CORPORATION
BETHPAGE, L. I., NEW YORK

SUPPORT INSTALLATION
LASER RANGING RETRO REFLECTOR
REWORK OF LDW280-54508 (SEE NOTE 11)

SIZE	CODE IDENT NO.		
B	26512	LDW200-55543	A
SCALE	NONE	SHEET 1.00 OF 12	

CDR A 9-11-70 CDR 3/20/70

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET 1.11

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00, 3.00 5.00, 6.00	24A 37B	LFM 567		✓		EO A1 LCD 5456	REVISED PICTURE OF SECT. N-N & ADDED NOTE 9 (ADDED SH 1.10)	LM-8	✓		W. HOLTON 7-21-70		J.V.
	2	2.00 2.01 2.02		LFM 567		✓		EO A2 LCD 5456	IN B/M ON -1 ADDED LDW280M18309-11(1) AND LDW280M18310-11(1). MIL-T-9046 TYPE III COMP 'C' COND ANNEALED (WAS) MIL-T-9046 FOR -17, -19, -21, -35, -37, -61, -63, -64, -65, -77, -103, -105.		NOT	REQD			
	3	2.02 2.03 3.00	35C	LFM 567		✓		EO A3 LCD 5456	ON -1 IN B/M ONLY, LDW280M18312-13 WAS LDW280M18312-12. IN F/D & B/M ADDED NAS674V-22D REPLACED GB511J-4-22.		✓				
	4	2.02 4.00	10B	LFM 567		✓		EO A4 LCD 5456	IN SECT H-H .406 REMAINING THICKNESS (WAS) .25 IN B/M ADDED LDW280M18314-11(1)						
	5	2.03 4.00 5.00	10B 13B 24B	LFM 567		✓		EO A5 LCD 5456	ON -1 IN F/D & B/M 34 EQ SP MS20470AD4(35) WAS 76 EQ SP MS20470AD4(77), ADDED GB511J-08-2(2), GB511J-3(4), REMOVED GB511P-08-2(2) & GB511P-08-3(4).						
	6	2.03 3.00 5.00	8B 24B 24D	LFM 567		✓		EO A6 LCD 5456	RELOCATED AND TRIMMED LDW280-17966-13. ADDED .165-.171 HOLE(2), NAS697C08, NAS1097AD3(2), GB511J-08-1, GC500AA-1D02, AN960D8L, DIM 4, .43, & 1.90. MS20470AD4 (34) WAS(30). 24.25(28 EQ SP) WAS 29.13(33 EQ SP) ADDED INSTL WIRE AS SHN						
	7	1.10 4.00 6.00	13C,D 14C 33C	LFM 567		✓		EO A7 LCD 5456	ADDED DIMS 12.75, .25, DIM 10.58~16 EQUAL SPACES WAS 10.58~15 EQ SPACES; REMOVED EXTRANEOUS ARROWS, (REF EO A6) -11(REF) WAS -19(REF)						
	8	3.00	4B 8B	LFM 567		✓		EO A8 LCD 5456	REF E.O. A6 REMOVED 8.16(9 EQ SP), MS20470AD4(8) WAS(10). ADDED 6.50(7 EQ SP). REMOVED CALLOUT TO ADD 1.90.						
	9	5.00	22C 27C	LFM 567		✓		EO A9 LCD 5456	IN SECT B-B & V-V ADDED SHIM AS REQD .188 MAX SEE NOTE 2.						

CHG APPROVED	LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES
	A	W.V. 9/27/70			N.M. 8/27/70

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW200-55543	A

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	10	2.01, 1.11 2.02 2.03 4.00 6.00	12C 30A 31B 32C 35AC	LFM 567		✓		EO A10 LCD 5456	REMOVED -117(1), REVISED TRIM OF -105; ADDED -131(1) & -133(1); IN DETAIL U (ZONE 35C SH6) ADDED GR500A-4E (4) & MS20470AD4; IN DETAIL S-S (ZONE 12B SH4) ADDED GR501A-4B(6) & GR500A-4C(16) (WAS) (22). ADDED SECT W-W. ADDED SH 1.11.	LM-8	✓		W. HOPTON 7-21-70	JL	
	11	1.11 6.00	35C	LFM 567		✓		LCD 5456	(REF EO A10) DIM .31 WAS .19. REMOVED GR500A-4C (6)	LM-8	✓				
	12	4.00	16D	DEC 5-LM-1506			✓		IN SECT J-J, MS20470AD4 (9) WAS (11)	NOT REQD	NOT	REQD			
	13	1.00, 2.00, 2.01, 4.00, 5.00 & 7.00		LFM 599 LFM 567		✓		LCD 5627 LCD 5456	ADDED SH 7.00, NOTES 10 & 11, REMOVED -15, -55, -59, -69, -71, -73 & -75 FROM SHEETS 4.00 & 5.00, RETRACED WITHOUT CHANGE ON SH 7.00 JL	LM-9 LM-8	NOT	REQD	BIANCHI NO 8-4-70		
	14	1.00, 2.00, 2.03, 3.4 & 7	3B 12A 3G	LFM 599		✓		LCD 5627	ADDED -5 & -135 JL	LM-9	NOT	REQD	CANCELLED 8-14-70		

CHG APPROVED	LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	PROJECT
	A	JL				

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW200-55543	A

SCALE NONE SHEET 1.11

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY			CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
	1	1		LDW200-55543-63	E	CHANNEL	TITANIUM SH	MIL-T-9046 TYPE III COMPC	6AL-4V	.050 x 2.41 x 5.0	NONE	NONE	10B
2	2			-61		CHANNEL	TITANIUM SH	COND ANNEALED	6AL-4V	.030 x 2.4 x 3.2		NONE	9B
1	1			-59		ANGLE	AL ALLOY SH	QQ-A-250	4 2024T3 T42	.050 X 3 X 12		76	SH 7
1	1			-57		ANGLE		QQ-A-250	4 2024T3 T42	.050 X 3 X 41			14D
1	1			-55		ANGLE		QQ-A-250	4 2024-T3 T42	.050 X 3 X 27			SH 7
1	1			-53		WEB	AL ALLOY SH	QQ-A-250/12	7075-T6	.032 X 13 X 26	NONE		13D
1	1			-51		ANGLE	AL ALLOY SH	QQ-A-250/4	2024-T3/T42	.040 x 3 x 4	NONE	76	2A
		1		-49		TEE	AL AL EXTR	QQ-A-200/11	7075-T6511	GS183A59DG x 5	SEE NOTE 7		19B
	1	1		-47		CHANNEL	AL ALLOY SH	QQ-A-250/4	2024-T3/T42	.040 x 4.5 x 5	NONE	76	16C
	1	1		-45		ANGLE				.050 x 2 x 4			27D
	1	1		-43		ANGLE				.050 x 2 x 4			22C
	1	1		-41		ANGLE				.050 x 2 x 3			22B
2	2			-39		ANGLE	AL ALLOY SH	QQ-A-250/4	2024-T3/T42	.050 x 3 x 3	NONE	76	23C
6	6			-37		CHANNEL-LOWER OUTBD	TITANIUM SH	MIL-T-9046 TYPE III COMPC	6AL4V	.040 x 2.50 x 8.00	NONE	NONE	15A
		1		-35		ZEE - UPPER OUTBD	TITANIUM SH	COND ANNEALED	6AL4V	.040 x 3.50 x 9.75	NONE	NONE	19D
	1	1		-33		TEE - LOWER	AL AL EXTR	QQ-A-200/11	7075-T6511	GS183A13DG x 7	SEE NOTE 7		26C
	1	1		-31		ANGLE - UPPER	AL ALLOY SH	QQ-A-250/4	2024-T3/T42	.050 x 3 x 4	NONE	76	24D
	1	1		-29		ANGLE - UPPER	AL ALLOY SH			.063 x 3 x 6	NONE	76	24D
	1	1		-27		PLATE	AL ALLOY SH			.125 x 2 x 2	NONE	76	22A
2	2			-25		CHANNEL - TRACK	AL ALLOY SH			.040 x 5 x 25	NONE	SEE NOTE 5	27A
		1		-23		CHANNEL - TRACK	AL ALLOY SH	QQ-A-250/4	2024-T3/T42	.040 x 5 x 20	NONE	SEE NOTE 5	22C
	1	1		-21		ZEE - LOWER	TITANIUM SH	MIL-T-9046	6AL4V	.040 x 5.75 x 8.00	NONE	NONE	29B
	1	1		-19		ZEE - UPPER	TITANIUM SH	TYPE III COMPC	6AL4V	.040 x 6.50 x 8.25	NONE	NONE	23C
2	2			-17		HAT	TITANIUM SH	COND ANNEALED	6AL4V	.040 x 10 x 7.75	NONE	NONE	28D
	1	1		-15		DOUBLER	AL ALLOY SH	QQ-A-250/4	2024-T3/T42	.040 x 3 x 60	NONE	76	SH 7
	1	1		-13		WEB	AL ALLOY SH	QQ-A-250/4	2024-T3/T42	.020 x 13 x 67	NONE	76	24D
	1	1		LDW200-55543 11		ZEE	AL ALLOY SH	QQ-A-250/4	2024-T3/T42	.063 x 7 x 68	NONE	76	24D
				LDW200-55543-5		SUPPORT INSTL							3B
				LDW200-55543-3		TRACK ASSY							3B
				LDW200-55543-1	E	SUPPORT INSTL							3B

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
T6	ALODINE	LSP 14-9010
T6	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW200-55543	A

SCALE NONE SHEET 2.00

ENG 77.2 7-64

01 NAS 9-1100

QTY PER ASSEMBLY			CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
				LDW200-55543-123	E	BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3/T42	.040 x 3 x 4	NONE	76	23D
				-121		BELLCRANK	AL ALLOY SH	QQ-A-250/4	2024T3	.160 x 3 x 4	SEE NOTE 4	SEE NOTE 5	36B
				-119		CHANNEL	CRES STL SH	17-7PH	MIL-S-25043	.040 x .75 x 6.0	NONE	NONE	38D
				-133		SHIM	AL ALLOY SH	QQ-A-250/12	7075-T6	.050 x 1 x 2	NONE	76	
	2	2		-115		ANGLE			2024-T3/T42	.050 x 2 x 4			37B
	2	2		-113		FILLER			2024-T3	.190 x 2 x 2			17A
				-111		CHANNEL			2024-T3/T42	.040 x 3 x 4			35D
	2	2		-109		CLIP				.050 x 2 x 4			32D
				-108		ANGLE				.050 x 3 x 9			33A
				-107		ANGLE	AL ALLOY SH	QQ-A-250/4	2024T3/T42	.050 x 3 x 9		76	35A
				-105		CHANNEL	TITANIUM SH	MIL-T-9046 TYPE III COMPC COND ANNEALED	6AL4V	.050 x 6.5 x 6.5		NONE	32A
				-103		CHANNEL	TITANIUM SH		6AL4V	.050 x 6.5 x 6.5		NONE	32A
				-101		ANGLE	AL ALLOY SH	QQ-A-250/4	2024T3/T42	.050 X 2 X 3	NONE	76	19A
				-99		ANGLE				.050 X 4 X 12			9A
				-97		ANGLE				.050 X 3 X 10			13D
				-95		ANGLE				.050 X 2 X 4			17B
				-93		ANGLE				.050 X 2 X 2			17B
				-91		ANGLE	AL ALLOY SH	QQ-A-250/4	2024-T3/T42	.050 X 2 X 2	NONE	76	18B
				-89		TEE	AL ALY EXTR	QQ-A-250/11	7075-T6511	GS183A53DGX3.5	SEE NOTE 7	SEE NOTE 7	18A
				-87		CHANNEL	AL ALLOY SH	QQ-A-250/4	2024T3/T42	.050 X 4 X 4	NONE	76	18B
				-35		FILLER		QQ-A-250/12	7075-T6	.190 X 1 X 2			17A
				-83		FILLER				.160 X 2 X 3			17B
				-81		FILLER				.090 X 1 X 2			17A
				-79		FILLER	AL ALLOY SH	QQ-A-250/12	7075-T6	.160 X 2 X 2		76	17A
				-77		ANGLE	TITANIUM SH	MIL-T-9046, TYPE III COMP C, COND ANNEALED	6AL-4V	.030 X 3.5 X 3.75		NONE	18A
				-75		ANGLE	AL ALY SH	QQ-A-250/4	2024-T3 T42	.050 X 2 X 23		76	SH 7
				-73		CHANNEL		QQ-A-250/4		.050 X 5 X 31			SH 7
				-71		ZEE		QQ-A-250/4		.050 X 3 X 31			SH 7
				-69		ZEE		QQ-A-250/4	2024T3 T42	.050 X 4 X 25			SH 7
	2	2		-67		PLATE	AL ALLOY SH	QQ-A-250/4	2024-T3	.040 X 3 X 3		76	18B
	1	1		LDW200-55543-65	E	CHANNEL	TITANIUM SH	MIL-T-9046 TYPE III COMPC COND ANNEALED	6AL-4V	.050 X 7.5 X 10.2	NONE	NONE	13B
	-5	-3	-1										

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW200-55543	A

SCALE NONE SHEET 2-01

ENG 77.2 7-64

NAS 9-1100

					NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
1		1		NAS43DD4-81	E SPACER	IND STD						
1		1		NAS43DD4-46								
1		1		NAS43DD4-22								
1		1		NAS43DD3-100	SPACER	IND STD						
1		1		LDW280M18310-11	FITTING	SEE DWG						
1		1		MS21043-4	NUT	GOVT STD						
7		7		MS21043-3	NUT	GOVT STD						
1		1		LDW280M18314-11	FITTING	SEE DWG						
A/R		A/R		MS20470AD6	RIVET	GOVT STD						
A/R		A/R		MS20470AD5	RIVET	GOVT STD						
A/R	A/R	A/R		MS20470AD4	RIVET	GOVT STD						
1		1		LDW200-55543-131	ANGLE	AL ALLOY SH	QQ-A-250/4	2024-T3/T42	.050 X 2 X 2	NONE	76	
A/R		A/R		MS20426AD5	RIVET	GOVT STD						
A/R	A/R	A/R		MS20426AD4	RIVET	GOVT STD						
A/R		A/R		MS20426AD3	RIVET	GOVT STD						
1		1		LDW280M18309-11	FITTING	SEE DWG						33B
4		4		AN960D416	WASHER	GOVT STD.						32C
3		3		AN960D416L	WASHER	GOVT STD.						35C
3		3		AN960D10L	WASHER	GOVT STD						9B
1		1		LDW280-55543-64	CHANNEL	TITANIUM SH	MIL-T-9046, TYPE III COMPC COND ANNEALED	6AL-4V	.050 x 2.41 x 5.00	NONE	NONE	33D
1		1		LDW280M18312-13	LINK	SEE DWG						33D
1		1		LDW280M18312-11	LINK							33B 33D
2		2		LDW280M18311-11	PIN							32C
1		1		LDW280M18145-31	BOLT							33C 33D
4		4		LDW280M18145-23	BOLT							32D
1		1		LDW280M18145-11	BOLT							37C
1		1		LDW280-66540-5	FASTENER ASSY	SEE DWG						17A
1		1		LDW200-55543-129	FILLER	AL ALLOY SH	QQ-A-250/4	2024-T3	.160 x 1 x 2	NONE	76	38C
1		1		LDW200-55543-127	PLATE	AL ALLOY SH	QQ-A-250/4	2024-T3/T42	.040 x 1 x 2	NONE		38C
1		1		LDW200-55543-125	PLATE	AL ALLOY SH	QQ-A-250/4	2024-T3/T42	.090 x 2 x 2	NONE		23D
1		1		LDW200-55543-124	E BRACKET	AL ALLOY SH	QQ-A-250/4	2024-T3/T42	.040 x 3 x 4	NONE	76	
-5	-3	-1		CODE IDENT	PART NO.	I&T				PROCESS SYM	FINISH NO.	ZONE

QTY PER ASSEMBLY

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

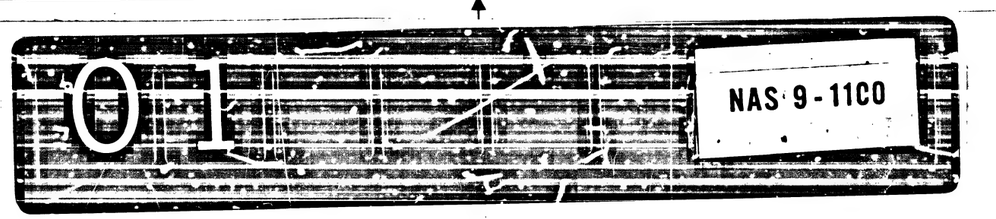
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW200-55543	A

SCALE NONE SHEET 2.02

ENG 77.2 7-64



QTY PER ASSEMBLY			CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
-5	-3	-1											
A/R		A/R		NAS1097AD3	E	RIVET	IND STD						
A/R		A/R		SEE NOTE 2	E	SHIM							
1		1		GR501A-5F		RIVET BLIND	GRUMMAN STD						
6		6		GR501A-4B									
3		3		GR500A-5K									
1		1		GR500A-5J									
2		2		GK500A-5H									
2		2		GR500A-5F									
2		2		GR500A-4H									
7		7		4G									
15		15		4F									
41		41		4E									
171		171		4C									
4		4		GR500A-4B		RIVET BLIND							
21		21		GN512H08		COLLAR							
1		1		GC500AA-1D02		CLAMP							
1		1		GB511J-08-1		BOLT							
7		7		GB511K-08-5		BOLT							
2		2		GB511K-08-3									
6		6		GB511K-08-2			GRUMMAN STD						
8		8		GB511J-08-3			IND STD						
1		1		NAS674V22D			GRUMMAN STD						
1		1		GB511J-5-25		BOLT	GRUMMAN STD						
10		10		GB511J-08-2		WASHER	GOVT STD						
1		1		AL960D8L	E	PLATE NUT	IND STD						
9		9		NAS697C08	E	ZEE	AL ALLOY SH	QQ-A-250/12	7075	.063x4x25	T6	76	3G
1				LDW200-55543-135									

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW200-55543	A

SCALE NONE SHEET 2.03

ENG 77.2 7-66

01 NAS 9-1100

SUPPLEMENTARY DATA
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130.
∠ 35E PAD PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☐ USE BOTH SIDES IF NECESSARY.
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
INSTALL RIVETS IN ACCORDANCE WITH

LDW200-55542 (REF)

DATUM 'X' (X141.790)

DATUM 'Y' (-Y75.343 REF)

DETAIL S ZONE 12C
DETAIL U ZONE 35B
(FOR DETAILS THIS AREA SEE SHEETS 4 & 6

X136.000 (REF)

LDW200-55544 (REF)

.35 (REF)

.23 (REF)

.57 (REF)

.25 (REF) (ON-3)

.27 (REF) (ON-3)

.47 (REF)

.49 (REF) (ON-3)

.75 (REF)

.73 (REF)

Q1 / Q2 NAS 9-1100

23.843 (REF)

.71 (REF)

.62 (REF)

.75 (REF)

X166.24 (REF)

X154.000 (REF)

X138.62 (REF)

X169.81 (REF)

LR³ ~ C.G.

-Y63.000 (REF)

.750 REF

35.41

11.18

MS20470AD4 (30)

.28

.13 (REF)

MS20470AD4 (REF)

MS20470AD4

MS20470AD4 (26)

MS20470-AD4 (REF)

MS20470AD4 (8)

.43

21.92 (25 EQ SP)

.13 (REF)

6.50 (7 EQ SP)

GR500A-4C(8)

24.25 (28EQ SP)

X136.000 (REF)

WIRE (REF)

▲▲ 18.252
18.248

6.10 (7 EQ SP)

X141.94

X137.02 (REF)

(FOR -13)

℄ PIN (REF)

X159.900 (REF)

X141.650 (REF)

GR500A-4E(8)

MS20470AD6 (2)

GR500A-4C(16)

MS20470AD6(2)

.31 (TYP)

.41 (REF)

.11 (REF)

-Y51.688 (REF)

GR500A-4C(2)

GR500A-4F(3) LOCATE FROM -39

.29 REF

.11 (REF)

.50

.31

GR500A-4C(28)

24.18 (27EQ SP)

.123 (REF)

.39 (REF)

GR500A-4F(3) LOCATE FROM -39

.31 (REF)

.15 (REF)

.69 (13)

2.00

2.83 (-19)

7.20 (8 EQ SP)

GR500A-4C(9)

.19 (REF)

GR500A-4F (2) LOCATE FROM -39

13.59 (15EQ SP)

GR500A-4F(6) LOCATE FROM -39

.15 (REF)

CODE IDENT NO.	DWG NO.	SHEET
26512	LDW200-55543	3

FRAME 1 FRAME 2

NOTES:

1. NO TOOLING HOLES PERMITTED IN PARTS
2. SHIM AS REQUIRED USING AL ALLOY QQ-A-250/4 2024-T3 FINISH 88
3. INSTALL RIVETS WET AND OVERCOAT RIVET HEADS WITH EPON 913 PER LSP14-14102
4. INSTALL FASTENERS PER LSP14-15302, LSP-14-15303 AND LSP-14-15306
5. FINISH ENTIRE PART PER LSP-14-10300, TYPE II.
6. DIMENSIONS MARKED ▲▲ FORM PART OF AN INTERCHANGEABLE INTERFACE SEE LDW200-55542 FOR CORRESPONDING INTERFACE DIMENSIONS.
7. AGE FROM T6511 CONDITION TO T73 TEMPER BY AGING FOR 7½ TO 8½ HOURS AT 350°F±10°F THEN SULPHURIC ACID ANODIZE PER MIL-A-8625 TYPE II. AFTER ANODIZING PROTECTIVE COAT USING ONE COAT OF PRIMER MIL-P-23377 PER LSP-14-4305.
8. MS20470AD4 & GR500A-4 MAY BE INTERCHANGEABLY SUB AS REQD, MS20470AD5 & GR500A-5 MAY BE INTERCHANGEABLY SUB AS REQD.
9. ATTACH GT535G-LCS (ON LDW280-66540-5) TO GT535G-HCS (ON LDW280-55544-1)
10. ALL DIM. MARKED * ARE FOR REF ONLY
11. THIS DWG IS AFFECTED BY THE FOLLOWING LFM. SEE LFM FOR EFFECTIVITY AND MODIFICATION: LFM 567, LFM 599.

SIDE VIEW

END VIEW

ENG REF ONLY (NO SCALE)

- LDW200-55543-1 INSTL
- LDW200-55543-3 ASSY
- (A14) LDW200-55543-5 INSTL (IDENT TO -1 EXCEPT AS NOTED)

02/02 NAS 9-1100

GRUMMAN AIRCRAFT ENGNG CORP. BETHPAGE, L.I., NEW YORK

SIZE	CODE IDENT NO.		
J	26512	LDW200-55543	A

SCALE FULL SHEET 3.00

LDW200-55543 SHEET 3 FRAME 1 FRAME 2

LDW200-55543 A

19 18 17 16

X169.81 (REF)

LDW200-55542 (REF)

-23 (REF)

1.06

LDW200-55544 (REF)

(35) BR=.16

.62

.62

9.50

X166.20 (REF)

MS20470AD5(4) SEE NOTE 3

-73 (REF)

-95 (REF)

-99 (REF)

-75 (REF)

TOOLING HOLE (REF) ON LDW280-11736-17

MS20470AD4(23)

LDW280-11736-17 (REF)

1.00

.38

.50

MS20470AD4(7)

MS20470AD4(7)

-85 (REF)

.38

.25

.38

.06

.25

4 EQUAL SPACES .25

SHIM AS REQ'D .010 MAX-SEE NOTE 2

3.83 @ EQUAL SPACES

22 EQUAL SPACES

.38

.38

4009

UP

-25 (REF)(ON-3)

X138.75 (REF)

LDW200-55544 (REF)

(A/2) MS20470AD4(9) (OD-3)

MS20426AD3(8) CSK-47
NAS6903T008(4)
GB5111J-U8-2(4) Y-A
HOLE SIZE .164-.166 (ON-1)

X133.62 (REF)

X134.37 (REF)

.69 (TYP)

.21

3.94 (-47)

CHAMFER .50 X 45° (2)

-49 (REF) (ON-3)

-37 (REF) (ON-3)

(47) BR=.13

X141.93 (REF)

.50

.37

2.66

-71 (REF)

.66 (-47)

MS20470AD4(6)

.65

X131.14

-53 (REF)

-57 (REF)

TOOLING HOLE (REF)

MS20470AD4(3)

-97 (REF)

MS20470AD4(7)

-101 (REF)

.25R (REF)

.34

MS20470AD4(8)

.25

.38

2.67

-81 (REF)

.25R (TYP)

.25R

.25

.25

.25

15 14 13 12

DETAIL S (ROTATED CCW 180°)
ZONE 6C SH 3

VIEW T-T (ZONE 11B)

UP

DATUM X(REF)
DATUM Y(REF)
DATUM Z(REF)

LDW280-17733-11(REF)
LDW280M17328-5(REF)
LDW280M18309-11(ON-1)
LDW280-18065-35(REF)
LDW280-23530(REF)
LDW280M18310-11(REF)
LDW280-17733-12(REF)
LDW200-55542(REF)
LDW200-55544(REF)

MS20470AD4(36) (ON-1)
MS20470AD4(2) (ON-1)
MS20470AD4(10) (ON-1)
MS20470AD4(6) (ON-1)
MS20470AD4(5)

GRS00A-4C(16) (ON-1)
GRS00A-4C(13X(ON-1)
GRS00A-4C(15X(ON-1)
GRS00A-4C(16) (ON-1)
GRS00A-4C(12) (ON-1)
GRS00A-4E(18) (ON-1)
GRS00A-4E(15) (ON-1)
GRS00A-4E(1) (ON-1)
GRS00A-4B(7) (ON-1)
GRS01A-4B(6) (ON-1) CSK NS

GBS11K-08-2(2) GUS12H08(2)
GBS11K-08-5(2) GUS12H08(2) (ON-1)
GBS11K-08-8(3) GUS12H08(3) (ON-1)

SHIM AS REQD.040 MAX SEE NOTE 2
SHIM AS REQD.060 MAX SEE NOTE 2
SEE NOTE 3(4)

ZONE 16A SH 4
ZONE 9A SH 4
ZONE 13C SH 4)
ZONE 11B SH 4)

24.50(-53)
24.568
26.03*(-55)
8.31 IN 12 EQUAL SPACES
9.91 IN 15 EQUAL SPACES
7.43 IN 12 EQUAL SPACES
7.22 IN 35 EQUAL SPACES
10.58 IN 16 EQ. SPACES
6.25 IN 10 EQUAL SPACES
11.62 IN 7 EQUAL SPACES
21 EQUAL SPACES
17 EQUAL SPACES
4 EQUAL SPACES

X131.140(REF)
X141.940(REF)
X141.790
X142.492 (REF)
X166.240(REF)
Z33.688 REF
+Z27.000(REF)
Y51.50 (REF)
Y81.000(REF)
Y75.343
Y75.340(REF)
(-Y69.188 REF)

LDW280-54625(REF)
LDW280-55544(REF)

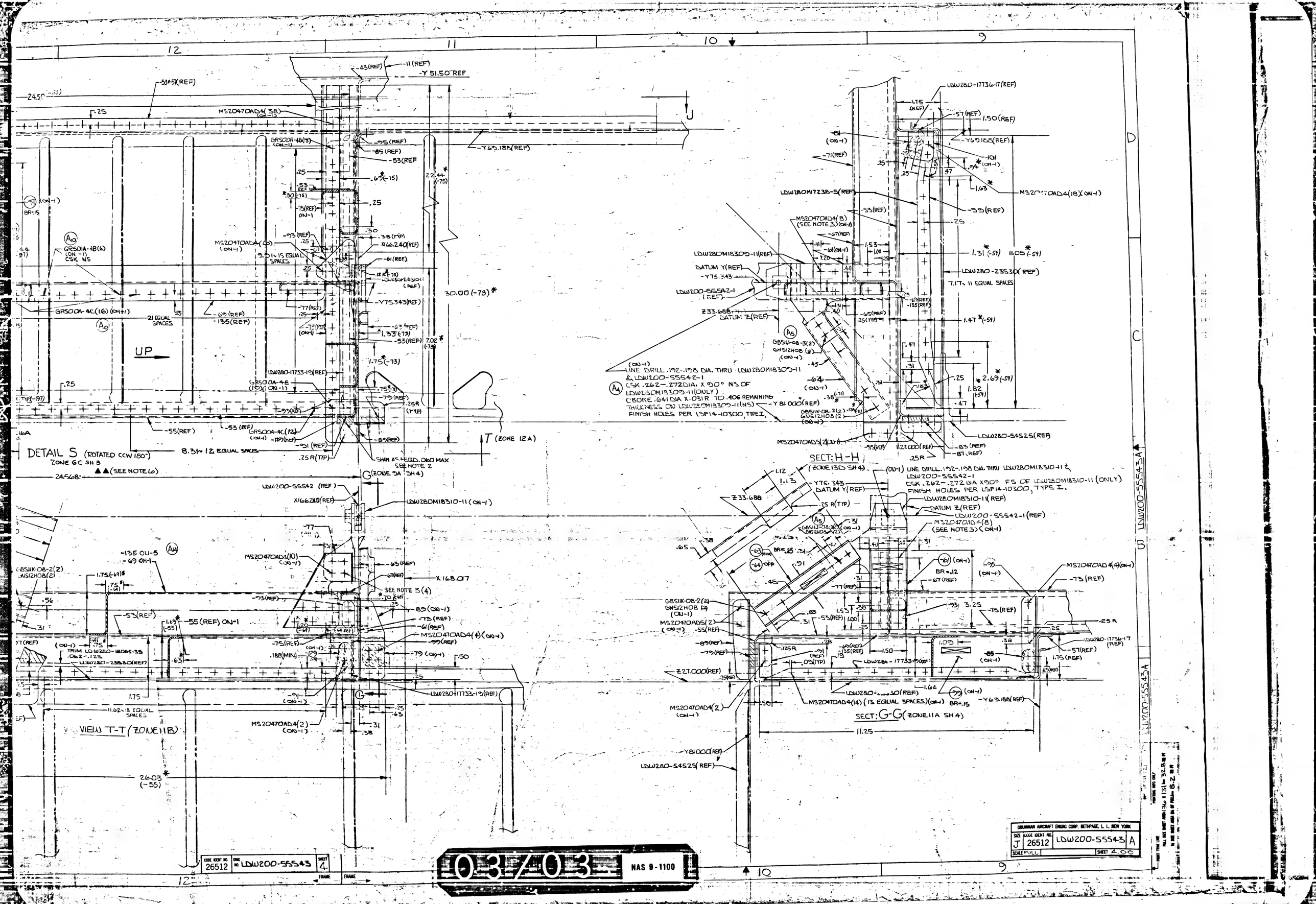
TRIM LDW280-18065-35 .062-.125

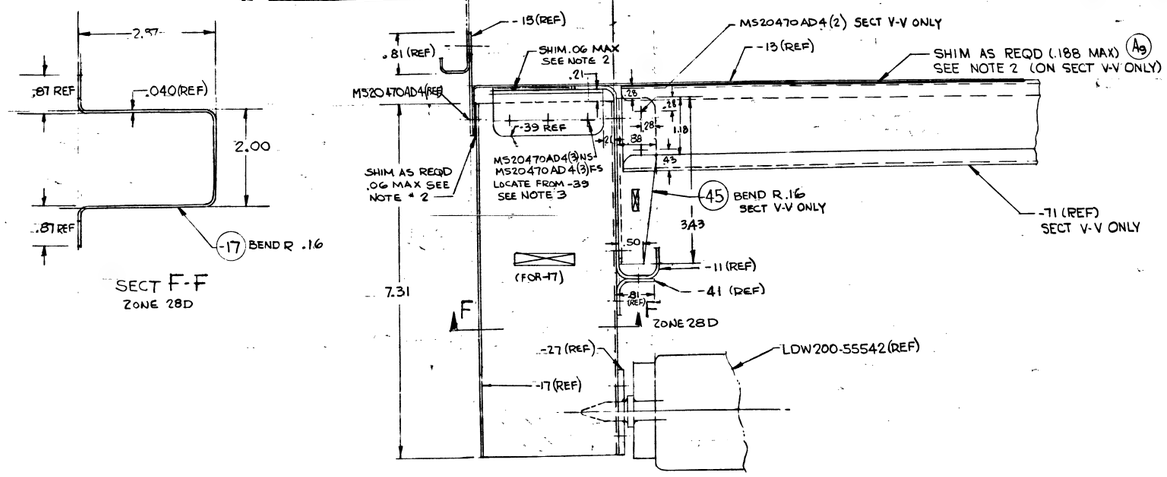
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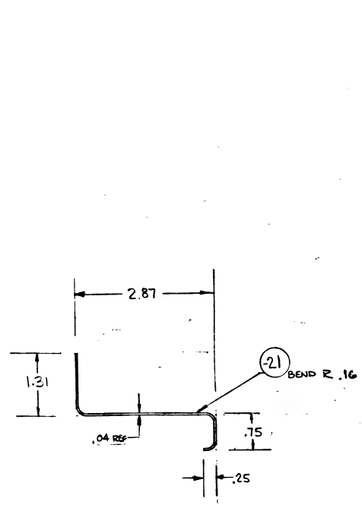
SEE NOTE 3(4)

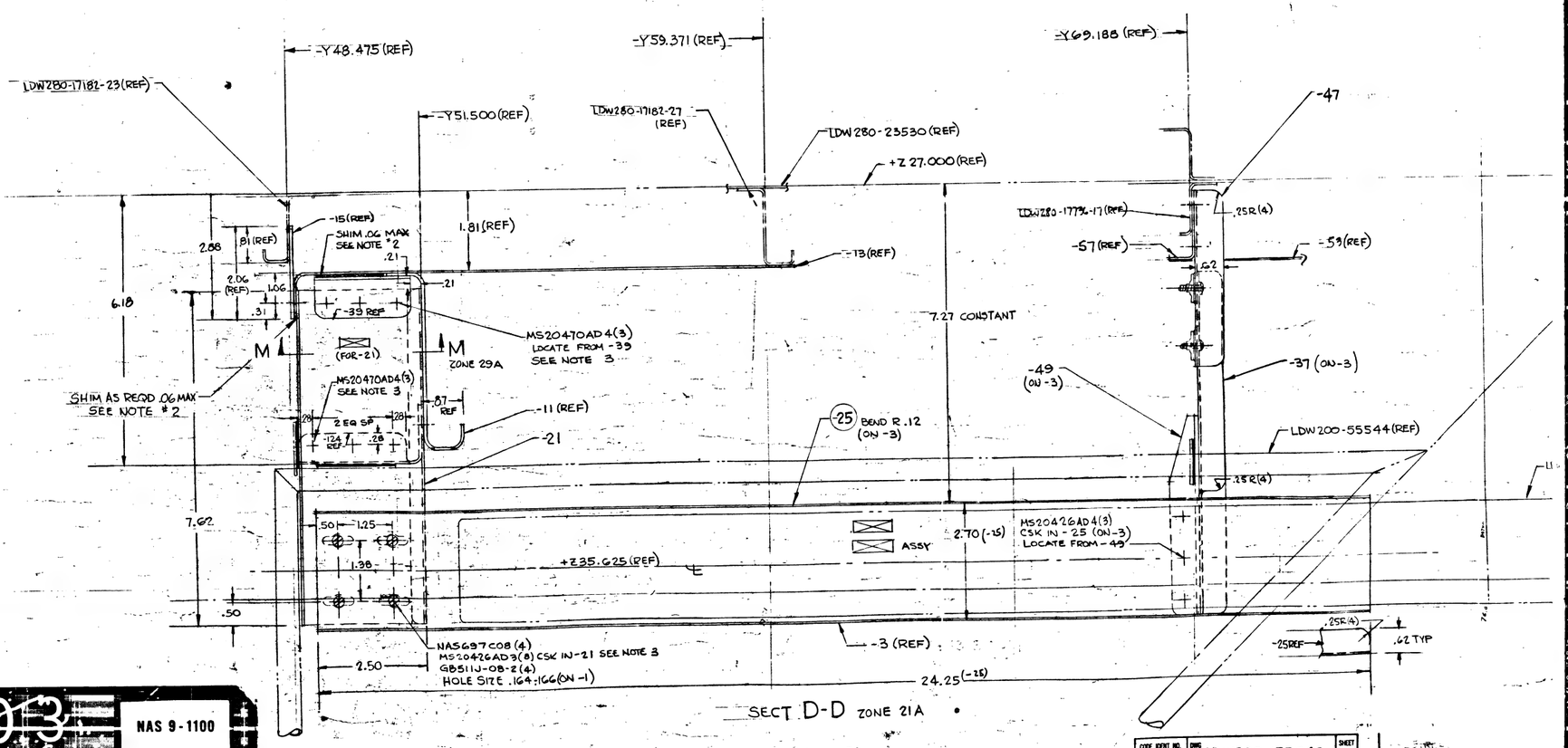
CODE IDENT NO 26512 | DWG NO LDW200-55543 | SHEET 4

02/03 | NAS 9-1100


DETAIL S (ROTATED CCW 180°)
ZONE 6C SH 3
▲▲(SEE NOTE 6)
SECT: H-H
(ZONE 13D SH 4)
SECT: G-G (ZONE 11A SH 4)
VIEW T-T (ZONE 11B)
UP
LDW200-55543
LDW200-55543A
CODE IDENT NO. 26512
DWG NO. LDW200-55543
SHEET 4
SIZE J
CODE IDENT NO. 26512
LDW200-55543 A
SCALE FULL
SHEET 4.00
GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I. NEW YORK
NAS 9-1100
03/03







01/03 NAS 9-1100

CODE IDENT NO.	DWG NO.	SHEET
26512	LDW200-55543	5

FRAME 1 FRAME 2

VIEW A-A ZONE 25B

SECT B-B ZONE 24C

SECT E-E ZONE 4A SH 3

NAS 9-1100

02/03

-Y 59.371 (REF)
A6
LDW280-54521 (REF)
+Z 27.000 (REF)
LDW280-17182-23 (REF)
A6
RELOCATE LDW280-17966-13 STRAP AND TRIM AS SHOWN
A6
ADD .165-.171 DIA HOLE TO -13 IN LINE WITH EXISTING PLATE NUT REPLACE WIRE AS SHOWN REF LPC280-23

-Y 48.475 (REF)
SHIM .06 MAX - SEE NOTE * 2
-Y 59.371 (REF)
+Z 27.000 (REF)
A9
SHIM AS REQD .188 MAX SEE NOTE 2
-Y 69.188 (REF)
-Y 81.000 (REF)
SEE SHEET #4 THIS AREA
LDW200-55545 THERMAL INSULATION (REF)
MS20470AD4(2)
SEE NOTE 3 MS20470AD4(3)
SHIM AS REQD .06 MAX SEE NOTE 2
-123 SHIM
-124 OPP BEND R.12
-43 BEND R.21
7.27 CONSTANT
-35 REF
MS20470AD4(3) SEE NOTE 3
-23 BEND R.12
LDW200-55544 (REF)
LDW200-55542 (REF)
-19 BEND R.15
19.38 (-23)
1.81 (REF)
2.70 (-23)
OF TRACK (-Z35.625) AND ADAPTOR
19.31 (-23)
56 (REF)
MS20426AD4(3) CSK IN -23 SEE NOTE 3
-Y 35.625 (REF)
-Y 36.25 (REF)
-Y 51.50 (REF)
-19 (REF)
-23 (REF)
SECT B-B ZONE 24C

2.31 — 2 EQ SP
.25R(4) .097-.102 4 HOLES
BEND R.15 (39)

X131.14 (REF)
64.86 (-13)
66.62 (-11)
-33 (REF)
-51 (REF)
MS20470AD6(2) NS SEE NOTE 3
MS20470AD4(2) FS
59.58 (-15) *
MS20470AD4(2)
+Z 27.000 (REF)
SEE NOTE 3 (NEAR SIDE) MS20470AD6(2)
(FAR SIDE) MS20470AD4(2)
MS20470AD5(2) SEE NOTE 3
MS20470AD5(2) SEE NOTE 3
X141.940 (REF)
-25R(2)(-15)
MS20470AD4 NS SEE NOTE 3 MS20470AD4 FS
SHIM (REF)
-11 (REF)
-39 (REF)
MS20470AD5(2)
MS20470AD4(8)
MS20470AD4(19)
MS20470AD4
MS20470AD4(3) SEE NOTE 3
MS20470AD5(4)
MS20470AD5(5) SEE NOTE 3
MS20470AD4(5) SEE NOTE * 3
-78 (REF)
-43 (REF)
MS20470AD4(4)
MS20470AD6(2) SEE NOTE 3
-71 (REF)
SHIM AS REQD .06 MAX SEE NOTE 2
-45 (REF)
-17 (REF)
-21 (REF)
-124 (REF)
MS20470AD4
-41 BEND R.21
-41
MS20470AD6(2) SEE NOTE 3
+Z 35.625 (REF)
+Z 35.50 (REF)
X136.34 (REF)
SLA PLATFORM (REF)
Z 35.84 (REF)
LDW200-55542 (REF)
LDW200-55544 (REF)
-27
-32 REF
X141.790 (REF)
X141.660 (REF)
X139.625 (REF)
X133.96 (REF)
10.510 (REF)
.186-.192 DIA IN -27 & -17
.375 -.377 DIA HOLE ON INSTL
FINISH HOLE PER LSP-14-10300 TYPE I
CSK .435 DIA x 100° NEAR SIDE
TYP 2 PLACES
SEE NOTE 8
X159.900 (REF)
X169.812 (REF)
SECT E-E ZONE 4A SH 3
DATUM X'

03703 NAS 9-1100

CODE IDENT NO.	DWG NO.	SHEET
26512	LDW200-55543	5

FRAME 2 FRAME 3

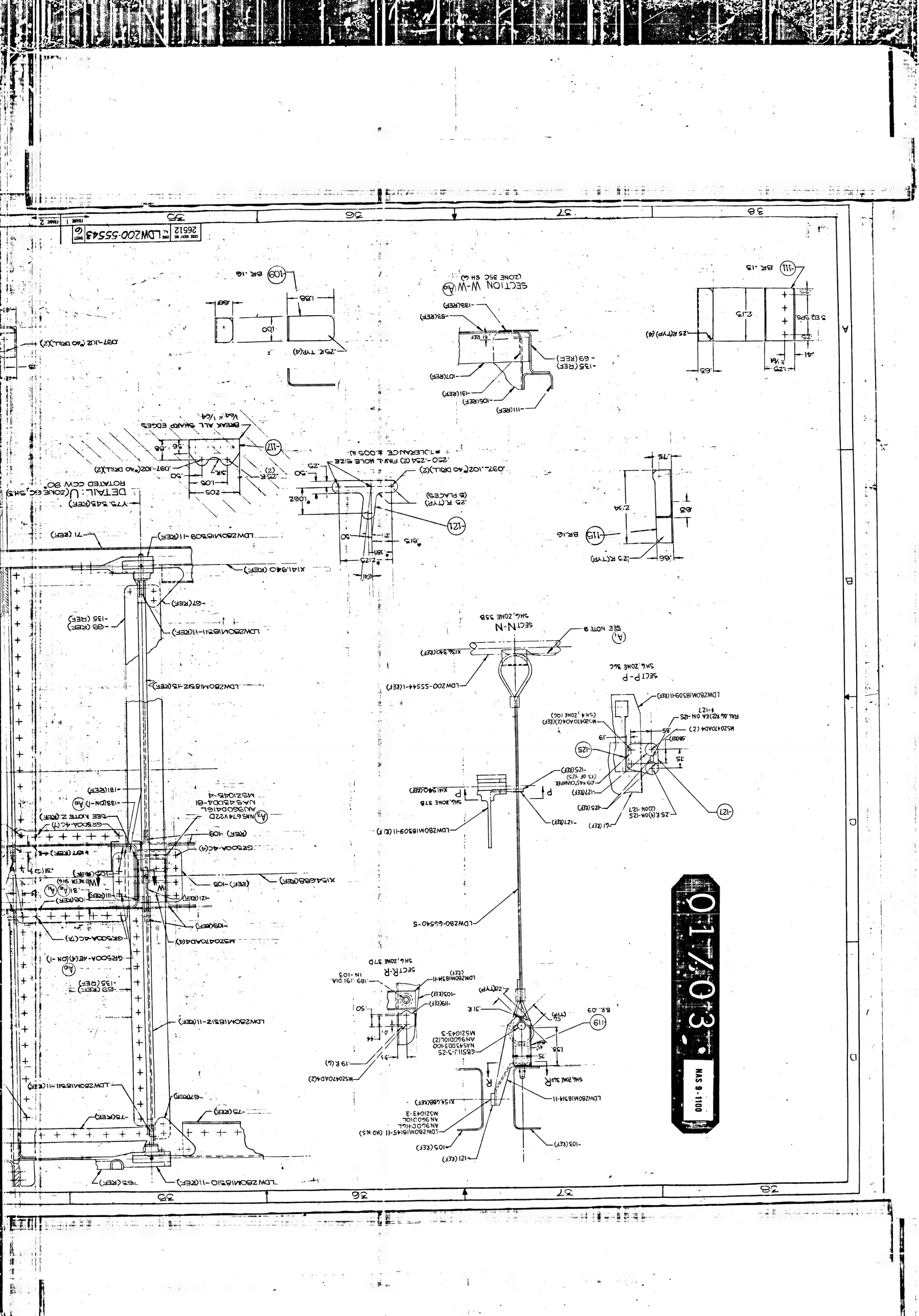
GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
J	26512	LDW200-55543	A

SCALE FULL SHEET 5.00

LDW200-55543 A
LDW200-55543 A
LDW200-55543 A

CODE IDENT NO 26512 | DWG NO LDW200-55543 | SHEET G | REV



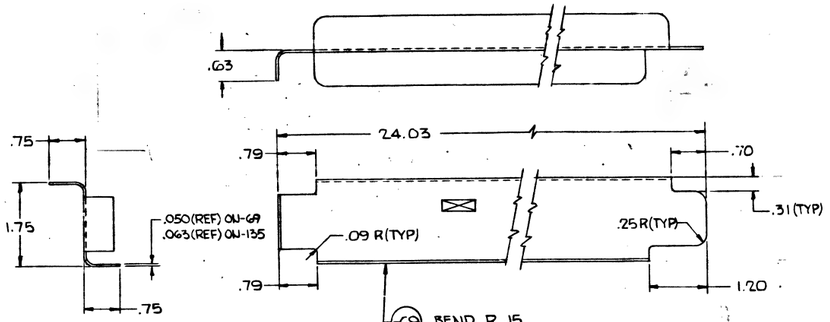
NAS 9-1100
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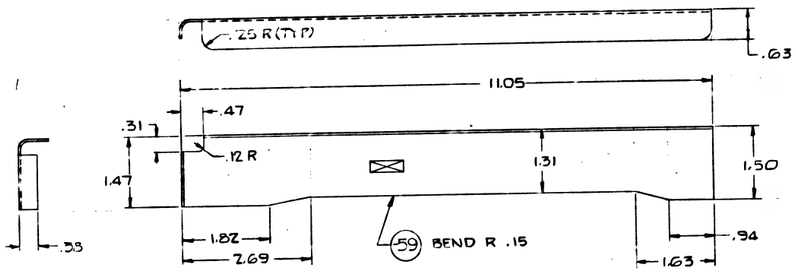
GRUMMAN AEROSPACE CORP. BETHPAGE, L.I., NEW YORK
SIZE A | CODE IDENT NO 26512 | DWG NO LDW200-55543 | REV A
SCALE FULL | SHEET 6 OF 6

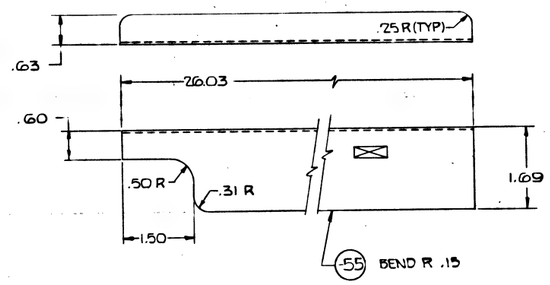
NAS 9-1100

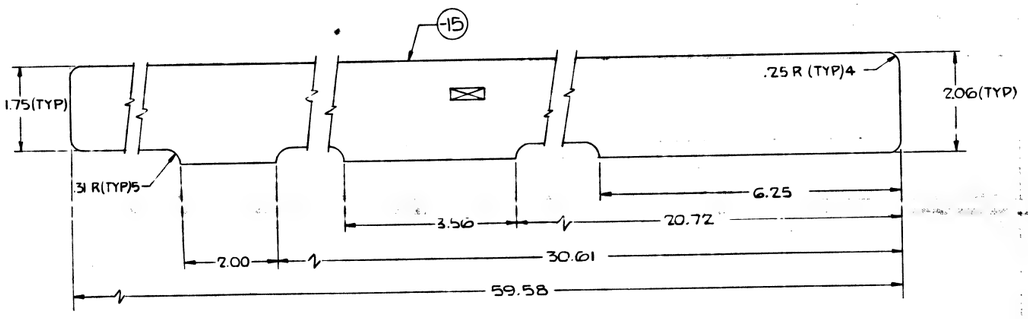
SUPPLEMENTARY DATA
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

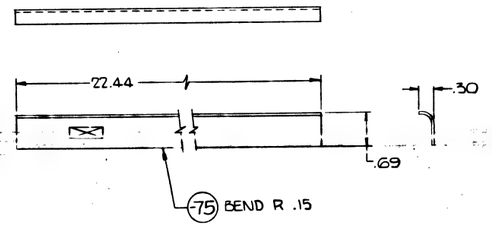
- MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130.
- AND ALL OTHER MARKINGS IN REGION MARKED-CHSD USE BOTH SIDES IF NECESSARY — PART NUMBER
- LENGTHS OF AN NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED
- INSTALL RIVETS IN ACCORDANCE WITH

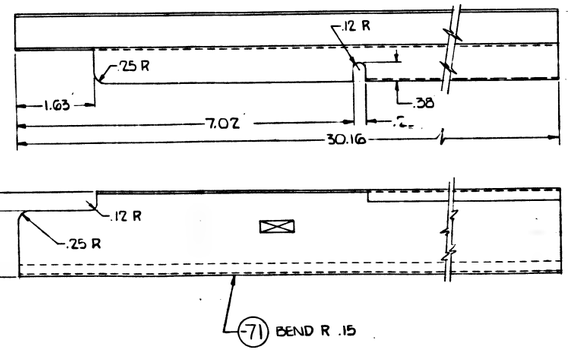


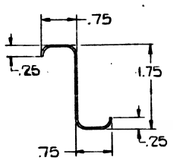


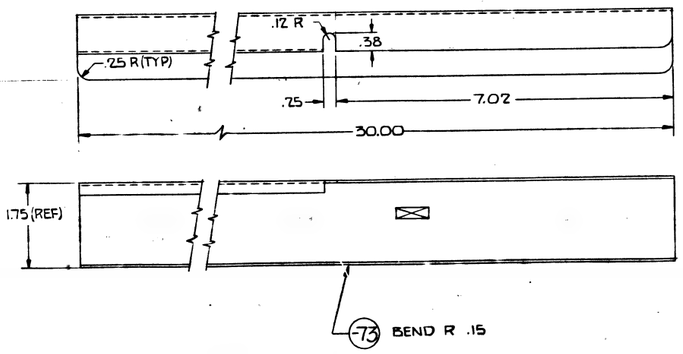


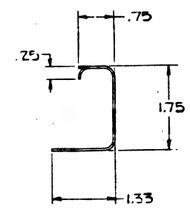












NAS 9-1100

GRUMMAN AEROSPACE CORPORATION
BETHPAGE, NEW YORK 11714

SIZE	CODE IDENT NO.		
E	26512	LDW200-55543	A

SCALE FULL SHEET 7.00

LDW200-55543A

GRUMMAN AEROSPACE CORPORATION

CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO.		EO NO.
LDW200-55543		B1
CONTROL INFO NO.	LDW280C0515	

FOR CALLOUT

IN ZONE 22A, REVISE HOLE SIZE FROM .375-.377 DIA

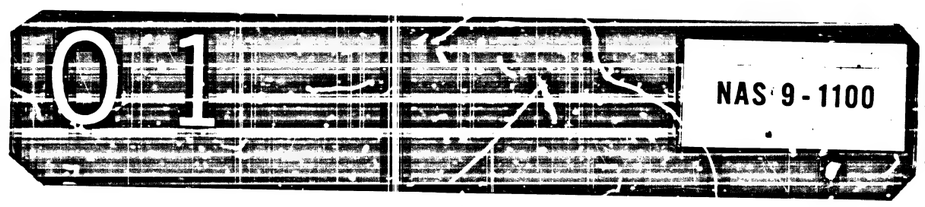
TO .379 -.381 DIA

CALLOUT SHOULD READ:

" .186-.192 DIA IN -27 & -17
.379-.381 DIA HOLE ON INSTL
FINISH HOLE PER LSP-14-10300 TYPE I.
CSK .435 DIA x 100° NEAR SIDE
TYP 2 PLACES "

DETAIL SPEC REQ		Cl II ENGRG CHG		Cl I ENGRG CHG	✓ LCD 5456 PKG 50												
REASON FOR EO: INCREASE HOLE SIZE TO PERMIT ENTRY OF MATING PINS					DESCRIPTION OF EO: HOLE SIZE .379-.381 DIA WAS .375-.377 DIA												GAEC EO RELEASE
MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG ✓	RECORD EO	DISPOSITION OF PARTS: REWORK ✓	SCRAP	APPROVED BY	RFT			WB		RFT	
								DATE	6-5-70			6/9/70	6/9/70		6-5-70		6/10/70
									VDI	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG		
LM	LFM 567	LM-8(38)		PRIORITY: C	DRAWING TITLE: SUPPORT INSTL - LASER RANGING RETRO REFLECTOR - REWORK OF LDW280-5452B (LFM 567)							DRAWING NO.: LDW200-55543				EO NO.: B1	

ISSUED BY 6-4-70 J. LANG / G. HANSMANN X 87222 SECTION VDI GROUP NO. 335 PL 25



GRUMMAN AEROSPACE CORPORATION

CODE IDENT NO. 26512

ENG 32.1 REV 3-65 **ENGINEERING ORDER**

DWG. NO. LDW200-55543 | EO NO. B2

CONTROL INFO NO. LDW280C1119

ON -1 & -5

LDW280-66540-5-1 FASTENER ASSY

REPLACED

LDW280-66540-5

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD5688½ PKG 50

REASON FOR EO: REPLACE PAP PINS WITH FULLY INSPECTED PIN.

DESCRIPTION OF EO: NOTED

GAEC EO RELEASE: W.R.N. 11-7-70

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 622	LM-8(38)	
LM		LM-9(39)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO | DISPOSITION OF PARTS: REWORK ✓ | SCRAP

PRIORITY: C

DRAWING TITLE: SUPPORT INSTL, LASER RANGING RETRO REFL, REWOR OF LDW280-54508

DRAWING NO.: LDW200-55543

EO NO.: B2

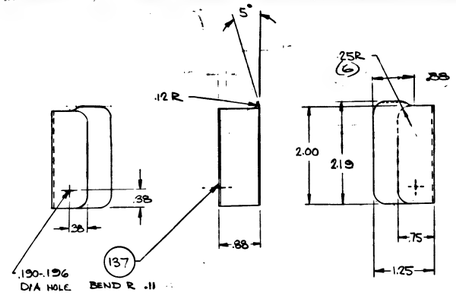
	APPROVED BY	DATE	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
	RSF	11-6-70	VDI		11/7/70	NM 11-7-70		RSF 11-7-70
								11/7/70

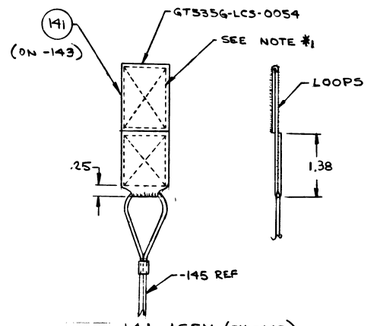
CDR 110970

ISSUED BY F. WOLFF/G. HANSMANN x87223 SECTION VDI GROUP NO. 0335 PL 25

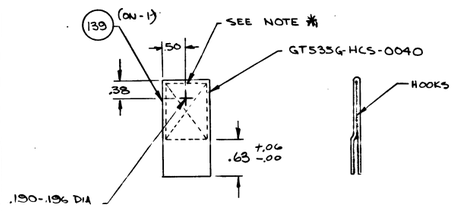
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NAS 9-1100





-141 ASSY (ON -143)
DETAIL △



-139 ASSY (ON -1)

NOTES:

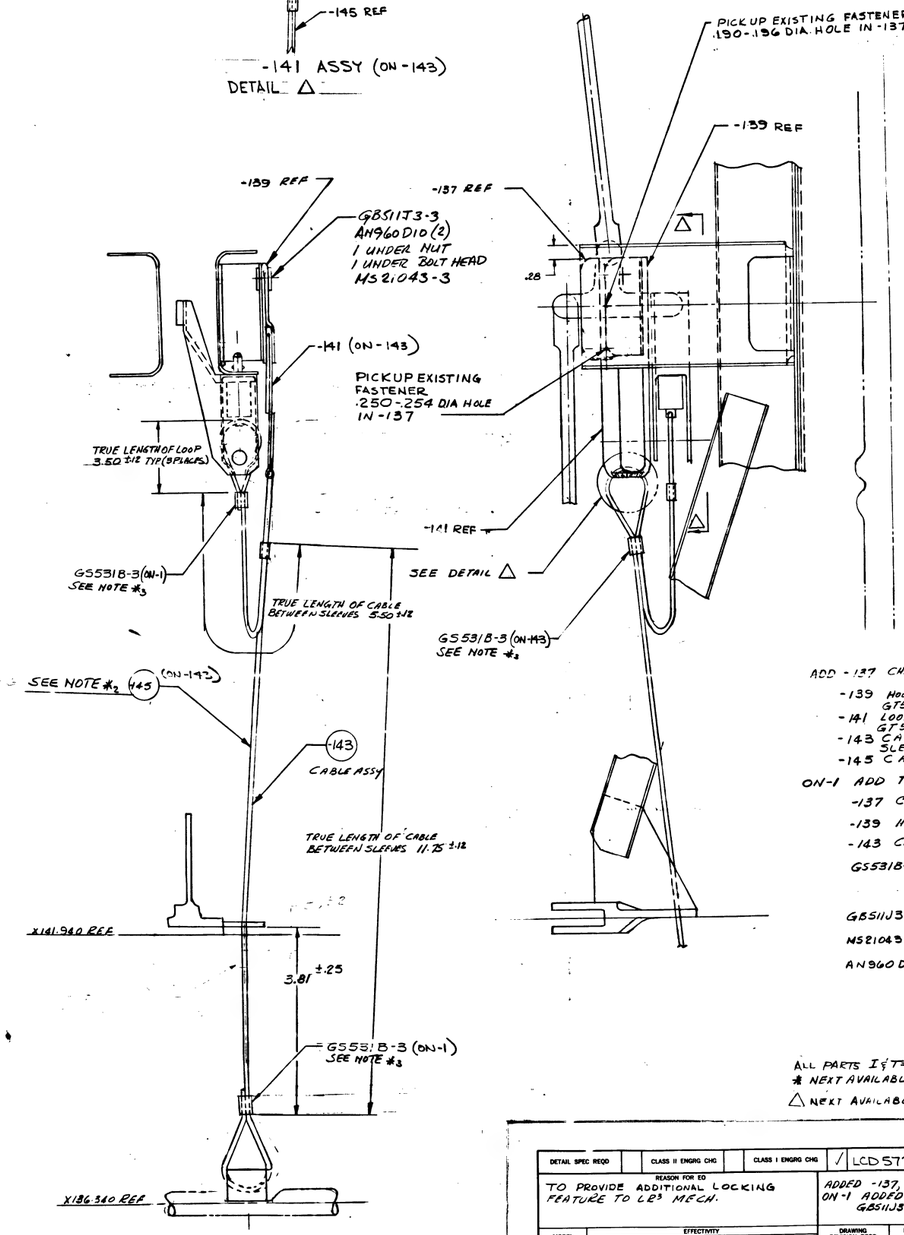
*1 SEW VELCRO AT .18±.06 FROM EDGES OF VELCRO IN ACCORDANCE WITH FED STD #751 TYPE 801 & STITCH 6 TO 11 STITCHES PER INCH. ALL STITCHING TO BE BACKSTITCHED A MIN OF .38 TO .50 IN. USE THREAD GT534C-1 OR GT534D-1.

*2 -145 TEFLON COATING TO BE ENTIRELY STRIPPED. CABLE TO BE TRIMMED ON INSTL AS REQD.

*3 INSTALL SLEEVES PER GL10J ON-1 & -143

*4 ASSEMBLE VELCRO HOOK & VELCRO LOOP AND TEST FOR MIN PULL STRENGTH OF 6 POUNDS AT RELEASE

*5 PRIOR TO FINAL BLANKET CLOSE OUT VERIFY THAT THE PIP PIN IS FULLY LOCKED AND THAT THE VELCRO HOOK & VELCRO LOOP IS ENGAGED AND THAT THE SLEEVE ON THE LANYARD IS APPROXIMATELY 3.81 ±.25 INCH. BELOW LANYARD GUIDE.



SECTION △-△

ADD -137 CHANNEL - MATL 2024-T3 QQ-A-250/4 .032 THICK FIN 76
-139 HOOK ASSY MAKE FROM: GT535G-HCS-0040 & GT534C-1 OR GT534D-1 SEE NOTE *1
-141 LOOP ASSY MAKE FROM GT535G-LCS-0054 & GT534C-1 OR GT534D-1 SEE NOTE *1
-143 CABLE ASSY MAKE FROM -141 LOOP ASSY, -145 CABLE, GS5318-3 SLEEVE
-145 CABLE MAKE FROM GC576-2-0320 SEE NOTE #2

ON-1 ADD THE FOLLOWING PARTS:
-137 CHANNEL (1)
-139 HOOK ASSY (1)
-143 CABLE ASSY (1)
GS5318-3 SLEEVE (2)

GB511J3-3 SCREW (1)
MS21043-3 NUT (1)
AN960D10 WASHER (2)

ALL PARTS IETP
* NEXT AVAILABLE NOTE NUMBER
△ NEXT AVAILABLE SECT LETTER

NAS 9-1100

DETAIL SPEC REQD		CLASS II ENGRG CHG		CLASS I ENGRG CHG	/	LCD 5738 PKG 50					CONTROL INFO NO. LDW280C1183		
REASON FOR ED: TO PROVIDE ADDITIONAL LOCKING FEATURE TO LB³ MECH.						DESCRIPTION OF ED: ADDED -137, -139, -141, -143 & -145 ON-1 ADDED -137, -139, -141, -143, -145, GS5318-3 (2), GB511J3-3, MS21043-3, AN960D10						GRUMMAN ED RELEASE	
MODEL	EFFECTIVITY: PROCURING ACT NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING REVISION REQD	DISPOSITION OF PARTS			DATE					
LM	LFM 638	LM 8(38)		REVISE DWG	RECORD ED	REWORK	SCRAP	VDJ	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGR
								12-17-70			12/16/70	12/16/70	12/17/70	12-17-70
				PRIORITY: C	DRAWING TITLE: SUPPORT INSTALLATION LASER RANGING RETRO REFL (REWORK OF LDW280-54508)						ENGINEERING ORDER DRAWING NO. LDW200-55543		ED NO. B3
12-17-70 ISSUED	P. CLARK / G. HANSMANN	SECTION	VDI	GROUP NO. 335	PL 25	CODE IDENT NO. 26512	GRUMMAN AIRCRAFT ENGINEERING CORP BETHPAGE L. I. N. Y.						

GRUMMAN AEROSPACE CORPORATION

CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200 55543		EO NO. B4
CONTROL INFO NO. LDW200C1198		

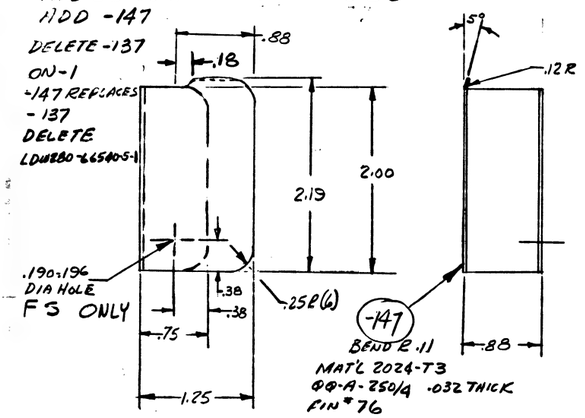
THIS EO IS A REVISION OF EO B3

ADD -147

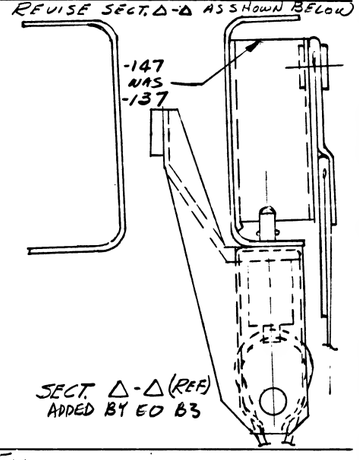
DELETE -137

ON-1 -147 REPLACES -137

DELETE LDW280-66540-5-1



REVISE SECT. Δ-Δ AS SHOWN BELOW



SECT. Δ-Δ (REF)
ADDED BY EO B3

DETAIL SPEC REQ | U.I. ENGRG LTR | U.II ENGRG LTR | LDW5758 PLG JU

REASON FOR EO: INCORRECT PICTURE CALLOUT & REMOVE REPLACED LANYARD.

FID # B/M REF EO DESCRIPTION OF EO: B3 ADDED -147 DELETED-137, LDW280-66540-5-1 ON-1 -147 REPLACES -137

GAEC EO RELEASE: C 12-17-70 12-16-70

MODEL	EFFECTIVITY: MFG ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 638	LM-8(38)	

DRAWING CHANGE REQD: REVISE DWG ✓; RECORD EO

DISPOSITION OF PARTS: REWORK; -137 SCRAP

APPROVED BY									
DATE	12/16/70		SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	CONT ENGR
	VDI				12/16/70	12/16/70		12/16/70	DEL

PRIORITY: C

DRAWING TITLE: SUPPORT INSTL. LASER RANGING RETRO REF. REWORK OF LDW280-54508)

DRAWING NO.: LDW200-55543

EO NO.: B4

ISSUED BY CLARK / HANSMANN 8-7222 SECTION VDI GROUP NO. A335 PL 075

01

NAS 9-1100

GRUMMAN AEROSPACE CORPORATION

CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200 55543 | EO NO. B5

CONTROL INFO NO. LDW280C1208

THIS EO IS A REVISION OF EO B3

ON-145 CABLE MAKE FROM GC576R-2-0320 SEE NOTE #2 WAS MAKE FROM GC576-2-0320 SEE NOTE #2

ON-1 & -143 GS531B-2 (3) WAS GS531B-3 (3)

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	LCD 5738 PKG #50

REASON FOR EO: INCORRECT CABLE & SLEEVE CALLOUT

DESCRIPTION OF EO: Ref EO B3 ON-145 MAKE From GC576R-2-0320 SEE NOTE #2 WAS MAKE From GC576-2-0320 SEE NOTE #2 ON-1 & -143 GS531B-2(3) WAS GS531B-3(3)

GAEC EO RELEASE: 12/8/70

MODEL	EFFECTIVITY: PROGRAM/ACTIVITY NO. E1	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM638	LM-8(38)	

DRAWING CHANGE REQD: REVISE DWG ✓; RECORD EO

DISPOSITION OF PARTS: REWORK Not Reqd; SCRAP

APPROVED BY										
DATE	12/8/70			12/11/70	12/11/70		12/11/70	12/7/70	12/8/70	
	VD1	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	COST		

PRIORITY: C

DRAWING TITLE: SUPPORT INSTL. LASER RANGING RETRO REFLECTOR (REWORK OF LDW280-54508)

DRAWING NO.: LDW200-55543

EO NO.: B5

CDR 12-18-70

ISSUED BY CLARK / HANSMANN X8-7222 SECTION VD1 GROUP NO. 0335 PL 025

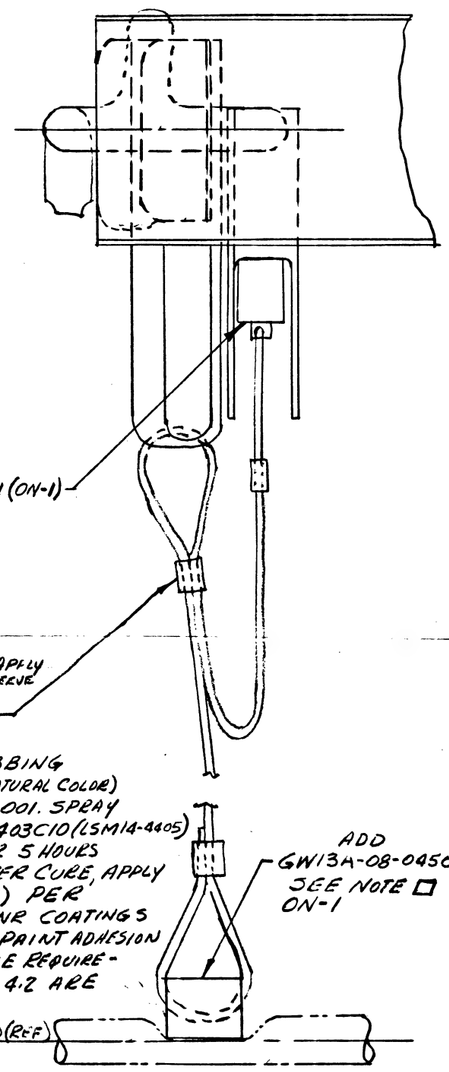
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NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENG 32.2 REV 3-65
ENGINEERING ORDER

DWG. NO. LDW200-55543		EO NO. B6
CONTROL INFO NO. LDW230C1209		

IN F/D & B/M ON-1



ADD NOTE □: PRIOR TO FABRICATION, WEBBING SHALL BE COATED WITH CNR (NATURAL COLOR) IN ACCORDANCE WITH LPC 330-001. SPRAY OR BRUSH COAT STRIPES WITH 403C10 (LSM14-4405) PER LSP14-4503 AND CURE FOR 5 HOURS MINIMUM AT 150° TO 160° F AFTER CURE, APPLY ONE COAT CNR (NATURAL COLOR) PER LPC 330-001. STRIPING AND CNR COATINGS TO BE INSPECTED VISUALLY. NO PAINT ADHESION TEST ARE REQUIRED. EMITTANCE REQUIREMENTS OF LSP14-4503 PARA 4.2 ARE TO BE OMITTED.

□ USE NEXT AVAILABLE NOTE LETTER

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCD 5738 PKG 50

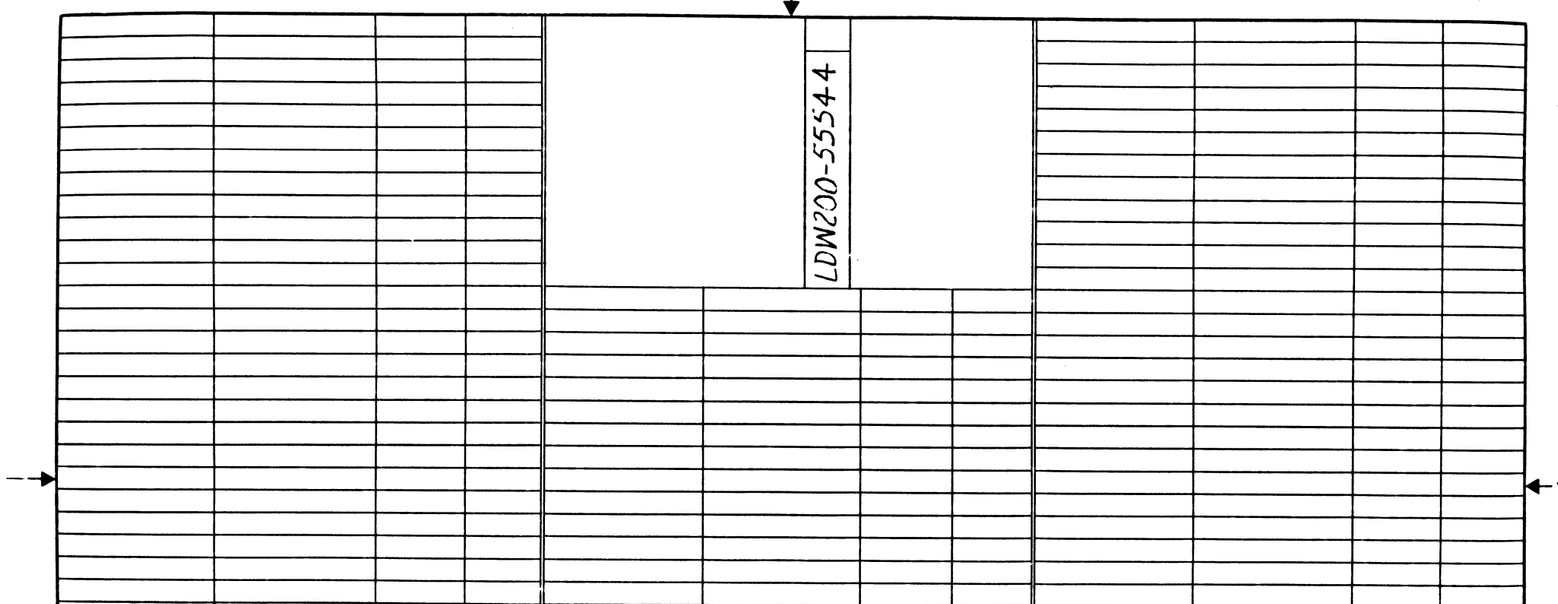
REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
ADDITIONAL LANYARD REQUIREMENTS	ON-1 ADDED LDW280-66540-11-1, GT835P-8 & GW13A-08-0450 & NOTE □	

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP	APPROVED BY	DATE	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ. ENGRG
LM	E1 LFM638	LM-8(38)		✓		✓		VDI	12-21-70			12/21/70	NM		12-21-70

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SUPPORT INSTL LASER RANGING RETRO REFL. (REWORK OF LDW280-54508)	LDW200-55543	B6

CDR 12-21-70
ISSUED BY R. CLARK / G. HANSMANN 8-7122 SECTION VDI GROUP NO. 0335 PL 075

NAS 9-1100



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LFM 561	LDW280-54508	LM8(58)	1
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW200-55544-1		GAEC SCH NO.	

WORK PACKAGE FUNCTION NO. 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1,00	2,00		3,00					
REV									
SHEET									
REV									
SHEET									
REV									

		GRUMMAN REC INFO			
LAST SECT LTR USED	E	PRIM NO.			
LAST DASH NO. USED	-35	207			

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
~~FRACTIONS~~ - DECIMALS – ANGLES
XX ± .06, .XXX ± .030 ± 1/2°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 5456 PK50	

CONTRACT NO. NAS 9-1100 | LINE ITEM | DOCUMENTATION TYPE II

DRAWN BY	DON RAGAS			
LAYOUT BY	DON RAGAS	THERMO		3/20/70
CHECKED BY				
GR LEADER				
VEH. DES INT				
STRUCTURES	WB	3/20/70	PROJ ENGR	3/20/70
STRUCTURES		3/20/70	REL GROUP	
MATERIAL		3/20/70		

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BETHPAGE, L. I., NEW YORK

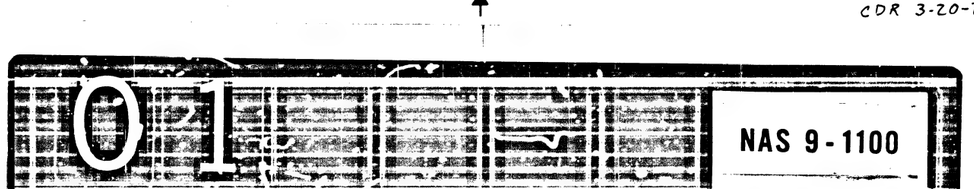
FRAME INSTALLATION
DESCENT STAGE-LASER RANGING RETRO-REFLECTOR (REWORK OF LDW280-54508 LFM561)

SIZE	CODE IDENT NO.	
B	26512	LDW200-55544

SCALE NONE | SHEET 1 OF 3

ENG 77.1 12-68

CDR 3-20-70



QTY PER ASSEMBLY -5	QTY PER ASSEMBLY -3	QTY PER ASSEMBLY -1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
6			GS26E	-1	E	STANDOFF	GRUMMAN STD						
		12	GB511J	-3-3		BOLT	GRUMMAN STD						
		12	MS21042	-3		NUT	GOVT STD						
A/R			MS20470	A3		RIVET	GOVT STD						
		12	AN960	D3		WASHER	GOVT STD						
		1	GT5356	HCS-0044		VELCRO HOOK	GRUMMAN STD						
		A/R	GT835	M-8		TAPE	GRUMMAN STD						
		A/R	SEE NOTE #9			SHIM							
	1		LDW200	-55544-35		PLATE	AL. ALY. SH	MIL-A-8920	2219 T81	.050 x 2 1/4 x 2 1/4		76	
	3			-33						x 2 1/4 x 2 3/4			
	8			-31						x 2.0 x 2.0			
	2			-29		PLATE	AL ALY. SH	MIL-A-8920	2219 T81	.050 x 2.0 x 2.0			
	2			-27		TUBE	SEE NOTE 5			1/2 OD x .040 x 6			
	1			-25						x 40			
	1			-23						x 37			
	3			-21						x 36 1/4			
	2			-19						x 20			
	2			-17						x 9 1/2			
	2			-15						x 18			
	2			-13						x 27			
	2			-11		TUBE	SEE NOTE 5			1/2 OD x .040 x 26			
		1		-5		STANDOFF ASSY							
		1		-3	1	FRAME ASSY	(WELDED)				AW	76	
			LDW200	-55544 -1	E	FRAME INSTL					NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
AW	FUSION WELDING AL	LSP 14-6201
76	ALODINE	LSP 14-9010

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55544

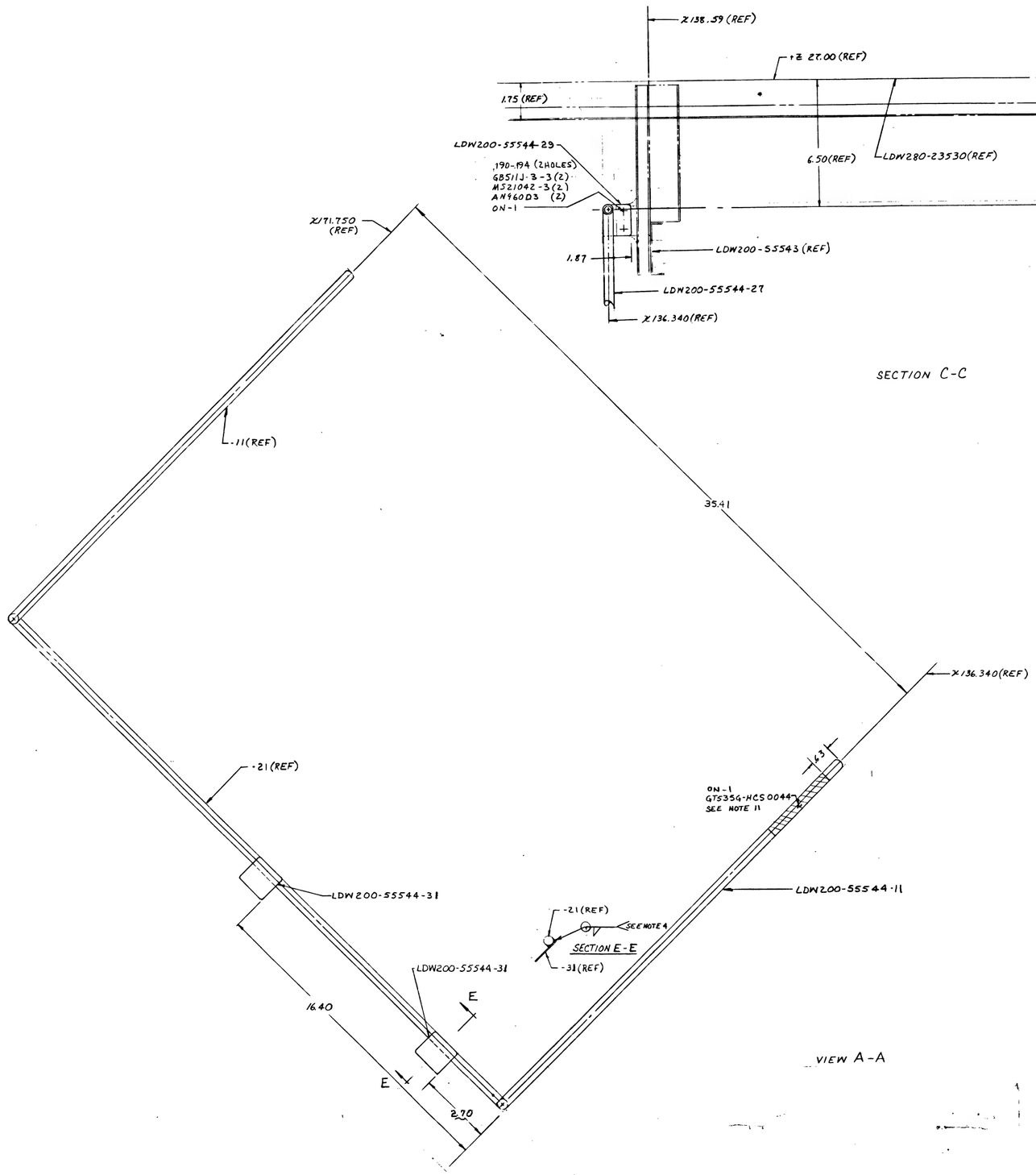
SCALE NONE SHEET 2.00

ENG 77.2 7-64

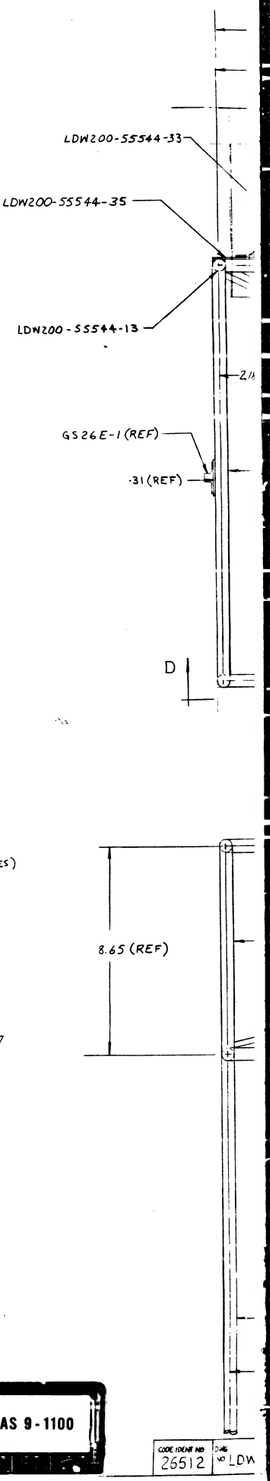
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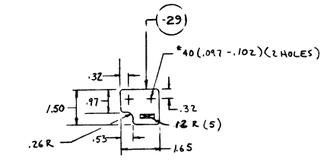
NAS 9-1100

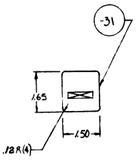
SUPPLEMENTARY DATA
UNLESS OTHERWISE SPECIFIED
S CHECKED ✓ APPLY TO THIS DWG
NUMBER IN ACCORDANCE TO 130.
E STAMP PART NUMBER
HER MARKINGS IN REGION CI USE BOTH SIDES IF
AN, NAS & MS AL ALY ETER THAN 1 INCH ARE ED.
ETS IN ACCORDANCE WITH 9-5302

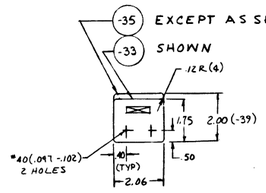


SECTION C-C



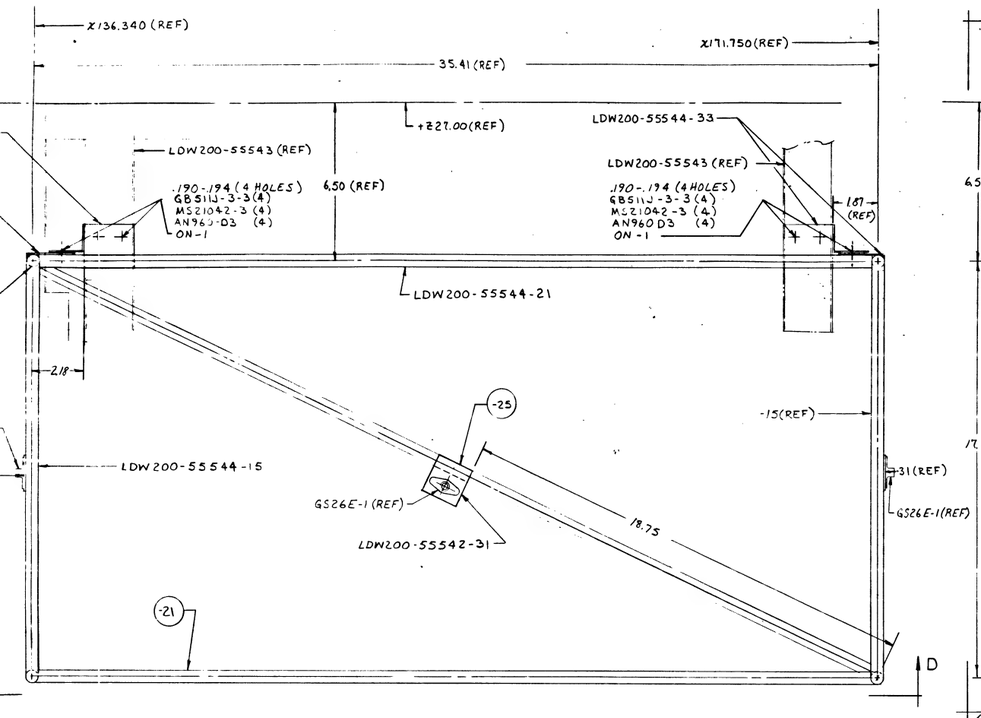




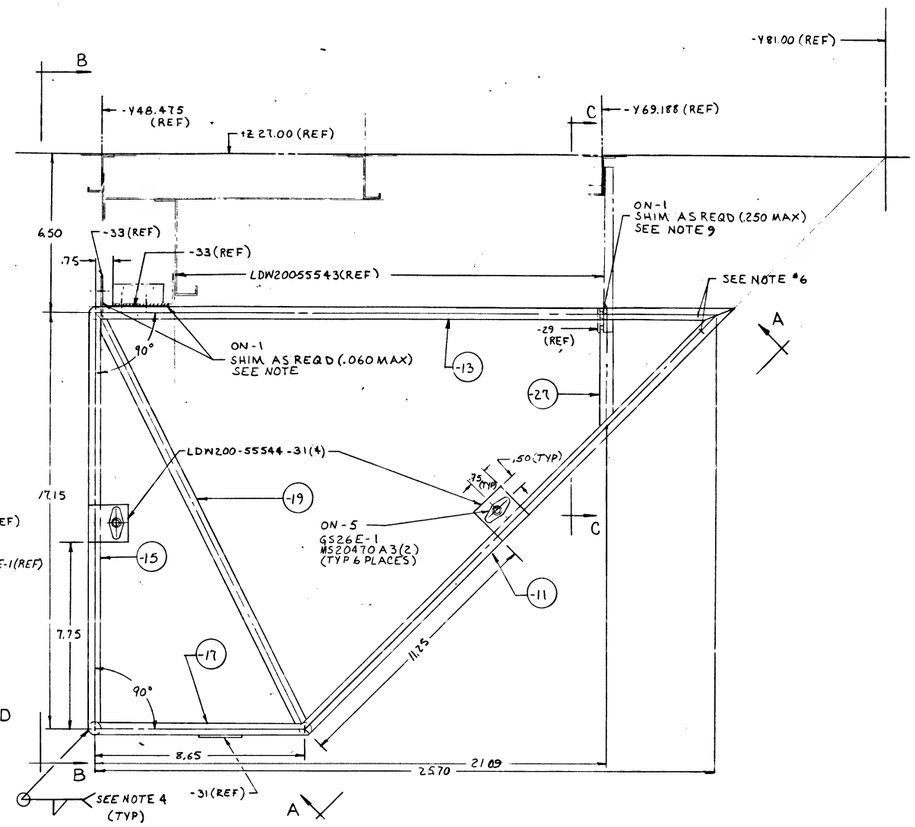


01	02	NAS 9-1100

CODE IDENT NO	SIZE	NO
26512	D	LDW

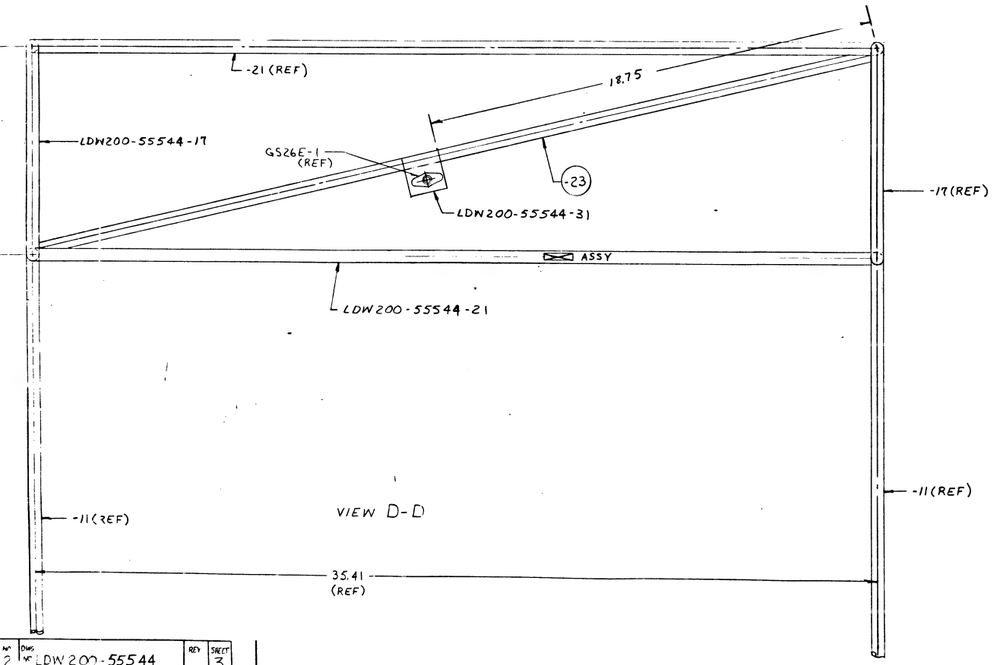


VIEW B-B



VIEW LOOKING DOWN (QUAD 1)

LDW200-55544 -1 FRAME INSTL
LDW200-55544 -3 ASSY (WELDED)
LDW200-55544 -5 ASSY (STANDOFF)



VIEW D-D

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS
2. INTERSECTING TUBE ENDS TO BE FULLY ENCLOSED & TRIMMED AS REQD PRIOR TO WELDING.
3. ALL FILLET WELDS .06.
4. FILLET OR BUTT WELD (AS APPLICABLE) 360° AROUND ALL INTERSECTIONS OF TUBES.
5. 2219-T81 AL ALY TUBING PER LSM 14-2009
6. .129-.133 (#30 LINE DRILL (1) HOLE THRU 2 WALLS AT EACH TUBE END. ALL TUBES TO HAVE (2) THRU VENT HOLES (4 HOLES TOTAL) VENT HOLES TO BE LOCATED 1/2 ± 1/8 FROM NEAREST WELD (ROTATIONAL POSITION OPTIONAL)
7. WELD STANDARD NO.3 PER LSP14-6201 EXCEPT WIRE BRUSHING MAY REPLACE SCRAPING. DYE PENETRANT CHECK ONLY ~ NO RADIOGRAPHIC INSPECTION REQUIRED
8. ANNEALED AREAS ADJACENT TO WELDS PERMISSIBLE.
9. SHIM AS REQD USING 2024-T3 AL ALY SH, QQ-A-250/4 FIN 76.
10. WRAP ALL TUBES WITH GT835M-8 TAPE, BEFORE INSTL.
11. BOND USING EPON 934 PER LSP14-22800 CURE RANGE I.

02402 NAS 9-1100

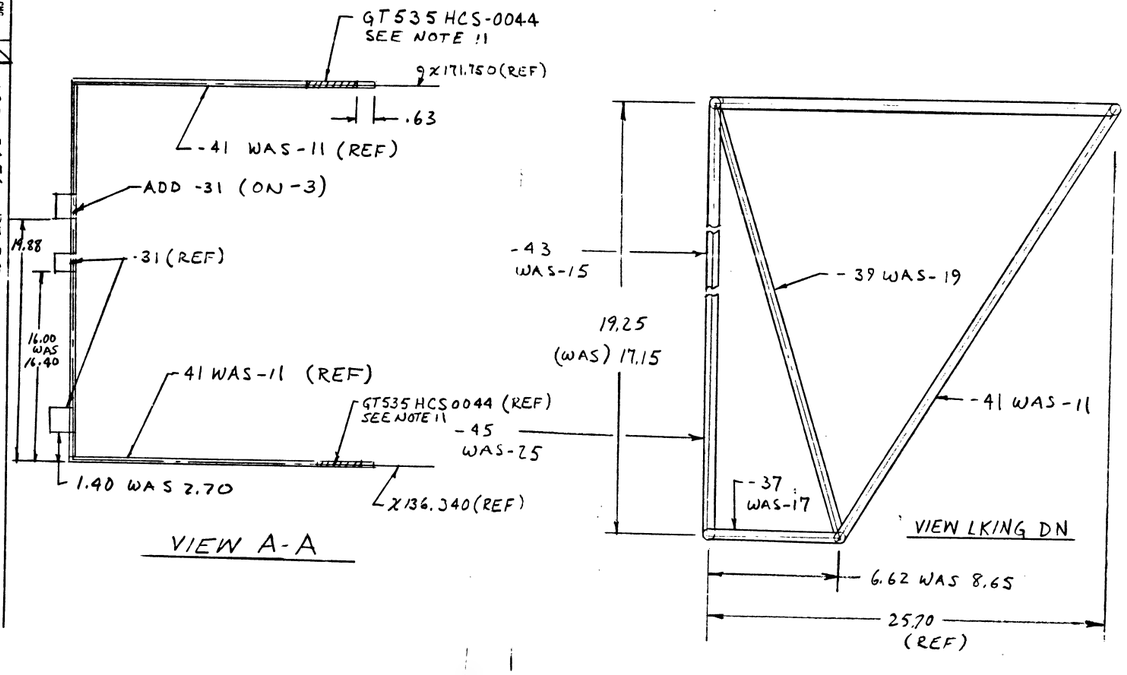
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE J	CODE IDENT NO 26512	LDW 200-55544	
SCALE HALF		SHEET 3	

FRAMES 2

NAS 9-1100

01

REVISE -3 ASSY AS SHOWN:
ADD -31, & GT535HCS-0044
-37, REPLACES -17
-39 ↕ -19
-41 ↕ -11
-43 ↕ -15
-45 REPLACES -25



GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO.	LDW200-55544		ECO NO. A1
CONTROL INFO NO.	LDW280C03/7		

DETAIL SPEC REQ | CL II ENGRG CHG | REASON FOR ECO

INCREASE SIZE OF HAND RAIL.

EFFECTIVITY MODEL	ASSEMBLY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LEM 5&7	LM 8(38)	

CL II ENGRG CHG | LCD 5456 PC 50

INFD & B/M ON -3 ASS'Y. DESCRIPTION OF ECO
ADDED -31 & GT535HCS-0044, VIEW A-A. REVISED D/M
(40 WAS 2.70 & 16.00 WAS 16.40. VIEW LKING DN 19.25 WAS 17.15
& 6.62 WAS 8.65 & -37, -39, -41, -43, -45 REPLACED -17, -19
-11, -15, -25 RESPECTIVELY.

DRAWING CHANGE REQD	DISPOSITION OF PARTS	APPROVED BY	DATE
REVISE DWG			
RECORD ED			
REWORK	-17, -19 SCRAP		
	-11, -15 -25 SCRAP		

VDI	SUPPORT	RELIAB GROUP	CHECK GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GAEC RELEASE
				WB			

PRIORITY C | DRAWING TITLE FRAME INSTL DIS LR & - (REWORK OF LDW200-55544 LEM 562)

DRAWING NO.	ECO
LDW200-55544	A1

ECR 040970 ISSUED BY DAN RAGAS 28722 SECTION VL1 GROUP NO. 280 PL 25

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

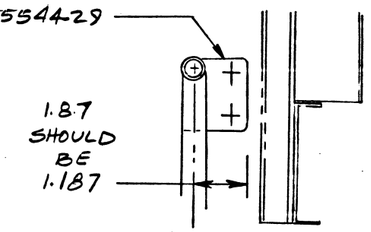
ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200-55544		EO NO. A2
CONTROL INFO NO. LM-5-22460		

LDW200-55542-29
SHOULD
BE
LDW200-55544-29

1.187
SHOULD
BE
1.187



LDW200-55544-3 (REF)

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓ LED 5456.

REASON FOR EO
-29 CANT BE INSTALLED PER DWG. F/D DOESNT AGREE WITH B/M

DESCRIPTION OF EO
ON-3
LDW200-55544-29 WAS LDW200-55542-29.
LOCATING DIA FOR -29 WAS 1.87

(E) GAEC EO RELEASE: C

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
LM	LEM 567	LM-8 (38)		✓		✓	

APPROVED BY								
DATE	5-14-70							
	VD1	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	EO
				5/13/70	5/7/70	5-5-70	5/6/70	5/8/70

PRIORITY: C

DRAWING TITLE: FRAME INSTL. D/G-LASER RANGING RETRO REFL.

DRAWING NO.: LDW200-55544

EO NO.: A2

ISSUED BY LIAISON E.V. BERGEMAN X-8675 SECTION VD1 GROUP NO. 280 PL 25

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200-55544 | EO NO. A3

CONTROL INFO NO. LM-5-22498

ON-1

IN D/M & F/D

MS21042-3 S/B MS21042-L3

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	X	LCD 5456

REASON FOR EO: WRONG NUT CALLOUT.

DESCRIPTION OF EO: ON-1 IN B/M ~ MS21042-L3 WAS MS21042-3 & F/D

GAEC EO RELEASE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 567	LM-8(38)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: REWORK ✓ | SCRAP

PRIORITY: C

DRAWING TITLE: FRAME INSTL D/S LRS (REMOVE OF LDW200-55508 LFM-567

DRAWING NO.: LDW200-55544

EO NO.: A3

APPROVED BY	DATE	VDI	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
[illegible]	5-14-70	VDI			5/20/70	5/20/70	5/11/70	5/14/70

KC CR [illegible] [illegible]

ISSUED BY LIAISON C Rossiano X86755 SECTION VDI GROUP NO. 250 PL 25

01

NAS 9-1100

ENG 32.1 REV 3-68

GRUMMAN AEROSPACE CORPORATION
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW200-55544 | EO NO. A4
CONTROL INFO NO. LDW280C0947

INF/D & B/M: AN960D3 S/B AN960D10

VIEW B-B (2 PLACES)
(*) REVISE CALLOUT:

	.190-.194 (4 HOLES) GB511J-3-3(4) AN960D10 (4) NAS680C3 (4) MS20426AD3(8) CSK N.S ON LDW280-55543-1	WAS	.190-.194 (4 HOLES) GB511J-3-3(4) AN960D3 (4) MS21042-3 (4) AN960D3 (4)

VIEW LKING DN: ADD NOTE ★ TO CALLOUT: ON-1
SHIM AS REQD (.250 MAX)
SEE NOTE 9 & ★.

NOTE ★ (USE NEXT AVAIL. NO.)
SHIM TO BE BONDED (USING EPON 919) & TACK RIVET TO LDW200-55543-1 USING MS20426AD3(2) CSK ON INTERFACE SIDE. MAINTAIN TWO DIAMETER EDGE DISTANCE ON FASTENERS. INSTALL RIVETS WET USING EPON 919 PER CSP14-14102.

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD 5456 FK 50

REASON FOR EO
TO REPLACE NUT WITH NUTPLATES & TACK RIVET SHIM, FOR EASE OF SCA INSTALLATION.

INF/D & B/M: AN960D10 DESCRIPTION OF EO WAS AN960D3. VIEW B-B AN960D10(4) NAS680C3(4) WAS AN960D3(4) MS21042-3(4). IN VIEW LKING DN ADDED CALLOUT NOTE ★ TO SEE NOTE 9 & ★. ADDED NOTE ★.

GAEC EO RELEASE: 9/15/70

MODEL	EFFECTIVITY EI		
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM567	LM8(38)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD "D"
DISPOSITION OF PARTS: REWORK ✓ | SCRAP
APPROVED BY / DATE: VDI | SUPPORT | RELIAB GROUP | GROUP LEADER 9/14/70 | STRESS GROUP 9/15/70 WB | LIAISON ENGRG | PROJ ENGRG 9/15/70 | CORP 9/15/70

PRIORITY: C
DRAWING TITLE: SUPT INSTL D/S-LR³ (REWK OF LDW280-54508)
DRAWING NO.: LDW200-55544
EO NO.: A4

CDR 09/15/70
ISSUED BY DON RAGAS X87222 SECTION VDI GROUP NO. 280 PL 25

01

NAS 9-1100

GRUMMAN AEROSPACE CORPORATION

CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO.	LDW200 -55544		EO NO. A5
CONTROL INFO NO.	LDW280 C 1048		

FOR-1
IN VIEW C-C REVISE CALLOUT *
(TYP 2PLACES)

* AN960 D10 (2)
NAS684 C3 (2)
MS20426 AD3 (2)
CSK W/S ON LDW280-55543-1

(WAS)

AN960 D3 (2)
MS21042-3 (2)

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓ LCD 5456 PK50

REASON FOR EO: NUT PLATES REQD FOR SLA INSTL

DESCRIPTION OF EO: FOR-1 IN F/D & B/M REVISED CALLOUT VIEW C-C AN960 D10 (8), NAS624 C3 (4) & MS20426 AD3 (8) WAS AN960 D3 (4) MS21042-3 (4)

GAEC EO RELEASE: (R) 11/6

MODEL	EFFECTIVITY: PRODUCING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 567	LM 8 (38)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO | DISPOSITION OF PARTS: REWORK ✓ | SCRAP

APPROVED BY							
DATE	11-5-70			11/5/70	11-5-70		11/5/70
	VD1	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG

NM 11-6-70

PRIORITY: C

DRAWING TITLE: SUPT INSTL D/S-LR3 (REWK OF LDW280-55508)

DRAWING NO.: LDW200-55544

EO NO. A5

11/6/70 ISSUED BY DON RAGAS X87222 SECTION VD1 GROUP NO. 0335 PL 025

01

NAS 9-1100

LDW200-55545

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

LFM567	LDW280-54508	LM8(39)	1 EA
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW200-55545-1,-11		GAEC SCH NO.	

WORK PACKAGE FUNCTION NO. 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	2.00	2.01	2.02					
REV									
SHEET	3.00	4.00							
REV									
SHEET									
REV									

LAST SECT LTR USED	U	GRUMMAN REC INFO
LAST DASH NO. USED	-69	PRIM NO. 207

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES
SEE NOTE #2
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE ✓
LCD 5456 PKG. 50

CONTRACT NO. NAS9-1100 | LINE ITEM | DOCUMENTATION TYPE II

DRAWN BY	DON RAGAS		
LAYOUT BY	DON RAGAS	THERMO	3/20/70
CHECKED BY	WB 3/20/70	THERMO	3/20/70
GP.LDR.	RC for RW		
VEH.DES.INT	3-20-70		
STRUCTURES		PROJ ENGR	3-20-70
STRUCTURES	WB 3/20/70	REL GROUP	

GRUMMAN AEROSPACE CORPORATION
BETHPAGE, L. I., NEW YORK

BLANKET INSTALLATION
DESCENT STAGE-LASER RANGING RETRO-REFLECTOR-(REWORK OF LDW280-54508 LFM567)

SIZE	CODE IDENT NO.	
B	26512	LDW200-55545

SCALE NONE | SHEET 1 OF 6

ENG 77.1 12-65

CDR-3-20-70

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW200-55545-69	E	SKIN					NONE	SEE NOTE 7	
		LDW200-55545-67	E	STRAP	ALALY SH	QQ-A-250/4	2024-T3	.030 x 11/16 x 75	NONE	88	
		-65			(REWORK OF	LDW280-55558-51)					
		-63			(REWORK OF	LDW280-55558-39)					
		-61		STRAP	(REWORK OF	LDW280-55558-53)					
		-59		HANDLE							
		-57		BLANKET	SEE NOTE 3						
		-55									
		-53									
		-51									
		-49									
		-47									
		-45									
		-43									
		-41									
		-39									
		-37		BLANKET	SEE NOTE 3						
AR		-35		MESH	SEE NOTES 1 & 6				NONE	NONE	
AR		-33		FOIL	SEE NOTES 1 & 5				NONE	NONE	
AR		-31		SKIN	SEE NOTES 1 & 4				NONE	NONE	
3		-15		FOIL ASSY	(SEE NOTES 1 & 2)						
1		-13		BLANKET ASSY (REWORK OF LDW280-58558)	(SEE NOTES 1 & 2				NONE	NONE	
		-11		STANDOFF INSTL							
1		-9		PLUME SHIELD ASSY	(SEE NOTES 1 & 2)						
1		-7		BLANKET ASSY (DOOR)	(SEE NOTES 1 & 2)						
1		-5		BLANKET ASSY (CAGE)	(SEE NOTES 1 & 2)						
1		-3		BLANKET ASSY (BEAM PANEL)	(SEE NOTES 1 & 2)						
		LDW200-55545-1	E	SHIELD INSTL					NONE	NONE	
-69 -15 -13 -11 -9 -7 -5 -3 -1											

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
88	ANODIZE	LSP-14-9030

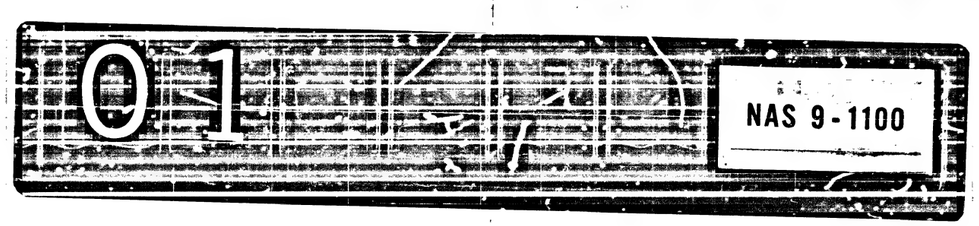
I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55545

SCALE NONE SHEET 2.00

ENG 77.2 7-6



QTY PER ASSEMBLY											CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								AR				MS20470A4	E	RIVET	GOVT STD						
										3		AN960D8		WASHER							
										1		MS21042-3		SCREW							
										3		MS21042-08		SCREW							
										1		NAS1131V3		SCREW							
								AR				MS20470A3		RIVET	GOVT STD						
												AN960D6L		WASHER	GOVT STD						
										1		GS11K-4-19		TAB STRIP	GRUMMAN STD						
										7		GS11K-4-5		TAB STRIP							
										2		GS11K-4-3		TAB STRIP							
									3			GS20D-06-16		SCREW							
										3		GB511J-08-2		SCREW							
										19		GS20D-06-8		SCREW							
										19		GN10R-06		WASHER							
									3			GW10M-1		WASHER							
								13	3			GS26E-1		STANDOFF							
								AR	AR	AR	AR	GT835P-8		TAPE							
							1					GS11P-1-314		STRIP							
						1						GS11P-1-231									
					1							GS11P-1-214									
									2			GS11N-1-021									
									4			GS11N-1-010		STRIP							
								AR				GS577A-4		STAPLE ASSY							
							AR			AR	AR	GW10H-3		WASHER							
							AR			AR	AR	GR11B-1		BUSHING							
								2				GF13B-11		WASHER							
								2				GF13B-1		STAPLE ASSY							
									3	6	13	GB10J-2		BUSHING							
									3	6	13	GW10H-1	E	WASHER	GRUMMAN STD						
-1	-65	-63	-61	-15	-13	-11	-9	-7	-5	-3	-1										

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : None

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55545

SCALE NONE SHEET 2,01.

ENG 77.2 7-61

01

NAS 9-1100

QTY PER ASSEMBLY -59	-57	-55	-53	-51	-49	-47	-45	-43	-41	-39	-37	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
A/R		A/R		A/R							A/R		LDW200-55545-29	E	INSULATION	SEE NOTE 3						
	A/R		A/R			A/R		A/R		A/R			-27									
		A/R					A/R		A/R				-25									
													-23									
				A/R		A/R							LDW200-55545-21	E	INSULATION	SEE NOTE 3						

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55545

SCALE NONE SHEET 2.02

ENG 77.2 7-64

01

NAS 9-1100

SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED CHECK USE BOTH SIDES IF NECESSARY.	✓
LENGTHS OF AN, MAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
INSTALL RIVETS IN ACCORDANCE WITH	

GS20D06-8(3)(REF) ON LDW280-58558-1 PICKUP EXISTING FASTENER LOCATION (REF) FOR GS11K-4-19 (SEE NOTE 2)

PREPARE HOLE PER GH11W-19 ON -7 ON -1 GS11K-4-19 (SEE DETAIL E)

SEE DETAIL E

TRACE OF +Z 27.00 (REF) & -Y81.00 (REF)

Z X175.025 (REF)

-7 (REF)

-5 (REF)

LDW280-58558-1 (REF)

-3 ASSY (REF)

LDW200-55544-1 (REF)

SLIT IN -5

SLIT IN-5

-9 (REF)

H

-69 (REF)

GS11N-1-021 (REF)

GT835P-8 (5 LAYERS)

WRAP GT835P-8 70-59 WITH GT835P-8 (TYP 8 PLCS)

-7 (REF)

G G

H

GS11N-1-010 (REF)

SECTION F-F (NO SCALE) (SH3 ZONE 2C)

GS11N-1-021 (2) MS20470A4 (4)

-7 (REF)

-59 (ON-7)

GS11N-1-010 (2) MS20470A6 (2) (2 PLACES)

VIEW H-H

LDW200-55545-29 (ON-59)

GT835P-8 (A/R) (SEE NOTE 11)

SECTION G-G (SCALE: NONE)

-5 (REF)

PREPARE HOLE PER GH11W-5 ON -7 ON -1 GS11K-4-5 (SEE DETAIL E) (TYP 7 PLACES)

SECTION D-D (SH3 ZONE 3C)

Z131.140 (REF)

-3 ASSY (REF)

-7 ASSY (REF)

PREPARE HOLE PER GH11W-3 ON -7 ON -1 GS11K-4-3 (SEE DETAIL E) (TYP 2 PLACES)

+Z 27.00 (REF)

LDW200-55544-1 (REF)

S (SH4 ZONE 14B)

S

X136.340 (REF)

-51 ON-5

-45 (ON-5)

-49 (ON-5)

LDW200-55545-45

-47 (ON-5)

GS11K-4-* (REF)

GT835P-8 5 LAYERS (REF) (OVER LAP OPTIONAL)

GT835P-8 5 LAYERS (REF) TYP BETWEEN EACH TAB (OVER LAP OPTIONAL)

DETAIL E

LDW280-58558-1 (REF)

GT835

GS11K-4 (

X171.750 (REF)

-5 (REF)

X136.340 (REF)

.38 DIA HOLE (3) THRU -7 GS11N-1-2 (3) ON -7 GW10H-1 (3) ON -7 GS26E-1 (3) 3/16 DIA HOLE THRU LDW200-55545-9 GW10M-1 (3) GS20D-06-16 (3) (3 HOLES)

-5 (REF)

LDW280-58558-1 (REF)

GT835P-8 (REF)

-7 ASSY (REF)

SECTION C-C (SH3 ZONE 2C)

01402 NAS 9-1100

CODE IDENT NO	DWG NO	REV	SHEET
26512	LDW200-55545		3

FRAME FRAME 2

+Z 27.00(REF)

LDW200-55544-1 (REF)

.38 DIA HOLE(6)THRU-5
GB10J-2 (6) ON-5
GW10H-1 (6) ON-5
GS20D-06-8 (6) ON-1
GW10R-06 (6) ON-1

S (SH 4 ZONE 14B)

S

-51 ON-5

-45 (ON-5)

-49 (ON-5)

LDW200-55545-45

-47 (ON-5)

X 136.340 (REF)

X 171.730 (REF)

VIEW B-B
(SH 3 ZONE 3C)

LDW280-5B658-1 (REF)

GT835P-8 (REF)

GS11K-4 (REF)

GT835P-8
5 LAYERS (REF)
(OVER LAP OPTIONAL)

X 171.750 (REF)

-5 (REF)

835P-8
AYERS (REF)
F BETWEEN EACH TAB
VER LAP OPTIONAL)

-9 ASSY (REF)

.38 DIA HOLE (3)
THRU-7
GB10J-2-(3) ON-7
GW10H-1 (3) ON-7
GS26E-1 (3)
9/16 DIA HOLE THRU LDW200-55545-9 (3 HOLES)
GW10M-1 (3)
GS20D-06-16 (3)

-7 ASSY (REF)

SECTION C-C
(SH 3 ZONE 2C)

+Z 27.00(REF)

-Y 51.50(REF)

-Y 58.371(REF)

-Y 69.188(REF)

-Y 81.00(REF)

LDW200-55543 (REF)

-3 ASSY (REF)

N (SH 4 ZONE 16A)

A (SH 3 ZONE 2A)

A

B

GR11B1 (REF)
GW10H2 (REF)

GS20D-06-16 (REF)
GW10M-1 (REF)

C

LDW200-55544-1 (REF)

-69 (ON-9)

T (SH 4 ZONE 14A) T

-53 (ON-7)

-55 (ON-7)

-57 (ON-7)

-59 (REF)

F (SH 3 ZONE 8B)

R (SH 4 ZONE 14D)

R

-7 ASSY

-9 ASSY

C (SH 3 ZONE 5A)

-Y

LDW200-55545-1 (REF)

+Z

VIEW LOOKING DOWN
(FOR ENGR REF ONLY)

B (SH 3 ZONE 4C)

-5 ASSY

GS20D-06-16 (REF)
GW10M-1 (REF)

N

D (SH 3 ZONE 7A)

-3 ASSY

-37 ON-3

-39 (ON-3)

-41 (ON-3)

-43 (ON-3)

LDW200-55545-39

P (SH 4 ZONE 13C)

P

X 169.860 (REF)

X 166.620 (REF)

(SH 4 ZONE 12A)

J

.38

.40

.30

.30

.60

X 159.90 (REF)

2.5

ON-11
GS26E-1 (13)
MS20470AS (26)

-Y 75.375
(REF)

SEE DETAIL U
SH 4 ZONE 13A

1.5

.35

.38

X 141.930(REF)

J

.38 DIA HOLE (13)(THRU-3)
GB10J-2 (13)(ON-3)
GW10M-1 (13)(ON-3)
GS20D-06-8 (13) ON-1
GW10R-06 (13) ON-1

LDW200-55542 (REF)

-Y 59.371 (REF)

-Y 51.50 (REF)

-Y 69.188(REF)

SECTION A-A

LDW 200-55545 -1 INSTL
LDW 200-55545 -3 ASSY
LDW 200-55545 -5 ASSY
LDW 200-55545 -7 ASSY
LDW 200-55545 -9 ASSY
LDW 200-55545 -11 INSTL

NOTES:

1. APPLICABLE PROCEDURES:
   LPC 280-1 FABRICATION
   -2 VENTING (CONFIGURATION I)
   -3 SEAMS
   -6 CUTTING & PATCHING
   -7 PROTRUSION
   -8 REPAIR
   LPC 280-25 PLUME SHIELD INSTL
2. FINAL SIZE (WITH FOLD, SEAM, VENT & FASTENER LOCATIONS) OF BLANKET ASSY; (WITH CUTOUTS & HOLES OF PLUME SHIELD ASSY) SHALL BE DETERMINED FROM ENGR. APPROVED MASTER TEMPLATE AND/OR FULL SIZE MOCKUP.
3. -21 ALUMINIZED MYLAR (.00015) PER LSM 14-5302
   -23 ALUMINIZED POLYMIDE (.0005) PER LSM 14-5301 TYPE IA CL1
   -25 ALUMINIZED POLYMIDE (.00025) PER LSM 14-5302 TYPE IA CL1
   -27 ALUMINIZED POLYMIDE (.002) PER LSM 14-5304 TYPE IVA CL2
   -29 ALUMINIZED POLYMIDE (.005) PER LSM 14-5304 TYPE IVA CL2
4. -31 TO BE MADE FROM (1) LAYER OF .0012 5 INCONEL 600 FOIL PER AMS 5540E.
5. -33 TO BE MADE FROM (1) LAYER OF .0005 NICKEL FOIL COMMERCIALLY PURE INCO 200 OR EQUIVALENT.
6. -35 TO BE INCONEL KNIT WIRE CLOTH (MESH) MADE OF KNIT PATTERN SQUARE TYPE WIRE CLOTH SLEEVING 5 TO 7 SQUARES PER LINEAR INCH WIRE INCONEL 600 (.0035 -.0045 DIA FOUND) MAY BE PURCHASED FROM: MONTGOMERY METAL FABRIC CO. 5 CANAL ST. WINDSOR LOCKS, CONN. (CODE IDENT NO 94725)
7. PAINT EXTERIOR SIDE WITH H.E. BLACK PYROMARK AS PER LSM 14-4505.
8. NO TOOLING HOLES PERMITTED IN PARTS.
9. INSTALL GS11K STRIPS PER LPC 280-25.
10. DIRECTION OF LAP JOINT OPTIONAL PER LPC 280-19.
11. TAPE USING 4 TO 6 IN PITCH WITH GT835 P-8 TAPE.
12. WRAP ALL STRAPS AND STANDOFFS WITH GT835 M TAPE
13. DO NOT REMOVE LDW280-17966-13 UNTIL -67 IS INSTALLED -67 MAY BE TRIMMED TO INSURE PROPER FIT.
14. ON-1 INSTL (-3, -5, -7 & -9 ASSY'S) MAY BE TRIMMED TO INSURE PROPER FIT, UNDER DIRECTION OF AN COG. ENGR.
15. REMOVE GT835 P-8 TAPE ON -9 ASSY (IF ANY), PRIOR TO INSTALLATION.

REVISIONS

ZONE	LTR	DESCRIPTION	EFF CODE	MODEL	DATE	APPROVED

02/02

NAS 9-1100

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES		
LINEAR TOL	XX	± .03
	XXX	± .010
ANGULAR TOL		± 0°30'
TOL ON LOFTED DELINEATIONS IS		

CONTRACT NO.

GRUMMAN AIRCRAFT ENGINEERING CORPORATION
BETHPAGE, NEW YORK 11714

DRAWN BY
LAYOUT BY
CHECKED BY
DR LEADER
REL GROUP
PROJ ENGR
GOVT APPD

SIZE J | CODE IDENT NO. 26512 | LDW200-55545

SCALE NONE | SHEET 3 OF 3

LDW200-55545 | REV | SHEET 3

FRAME | FRAME 2

DESIR LIST =

FR 2

LDW200-55545 B

LDW200-55545 A

PRINTING INFO ONLY
DWG SIZE D = 36 IN
FULL SIZE SHEET AREA ON D SIZE = 24.5 SQ FT
½ SIZE SHEET AREA ON ½ OF FULL = 6.5 SQ FT

Z 196.00 (REF)

LDW280-17966-13 (REF)

NAS1131 V1 (REF)
AN960 D6 L (REF)
PICK UP EXISTING FASTENER

-9 (REF.

-29 (ON-53)

LDW200-55545-23
(1 LAYER ON-55)

LDW280-58558-49

-27 (ON-

-23
(1 LAYER ON-45)

-65 (ON-1)

ON-65
GS11P-1-314
(GS11P-1-314 IS MADE BY TRIMMING GS11P-1-316)
(LDW280-55558-51 REF)

ON-1
REMOVE LDW280-58558-37

GS11P-1-540 (REF)

ON-67
GS11P-1-214
(GS11P-1-214 IS MADE BY TRIMMING GS11P-1-540)
(LDW280-55556-53 (REF)

-61 (ON-1)

-33 (ON-15)

SE
(S

01 / 02 NAS 9-1100

.165-.171 DIA HOLE (3)
GB5111J-08-2 (3)
AN960 D8 (3)
MS21042-08 (3)

GS11P-1-582 (REF)

ON-13
TRIM LDW280-58558-1
SEE NOTE 1 & 2

ON-63
GS11P1-231
(GS11P-1-231 IS MADE BY TRIMMING GS11P-1-582)
LDW280-55558-39 (REF)

-63 (ON-1)

-67 SEE NOTE 13
(.030 x 11/16 x 75)

4.03

2.9 MIN (TYP)

SEE NOTE 13
ON-1 REMOVE LDW280-17966-13

.29 MIN

SEE NOTE 13
.139-.145 DIA HOLE
NAS1131 V3 AN960D6L
MS21042-3

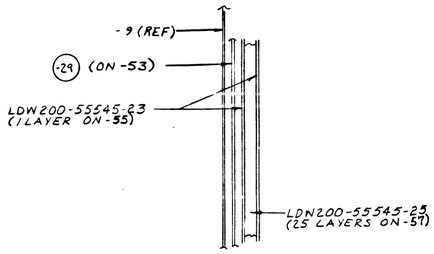
VIEW N-N
(SH 3 ZONE 2D)

X 131.14 (REF)

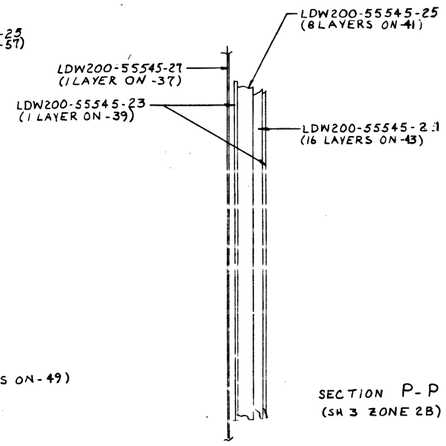
CODE IDENT NO	DWG NO	REV	SHEET
26512	LDW200-55545		4

FRAME 1 FRAME 2

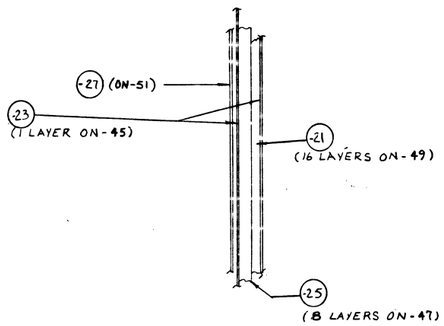
REVISIONS						
ZONE	LTR	DESCRIPTION	ECP CODE	MODEL	DATE	APPROVED



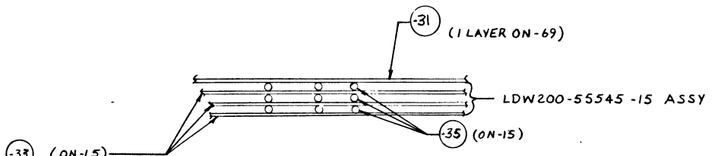
SECTION R-R
(SH 3 ZONE 2B)



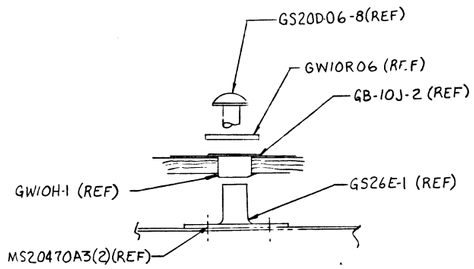
SECTION P-P
(SH 3 ZONE 2B)



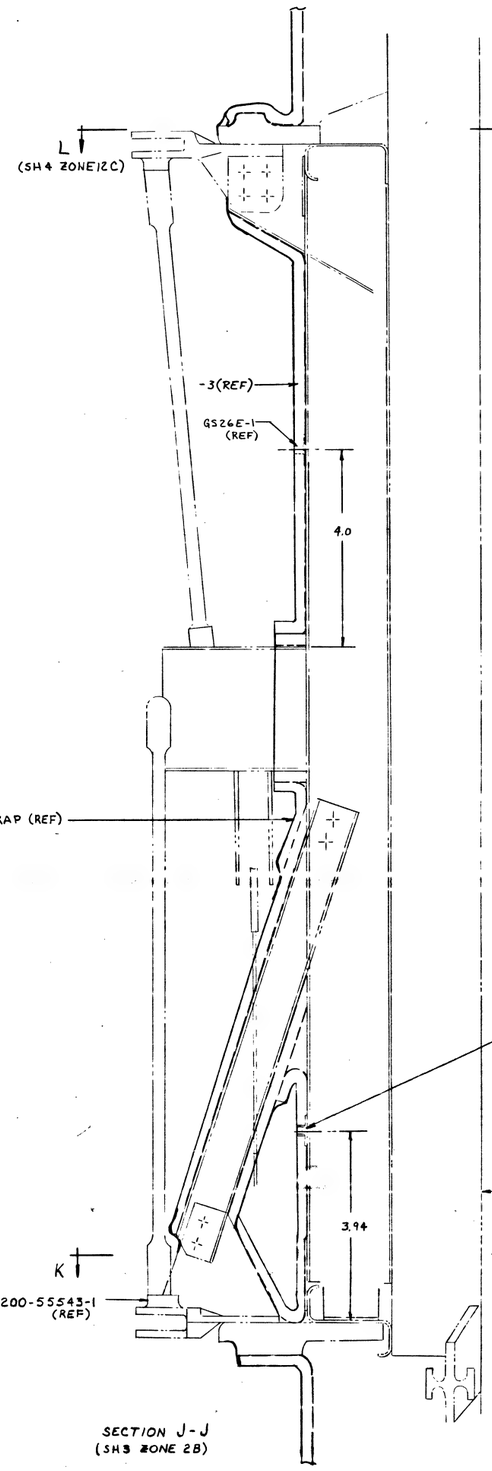
SECTION S-S
(SH 3 ZONE 2B)



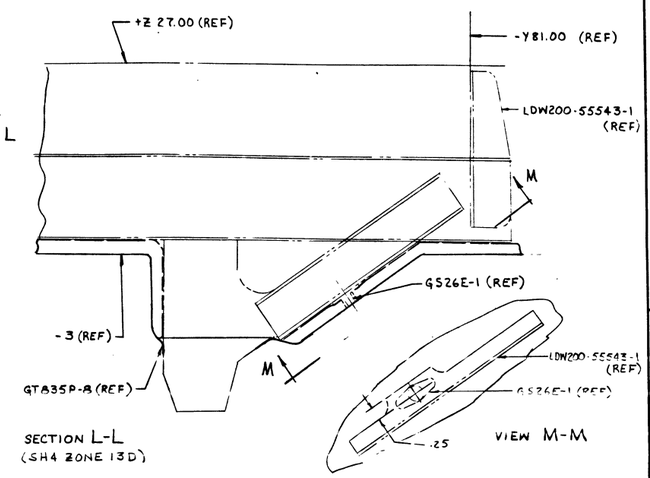
SECTION T-T
(SH 3 ZONE 2C)



DETAIL U (ZONE 3A)
(TYP 16 PLACES)

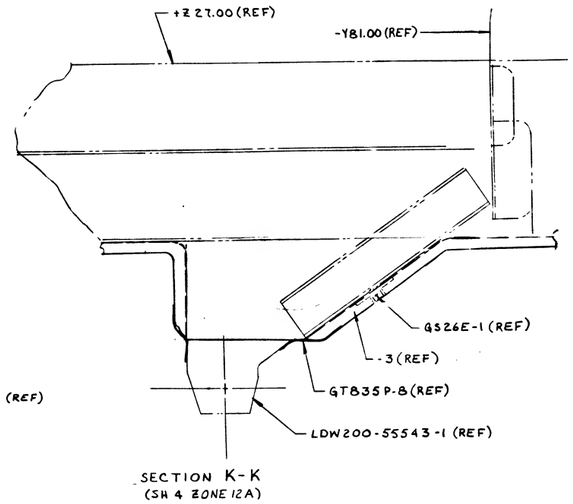


SECTION J-J
(SH 3 ZONE 2B)



SECTION L-L
(SH 4 ZONE 13D)

VIEW M-M



SECTION K-K
(SH 4 ZONE 12A)

02/02 NAS 9-1100

FOR PARTS LIST, USAGE DATA, AND SYS SW STATUS, SEE DOCUMENT LAM MANAGER PRIVILEGE PL

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES			CONTRACT NO.	GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714
LINEAR TOL	XX ± .03		DRAWN BY	
	XXX ± .010		LAYOUT BY	
ANGULAR TOL	± 0°30'		CHECKED BY	
TOL ON LOFTED DELINEATIONS IS			DES. LEADER	
			REL GROUP	
			PROJ ENGR	
			GOVT APPD	

SIZE	CODE IDENT NO.	
J	26512	LDW200-55545

SCALE NONE SHEET 4 OF

LDW200-55545 REV SHEET 4

FRAME 1 FRAME 2

DISTR. LIST =

LDW200-55545 A B C D

PRINTING INFO ONLY
DWG SIZE 24 X 36
FULL SIZE SHEET AREA ON 1 MIL = 24.0 SQ FT
½ SIZE SHEET AREA ON 1 MIL = 6.0 SQ FT

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW200 -55545		EO NO. A1
CONTROL INFO NO. LDW280C0269		

IN B/M FOR THE FOLLOWING DASH NO'S REVISE QTY:

-39	2 REQD	WAS	1 REQD
-41	1 REQD	WAS	2 REQD
-45	2 REQD	WAS	1 REQD
-49	1 REQD	WAS	2 REQD
-55	2 REQD	WAS	1 REQD

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG ✓ LCD 5456 PK50

REASON FOR EO: TO CORRECT QTY TO AGREE WITH F/D.

DESCRIPTION OF EO: IN B/M REVISED QTY:
-39 -45 & -55 (2) EA WAS (1) EA REQD
-41 & -49 (1) EA WAS (2) EA REQD.

GAEC EO RELEASE

MODEL	EFFECTIVITY: PROVISIONING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM567	LM8(38)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO | DISPOSITION OF PARTS: REWORK | SCRAP ✓

PRIORITY: C

DRAWING TITLE: BLANKET INSTL D/S-LR3 -(REWORK OF LDW280-54508)

DRAWING NO.: LDW200-55545 EO NO.: A1

APPROVED BY	DATE	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
PBF	4-2-70	4/2/70	NM 4/2/70	4/2/70	4/3/70
MIR	4-2-70				
VDI		SUPPORT THERMO	RELIAB GROUP		

40370
ISSUED BY DON RAGAS 287222 SECTION VDI GROUP NO. 280 PL 25

01

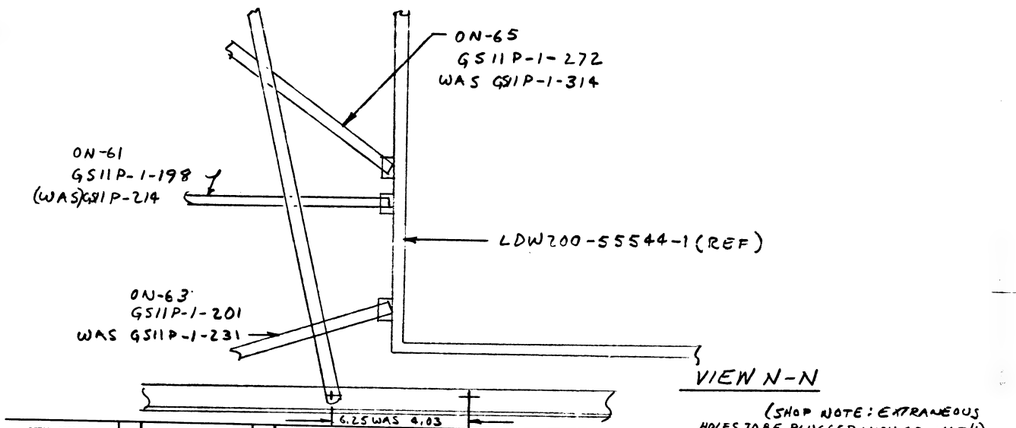
NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200 -55545		EO NO. A2
CONTROL INFO NO. LDW280C0310		



(SHOP NOTE: EXTRANEOUS HOLES TO BE PLUGGED WITH AD MAT'L)

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCD5456 PK50

REASON FOR EO: HAND RAIL OF PALLET REDESIGN

INFO & B/M.

DESCRIPTION OF EO: ON-61 GS11P-1-198 WAS GS11P-1-214, ON-63 GS11P-1-201 WAS GS11P-1-231, ON-65 GS11P-1-272 WAS GS1P-1-314; VIEW N-N: REVISED DIM 6.25 WAS 4.03

GAEC ENG RELEASE

MODEL	EFFECTIVITY: PROD. MKNG ASSEMBLY NOS.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LPM567	LII-B(3B)	

DRAWING CHANGE REQD: ✓ REVISE DWG; RECORD EO

DISPOSITION OF PARTS: ✓ REWORK; SCRAP

PRIORITY: C

DRAWING TITLE: SHIELD INSTL D/S-LR3 (REWORK OF LDW280-54508)

DRAWING NO.: LDW200-55545

EO NO.: A2

APPROVED BY								
DATE	9/6/70			9/7/70	WB 9/10		9/8/70	9/9/70
	VDI	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

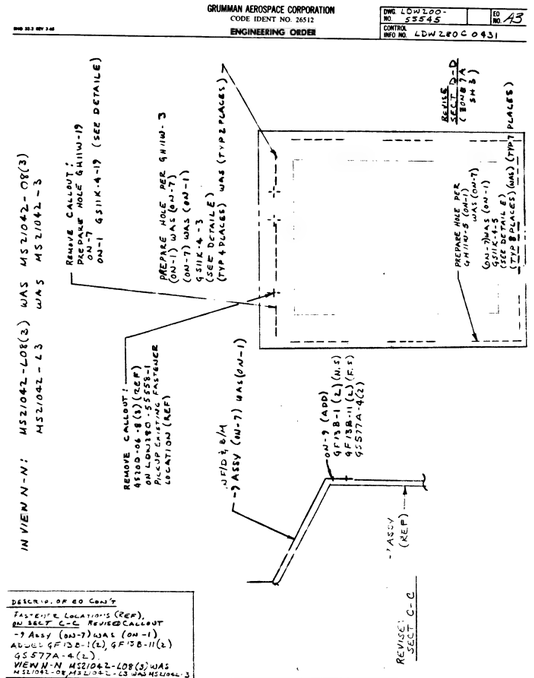
CDR 0909-70
ISSUED BY DON RAGAS 87222 SECTION VDI GROUP NO. 335 PL 21

01

NAS 9-1100

GRUMMAN AEROSPACE CORPORATION
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LDW1200-55545 | ED NO. A3
CONTROL INFO NO. LDW2E0C 0431



DESCRIP. OF ED CONT
FASTENER LOCATION'S (REF), ON SECT C-C REVISE CALLOUT ~7 ASSY (NU-7) WAS (ON-1) ADDED 9F138-1(L), 9F138-11(L) 9537A-4(L) WHEN N-N MS21042-L08(2) WAS MS21042-08 MS21042-L3 WAS MS21042-3

LCD 5456 PCR0

TO FACILITATE INSTL OF DETAIL PARTS (H.W.C.)

IN SECT D-D PREPARE HOLE PER 9311D-3 (8 PLACES) & C (NU-2 (4 PLACES) (ON-1) WAS (NU-7) 9311K-3-2 (4 PLACES) & 9311K-4-5 (8 PLACES) (TYP 7) WAS (TYP 6) REMOVE CALLOUT: 4 HOLES (2 EA SIDE) (SEE DETAIL) 9537A-4(L) SHT 3

| MODEL | EFFECTIVITY | | |

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

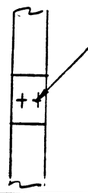
DWG. NO LDW200-55545 | EO NO. A4

CONTROL INFO NO. LDW280C 0480

IN SECT A-A

REVISE CALLOUT: .38 DIA HOLE (13) (ON-1) WAS (ON-3)
GB10J-2 (13) (ON-1) WAS (ON-3)
GW10H-1 (13) (ON-1) WAS (ON-3)

VIEW H-H



REVISE CALLOUT
GS11N-1-010 (2)
MS20470A4 (2)
WAS
GS11N-1-021 (2)
MS20470A4 (4)

SHOP NOTE
EXTRANEOUS HOLES TO BE LEFT OPEN

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	LCD 5456 PK50

REASON FOR EO: TO AGREE WITH MASTER TEMPLATE & FACILITATE INSTL OF DETAIL PARTS

DESCRIPTION OF EO: IN SECT A-A: (.38 DIA HOLE(13), GB10J-2 (13), GW10H-1) ON-1 WAS ON-3
VIEW H-H
GS11N-1-010(2) MS20470A4(2) WAS GS11N-1-021(2)
MS20470A4(4)

GAEC EO RELEASE

MODEL	EFFECTIVITY: ET (PROCURING ACTIVITY NO.)	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM567	LM8(38)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: REWORK ✓ | SCRAP

APPROVED BY							
DATE	5-19-70						
	VD1	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
				5/19/70	5/19/70		5/19/70

PRIORITY: C

DRAWING TITLE: BLANKET INSTL D/S-LR3 (REMARK OF LDW280-59508)

DRAWING NO.: LDW200-55545

EO NO. A4

CDR 5/1970

ISSUED BY DON RAGAS x86048 SECTION VD1 GROUP NO. 335 PL 25

021

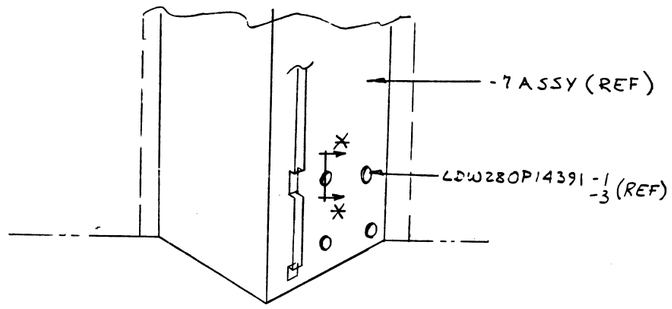
NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

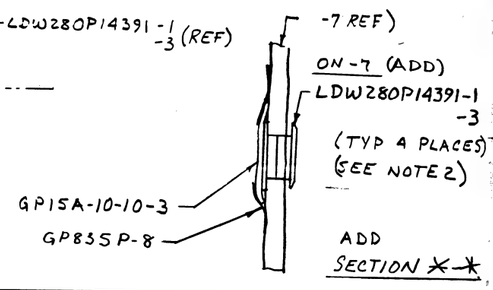
ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200 - 55545		EO NO. A5
CONTROL INFO NO. LDW280C0648		



VIEW LOOKING INBD



ADD
SECTION *-*

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓ LCD 5456 PK50

REASON FOR EO: ADDITIONAL VENTING REQ'D (MWC.)

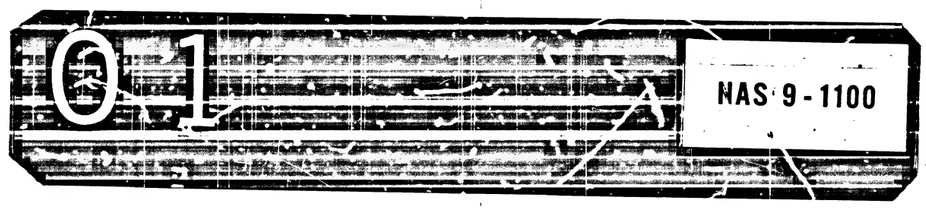
DESCRIPTION OF EO: ON-7 ADDED LDW280P14391-1, -3 & GP15A-10-10-3 (4 PLACES) ADDED SECT *-*.

MODEL	EI PROCURING ACTIVITY NO.	EFFECTIVITY GAEC UNIT NO.	EFFECTIVITY SUB CONTR UNIT NO.
LM	LFM567	LM8(38)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	DATE	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GAEC EO RELEASE
✓		✓		RAT MiR	6-12-70 6/12/70	VD1 THERMO	6/11/70	6/14/70 NM		6-12-70	6/12/70

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	BLANKET INST'L D/S-LR3 (REWORK OF LDW280-54508)	LDW200-55545	A5

CDR -6-12-70
ISSUED BY Don Ragas X87222 SECTION VD1 GROUP NO. 335 PL 25



GRUMMAN AEROSPACE CORPORATION
CODE IDENT NO. 26512
ENGINEERING ORDER

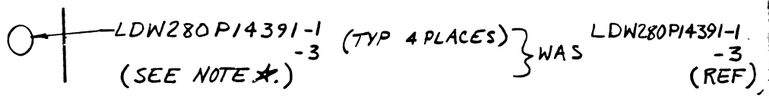
DWG. NO. LDW200-55545 | EO NO. A6
CONTROL INFO NO. LDW280C0948

DMG 32.1 REV 3-68

THIS IS A REV. OF EO "A5".

DELETE 'SECT *-*.

REVISE CALLOUT:



ADD NOTE *. (USE NEXT AVAILIBLE NO.)

INSTALL VENTS PER LPC 280-9 LESS THE BLANKET PATCH ON THE OUTBOARD SIDE.

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD 5456 PK58

REASON FOR EO: TO AGREE WITH INSTL

DESCRIPTION OF EO: REF EO A5: ON-1 INF/D$ NOTES ADDED NOTE * REMOVED SECT * *

GAEC EO RELEASE: LA/RIA 9/15-70

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM567	LM8(38)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: REWORK ✓ | SCRAP

APPROVED BY								
DATE		VDI	SUPPORT	RELIAB GROUP	GROUP LEADER 9/14/70	STRESS GROUP 9/15/70	LIAISON ENGRG WB	PROJ ENGRG 9/15/70

PRIORITY: C
DRAWING TITLE: BLANKET INSTL D/S-LR3 (RENR. OF LDW280-54508)
DRAWING NO.: LDW200-55545
EO NO.: A6

CDR 09-15-70
ISSUED BY DON RAGAS R7222 SECTION VDI GROUP NO. 280 PL. 25

01

NAS 9-1100

LDW200-55546 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	LFM 558 / LDW280-54508 / LM 8(58) / 1			
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								PART NO. LDW200-55546-1		GAEC SCH NO.	

WORK PACKAGE FUNCTION #110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00		2.00	2.01	3.00					
REV	A		A	A	A					
SHEET	1.10									
REV	A									
SHEET										
REV										

LAST SECT LTR USED	K	GRUMMAN REL INFO	A
LAST DWG NO. USED	-33	PRIM NO.	207

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES
SEE NOTE 2

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 5410 PKG 51	

CONTRACT NO. NAS9-1100 LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	GEORGE BARNES 4-20-70	THERMO	
LAYOUT BY	GEORGE BARNES 4-20-70		
CHECKED BY	4-20-70		
GRP LDR	4/20/70		
VDI	4-20-70		
STRUCTURES		PROJ ENGR	
STRUCTURES	4/20/70	REL GROUP	4/22/70
THERMO			

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SHIELD INSTL ~ DESCENT STAGE
MAGNETOMETER STOWAGE-QUAD II
(REWORK OF LDW280-54508 LFM558)

SIZE	CODE IDENT NO.		
B	26512	LDW200-55546	A

SCALE NONE SHEET 1.00 OF 5

ENG 77.1 12-65

CDR 5-1-70 CDR 4/20/70

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	APPD
A	1	2.01 3.00	7A	LFM 558		✓		LCD 5410 PKG 51	REVISED PICTURE TO AGREE WITH SHOP-DEVELOPED MASTER TEMPLATE. REMOVED 3/8 DIA HOLE ON -3, REMOVED QTY(1) OF GS26F-1-1 ON-1, MS20470A3(2) ON-1, GB10J2 ON-3, GW10H1 ON -3, GW10P1 ON-1, GS20D06-8 ON-1, GW10R06 ON-1	LM-8(38) LFM 558	✓		GWB 5-26-70		
	2	2.00 2.01 3.00	6D	LFM 558					ADDED -33 TO -9 ASSY & MS20470A3(4) REMOVED GT535G-LDS-0020 FROM -3, GT535G-HDS-0020 FROM -9; REMOVED GB511J-06-1(1) AN960C6L(2), MS21043-06(1) FROM -9; ADDED GS11N-1-010(4) ON -9		✓				
	3	2.00 2.01 3.00	5C 5D	LFM 558					ON -1 GS11K-4-2 (14) WAS GS11K-4-1(11) ADDED: NOTES 11 & 12, ¼ DIA. HOLE(3) ON-3, GS16F-1(3) ON-3 GR11E-2(6) ON-3 GT835AMI A/R ON-3. REVISED -31(1) ON-3 WAS ON-1		✓				
	4	2.00 3.00	2B	LFM 558				(A)	ADDED NOTE 13; FOR -21 (SH 2.00) FINISH NO: "SEE NOTE 13" WAS "NONE" 5-28-70		✓				

CHG APPROVED	LTR	GROUP LDR	VDI	THERMO	STRUCT	PROJ.
	A	[illegible] 5/26/70	[illegible] 5-28-70	[illegible] 5-27-70	[illegible] 5/28/70	

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW200-55546	A

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01

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		1						LDW200-5554633	E	HANDLE	SEE NOTE 8					NONE	NONE	D6
	1					1		GT535GHCS-0020		TAPE, HOOK	GRUMMAN STD							
						A/R	A/R	GW10H-3		WASHER	GRUMMAN STD							
						A/R	A/R	GR11B-1		RETAINER	GRUMMAN STD							
							14	GS11K-4-2		STRIP	GRUMMAN STD							
						1		LDW200-5554631		LANYARD ASSY	SEE NOTES 1 & 2							A7
						1		GT535G-HDS-0120		TAPE, HOOK	GRUMMAN STD							
						1		GT535G-HDS-0360		TAPE, HOOK								
						1		GT535G-LDS0120		TAPE, LOOP								
						1		GT535G-LDS-0360		TAPE, LOOP								
	ALT				ALT			GT534D-1		THREAD		(SEE NOTE 5)						
	NR.				A/R			GT534G-1		THREAD		(SEE NOTE 5)						
			A/R				A/R	GS577A-4		STAPLE								
		A/R			A/R			GS577A-1		STAPLE								
		A/R			A/R	A/R		GT835P-8		TAPE	GRUMMAN STD							
		A/R						LDW200-55596-29		INSULATION	SEE NOTE 8							
		A/R						LDW200-5554627		INSULATION	SEE NOTE 8							
							2	LDW200-5554625		PLUG	AL ALLOY ROD	QQ-A-225/4	2014-T6	.375 DIA × 1.25	NONE	76	C8	
							2	-23		STRIP	AL ALLOY SH	QQ-A-250/4	2024-T3	.032 × 1.00 × 37.00	NONE	76	D8	
			1					-21		SKIN	SEE NOTE 8					SEE NOTE 13	D4	
				A/R				-19		FOIL						NONE	D4	
				A/R				-17		MESH							D4	
					A/R			-15		INSULATION							A3	
					A/R			-13		INSULATION							A3	
					A/R			-11		INSULATION	SEE NOTE 8						A3	
							1	-9		BLANKET ASSY	SEE NOTES 1 & 2						D6	
							1	-7		SHIELD ASSY	SEE NOTES 1 & 2						A6	
			3					-5		FOIL ASSY (WELDED)							A6	
							1	-3		BLANKET ASSY							A6	
								LDW200-55546-1	E	SHIELD INSTL	SEE NOTES 1 & 2				NONE	NONE	A6	
	-31	-9	-7	-5	-3	-1		QTY PER ASSEMBLY		CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
76	ALODINE	LSP14-9010

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW200-55546	A

SCALE NONE SHEET 2.00

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01 NAS 9-1100

-31	-9	-7	-5	-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
QTY PER ASSEMBLY																
	4						GS11N-1-010	E	STRIP	GRUMMAN STD						
				A/R			GT835AM1		THREAD	GRUMMAN STD						
				6			GR11E-2		RETAINER	GRUMMAN STD						
				3			GS16F-1		SPACER	GRUMMAN STD						
					A/R		MS20470AD4		RIVET	GOVT STD						
		A/R			A/R	A/R	MS20470A3		RIVET	GOVT STD						
	1						GW13A-08-0120		WEBBING	GRUMMAN STD						
						A/R	GT15C-2		TAPE	GRUMMAN STD						
						1	GS26F2-1		STANDOFF	GRUMMAN STD						
						3	GW10R-06		WASHER	GRUMMAN STD						
						3	GW10P1		WASHER							
					3		GW10H-1		WASHER							
					3		GB10J2		BUSHING							
						3	GS20D06-8		SCREW							
						2	GS26E1	E	STANDOFF	GRUMMAN STD						

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

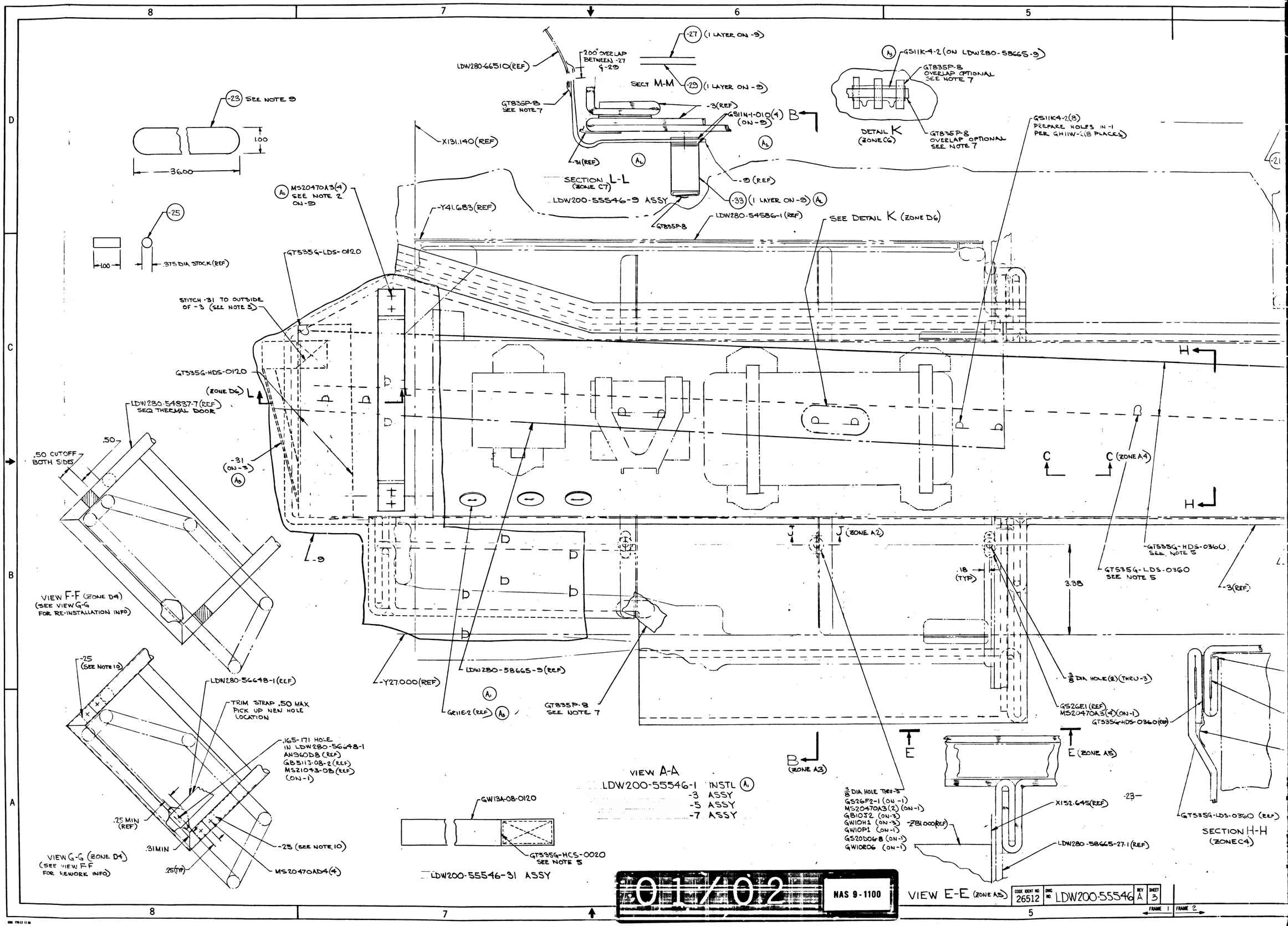
SIZE	CODE IDENT NO.		
B	26512	LDW200-55546	A

SCALE NONE SHEET 2.01

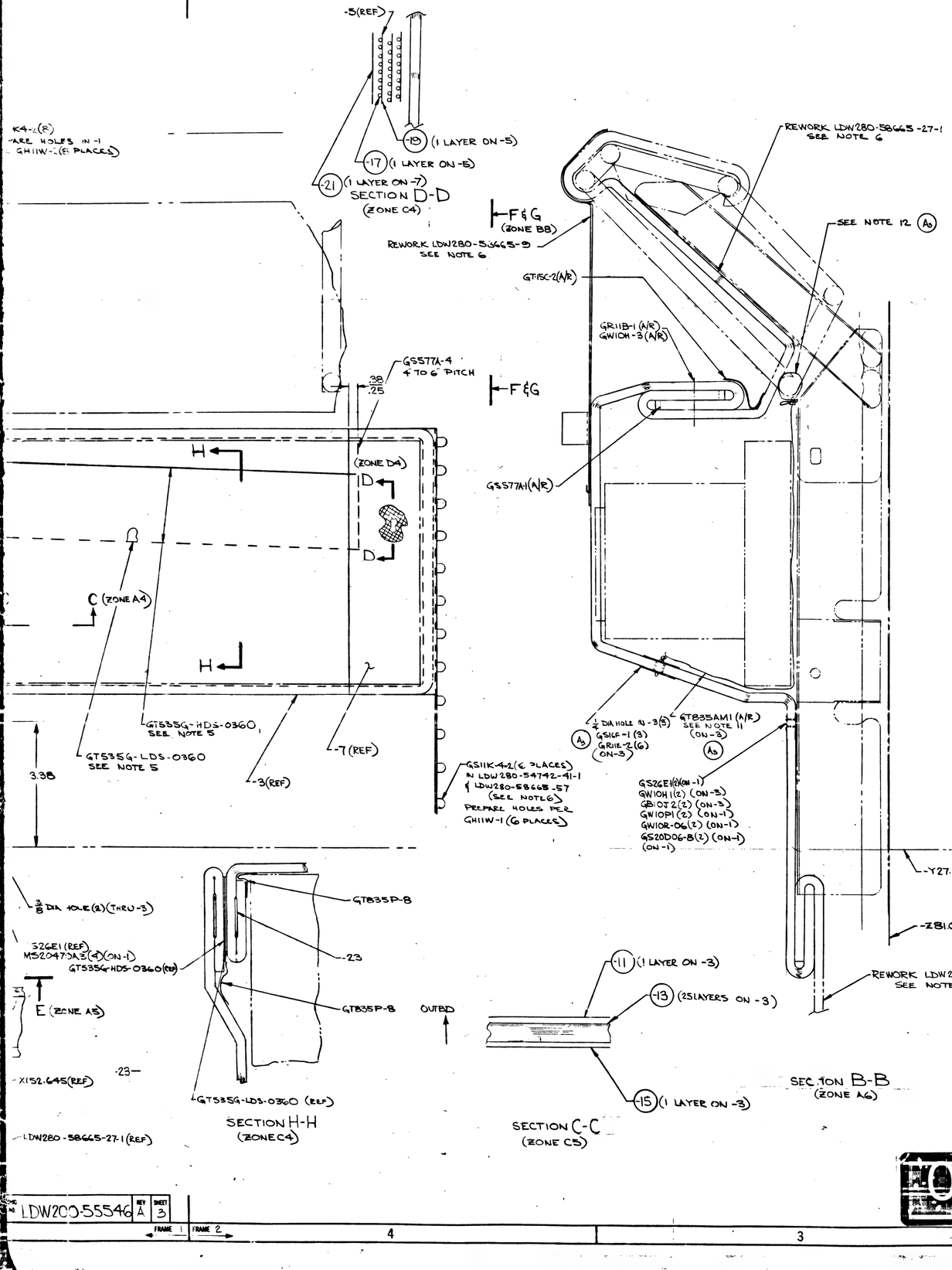
ENG 77.2 7-64

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NAS 9-1100


-27 (1 LAYER ON -9)
200" OVERLAP BETWEEN -27 & -29
LDW280-66510 (REF)
SECT M-M
-29 (1 LAYER ON -9)
GT835P-8 SEE NOTE 7
-3 (REF)
GS11N-1-010 (4) (ON -9)
B
X131.140 (REF)
-31 (REF)
A1
SECTION L-L (ZONE C7)
LDW200-55546-9 ASSY
-9 (REF)
-33 (1 LAYER ON -9) A1
GT835P-8
LDW280-54586-1 (REF)
A3 GS11K4-2 (ON LDW280-58665-9)
GT835P-8 OVERLAP OPTIONAL SEE NOTE 7
DETAIL K (ZONE C6)
GT835P-8 OVERLAP OPTIONAL SEE NOTE 7
GS11K4-2 (8) PREPARE HOLES IN -1 PER GH11W-2 (8 PLACES)
-23 SEE NOTE 9
1.00
36.00
-25
.100
.375 DIA STOCK (REF)
A1 MS20470A3 (4) SEE NOTE 2 ON -9
-Y41.683 (REF)
SEE DETAIL K (ZONE D6)
GT535G-LDS-0120
STITCH -31 TO OUTSIDE OF -3 (SEE NOTE 5)
GT535G-HDS-0120
(ZONE D6) L
LDW280-54837-7 (REF) SEQ THERMAL DOOR
.50
.50 CUTOFF BOTH SIDES
-31 (ON -3) A3
-9
VIEW F-F (ZONE D4) (SEE VIEW G-G FOR RE-INSTALLATION INFO)
H
J
J (ZONE A2)
.18 (TYP)
3.38
GT535G-HDS-0360 SEE NOTE 5
GT535G-LDS-0360 SEE NOTE 5
-3 (REF)
C
C (ZONE A4)
-25 (SEE NOTE 10)
LDW280-56648-1 (REF)
TRIM STRAP .50 MAX PICK UP NEW HOLE LOCATION
.165-.171 HOLE IN LDW280-56648-1
AN960D8 (REF)
GBS113-08-2 (REF)
MS21043-08 (REF) (ON -1)
.25 MIN (REF)
.31 MIN
.25 (TYP)
-25 (SEE NOTE 10)
MS20470AD4 (4)
VIEW G-G (ZONE D4) (SEE VIEW F-F FOR REWORK INFO)
-Y27.000 (REF)
LDW280-58665-9 (REF)
A1
GE116-2 (REF) A3
GT835P-8 SEE NOTE 7
3/8 DIA HOLE (2) (THRU -3)
GS26E1 (REF)
MS20470A3 (4) (ON -1)
GT535G-HDS-0360 (REF)
B (ZONE A3)
VIEW A-A
LDW200-55546-1 INSTL A1
-3 ASSY
-5 ASSY
-7 ASSY
E
E (ZONE A5)
3/8 DIA HOLE THRU -3
GS26F2-1 (ON -1)
MS20470A3 (2) (ON -1)
GB1032 (ON -3)
GW10H1 (ON -3)
GW10P1 (ON -1)
GS20D068 (ON -1)
GW10R06 (ON -1)
X1512.645 (REF)
.781 000 (REF)
LDW280-58665-27-1 (REF)
VIEW E-E (ZONE A5)
-23-
GT535G-LDS-0360 (REF)
SECTION H-H (ZONE C4)
GW13A-08-0120
GT535G-HCS-0020 SEE NOTE 5
LDW200-55546-31 ASSY
01/02
NAS 9-1100
CODE IDENT NO 26512
DWG NO LDW200-55546
REV A
SHEET 3
FRAME 1
FRAME 2
8
7
6
5
D
C
B
A

REVISIONS						
ZONE	LTR	DESCRIPTION	EFF CODE	MODEL	DATE	APPROVED



NOTES
1.- APPLICABLE PROCEDURES
LPC280-1 FABRICATION
LPC280-3 SEAMS
LPC280-6 CUTTING
LPC280-19 FABRICATION (PLUME SHIELD)
LPC280-25 INSTALLATION
2.- FINAL SIZE (WITH FOLD, SEAM, VENT & FASTENER LOCATIONS) OF BLANKET & SHIELD ASSY SHALL BE DETERMINED FROM ENGRG APPROVED MASTER TEMPLATE AND/OR FULL SIZE MOCKUP.
3.- NO TOOLING HOLES PERMITTED IN PARTS.
4.- TAPE USING 4-6 INCH STRIPS WITH .75 TO 1.00 GAPS.
5.- LOCATIONS OF GT535G TO BE DETERMINED FROM APPROVED MASTER TEMPLATE. BACK UP BLANKET WITH GT835P-8 TAPE (A/R) BEFORE SEWING VELCRO TO BLANKETS. SEW VELCRO AT .18 ± .06 FROM EDGES OF VELCRO IN ACCORDANCE WITH FED STD *751 & STITCH 6 TO 11 STITCHES PER INCH TYPE 301. USE THREAD GT534C-1 OR GT534D-1.
6.- REWORK EXISTING PARTS PER ENGRG APPROVED MASTER TEMPLATE AND/OR ENGRG INSTRUCTIONS.
7.- TAPE USING 5 LAYERS OF GT835P-8 TAPE
8.- -11 TO BE MADE FROM .002 ALUMINIZED POLYIMIDE PER LSM14-5304 TYPE III A, CL 2.
-13 TO BE MADE FROM .0005 ALUMINIZED POLYIMIDE PER LSM14-5301 TYPE IA, CL 1.
-33, -15, -27 & -29 TO BE MADE FROM .005 ALUMINIZED POLYIMIDE PER LSM14-5301 TYPE VI A CL 2.
-17 TO BE INCONEL KNIT WIRE CLOTH (MESH) MADE OF KNIT PATTERN SQUARE TYPE WIRE CLOTH SLEEVING 5 TO 7 SQUARES PER LINEAR INCH. WIRE INCONEL 600 (.0035-.0040 DIA ROUND MAY BE PURCHASED FROM MONTGOMERY METAL FABRIC CO. 5 CANAL ST. WINDSOR LOCKS, CONN (CODE IDENT 94725)
-19 TO BE MADE FROM .0005 NICKEL FOIL COMMERCIALLY PURE INCO 200 OR EQUIVALENT.
-21 TO BE MADE FROM .0012S INCONEL 600 PER AMS 5540.
9.- FOR -23 REMOVE ALL SHARP EDGES, ROUND OFF ALL CORNERS & REMOVE ALL BURRS.
10.- SHIM PER LPC280-53
(A3) 11.- TIE GT835-AM1 PER LSP390-002.
12.- SECURE GT835-AM1 THREAD TO LDW280-54837-7 SEQ DOOR AFTER MAGNETOMETER IS INSTALLED. MAINTAIN A SNUG WRAP OF BLANKET TO MAGNETOMETER.
(A4) 13.- PAINT EXTERIOR SIDE OF -21 WITH H.E. BLACK PYROMARK AS PER LPC280-5

02402

NAS 9-1100

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES			CONTRACT NO.	GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714
LINEAR TOL	XX ± .03		DRAWN BY	
	XXX ± .010		LAYOUT BY	
ANGULAR TOL ± 0°30'			CHECKED BY	
TOL ON LOFTED DELINEATIONS IS			GR. LEADER	
			REL. ENGR.	
			PROJ. ENGR	
			GOVT APPD	

SIZE J | CODE IDENT NO. 26512 | LDW200-55546 | A
SCALE FULL & NOTED | SHEET 3 OF

LDW200-55546 | REV A | SHEET 3

FRAME 1 FRAME 2

DISTR LIST =

PRINTING INFO ONLY
DWG SIZE 24 X 36
FULL SIZE SHEET AREA (36 X 36) = 24.0 SQ FT
½ SIZE SHEET AREA (½ OF FULL) = 6.0 SQ FT

LDW200-55546 A

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENGINEERING ORDER

DWG NO. LDW200-55546		EO NO. B1
CONTROL INFO NO. LDW280C0517		

FOR -23 IN F/D 36.00 S/B 34.00
IN F/D & B/M. -23(2)(DN-1) S/B -23(2)(DN-3)

IN F/D & B/M FOR -31 ASSY GT535-HCS-0020(1) S/B GT535-LCS-0020(1)

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCD 5410 PKG 51

REASON FOR EO
① TO AGREE WITH SHOP DEVELOPED MASTER TEMPLATES ② PARTS SHOULD BE ON ASSY RATHER THAN INSTL.

DESCRIPTION OF EO
FOR -23 34.00 WAS 34.00
REMOVED -23(2) FROM -1 INSTL, ADDED -23(2) TO -3 ASSY
FOR -31 GT535-LCS-0020(1) WAS GT535-GCS-0020(1)

GAEC EO RELEASE

MODEL	EFFECTIVITY			DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
	~~EI PROGRAMS ACTIVITY NO.~~	GAEC UNIT NO.	SUB CONTR UNIT NO.	REVISE DWG	RECORD EO	REWORK	SCRAP	DATE								
LM	LFM 553	LM-8 (38)														
								VDI			RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
				PRIORITY	DRAWING TITLE							DRAWING NO.				EO NO.
				C	D/S MAGNETOMETER SHIELD INSTL STOWAGE							LDW200-55546				B1

CDR 060570
ISSUED BY G. BARNES / G. HANSMANN X87222 SECTION VDI GROUP NO. 335 PL 25

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NAS 9-1100

GRUMMAN AEROSPACE CORPORATION

EMG 32.1 REV 3-65

CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LDW200-55546		EO NO. B2
CONTROL INFO NO. LDW280 C1123		

ADD NOTE *

*:- FOR REWORK MODIFICATION OF -1 LDW280-58647-3 H_2O & N_2 FILL DRAIN ACCESS THERMAL DOOR IS TO BE REMOVED & IS NOT TO BE REINSTALLED TO ACCOMPLISH -1 INSTALLATION.

* USE NEXT AVAILABLE NOTE

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	LCD 5410C PKG 51

REASON FOR EO: NO DISPOSITION OF ACCESS DOOR ON DWG (HWC)

DESCRIPTION OF EO: FOR -1 ADDED NOTE *

GAEC EO RELEASE: W. R. H. 11-10-70

MODEL	EFFECTIVITY			DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
	~~PRELIMINARY~~ PRI	GAEC UNIT NO.	SUB CONTR UNIT NO.	REVISE DWG	RECORD EO	REWORK	SCRAP	DATE	11/9/70		11/17/70	11-9-70		11/9/70	11-10-70	
LM	LEM553	LM-8(38)		✓		✓		YDI		RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG		

PRIORITY: C

DRAWING TITLE: DESCENT SHIELD INSTL STAGE ~ MAGNETOMETER STOWAGE QUAD II (FEEDLOCK OF LDW280-54508) VH508

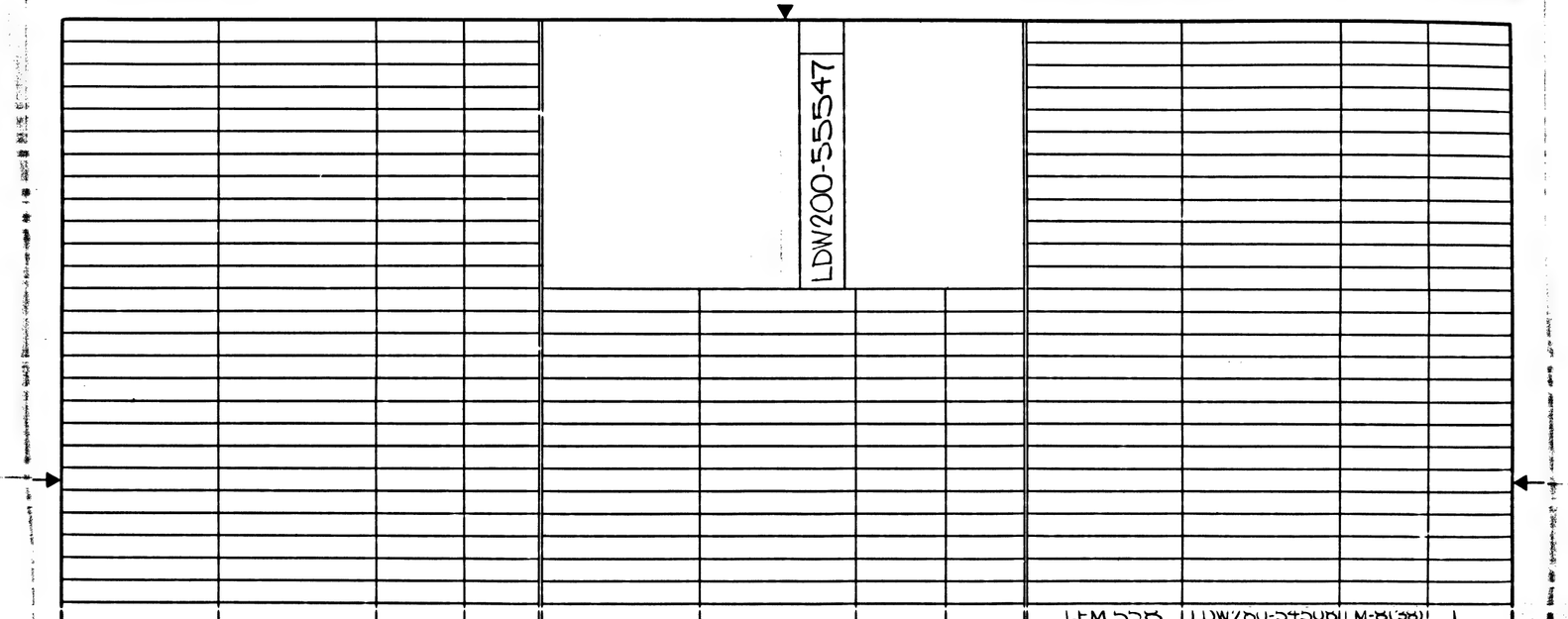
DRAWING NO.: LDW200-55546

EO NO.: B2

CDR 11/10/70 ISSUED BY G. BARNES / G. HANSMANN x87222 SECTION V.D.I GROUP NO. 335 PL 25

01

NAS 9-1100



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	LFM 558	LDW280-54508	LM-8(38)	1
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW200-55547-1		GAEC SCH NO.	

WORK PACKAGE FUNCTION #110

| SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH | | |

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
2		GS11E-0010J09	E	RADIUS BLOCK	GRUMMAN STD						
A/R		SEE NOTE 1		SHIM							
1		LDW280M18101-11	E	FITTING	SEE DWG						
1		LDW200-55547-35	E	ANGLE	AL ALLOY EXTR	QQ-A-200/3	2024-T3511	GS180C32BF×1	NONE	88	
1		-33		TEE	AL ALLOY EXTR	QQ-A-200/11	7075-T6511	GS183A13DG×1	NOTE 4	NOTE 4	
1		-31		TEE	AL ALLOY EXTR	QQ-A-200/11	7075-T6511	GS183A13DG×2	NOTE 4	NOTE 4	
1		-29		FILLER	AL ALLOY SH	QQ-A-250/4	2024-T3	.040×1×7	NONE	88	
1		-27		TEE	AL ALLOY EXTR	QQ-A-200/11	7075-T6511	GS183A13DE×1	NOTE 4	NOTE 4	
1		-25		CHANNEL	AL ALLOY SH	QQ-A-250/4	2024-T3	.040×3×4	NONE	88	
1		-23		ANGLE				.063×2×21			
1		-21		ANGLE				.063×3×15			
1		-19		ANGLE				.040×4×6			
1		-17		ANGLE				.050×5×16			
1		-15		BRACKET				.040×4×5			
1		-13		BRACKET				.040×4×5		88	
1		LDW200-55547-11		ZEE	AL ALLOY SH	QQ-A-250/4	2024-T3	.071×5×9			
		LDW200-55547-1	E	MAGNETOMETER SUPPORT INSTL					NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
88	ANODIZE	LSP14-9030
76	ALODINE	LSP14-9010

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55547

SCALE NONE SHEET 2.00

ENG 77.2 7-64

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NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
1		NAS697C08	E	PLATE NUT	GOVT STD						
A/R		NAS1097AD4		RIVET	IND STD						
A/R		NAS1097AD3		RIVET	IND STD						
A/R		MS20470DD4		RIVET	GOVT STD						
A/E		MS20470AD4		RIVET	GOVT STD						
20		GN512H08		COLLAR	GRUMMAN STD						
10		GB511K08-3		BOLT							
2		GB511P08-6		BOLT							
8		GB511K08-4	E	BOLT	GRUMMAN STD						
-1											

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55547

SCALE NONE SHEET 2.01

ENG 77.2 7-64

01

NAS 9-1100

-29
R(TYP)
.50
5.91

-31
.50
.31
.12 TYP
.31R
.96
.92
.25
.25
.25
.62
.75R(TYP)
1.30
1.44
.097-.102 DIA 6 HOLES

.250(REF)
.062(REF)
.062R(REF)
1.750(REF)
.062(REF)

R(TYP)
.12R
.25
.25
.31
.62
1.094 (REF)
.72
.48
.94
.62
.18
.25
.25R(TYP)
.44
.097-.102 DIA 4 HOLES
-33

-35
.62
.19 x 45° CHAMFER(TYP)
1.500 (REF)
.125R(REF)
.064(REF)
2.000 (REF)
.66
.62

LDW280-58665(REF)
LDW200-55547-23(REF)
.50
LDW200-55547-33(REF)
MS20470DD4(2) LOCATE FROM LDW200-55547-33
.31
.44
.44
.25
.028 MAX SHIM SEE NOTE 1
MS20470DD4(12)
MS20470DD4(4) LOCATE FROM LDW200-55547-31
31
(REMOVE) STANDOFF ASSY GS26FZ-1(2) MS20470A3(4)
LDW200-55547-29(REF)
MS20470DD4(2) LOCATE FROM LDW200-55547-27
MS20470DD4(7) PICK UP EXISTING LOCATIONS
LDW200-55547-27(REF)

SECTION A-A (ZONE A5)

-Z81.000(REF)
LDW280-54586(REF)
LDW280M18101-11(REF)
LDW280M18101-11
LDW200-55547-29(REF)

-Y41.683(REF)
LDW200-55547-11
LDW200-55547-29
(REMOVE) MS20470DD4(3)
(ADD) NAS1097AD4(3) FLUSH IN LDW200-55547-29 PICK UP EXISTING LOCATIONS
LDW280M18101-11
(REMOVE) MS20470DD4(8)
(ADD) GB511K08-3(8) GN512H08(8) PICK UP EXISTING LOCATIONS
SEE NOTE 2
-Y27.000(REF)

MS20470DD4(10) PICK UP EXISTING LOCATIONS
.50(REF)
MS20470DD4(2) LOCATE FROM LDW200-55547-3
.25
MS20470DD4(25) LOCATE FROM LDW200-55547-23
LDW200-55547-33
LDW280-58665(REF)
LDW200-
X131.190(REF)
X139.470(REF)
▲21.655±.030
.033(REF)
(RELOCATE) LDW280-17739-15 AS SHOWN
LDW200-55547-25(REF)
REMOVE & REPLACE MS20470DD4(13)
LDW200-55547-33(REF)
A
LDW200-55547-21
LDW200-55547-31
LDW280-5
▲2.996±.010
7.97±.03
LDW200-55547-27
MS2
PICK
LOC
LDN

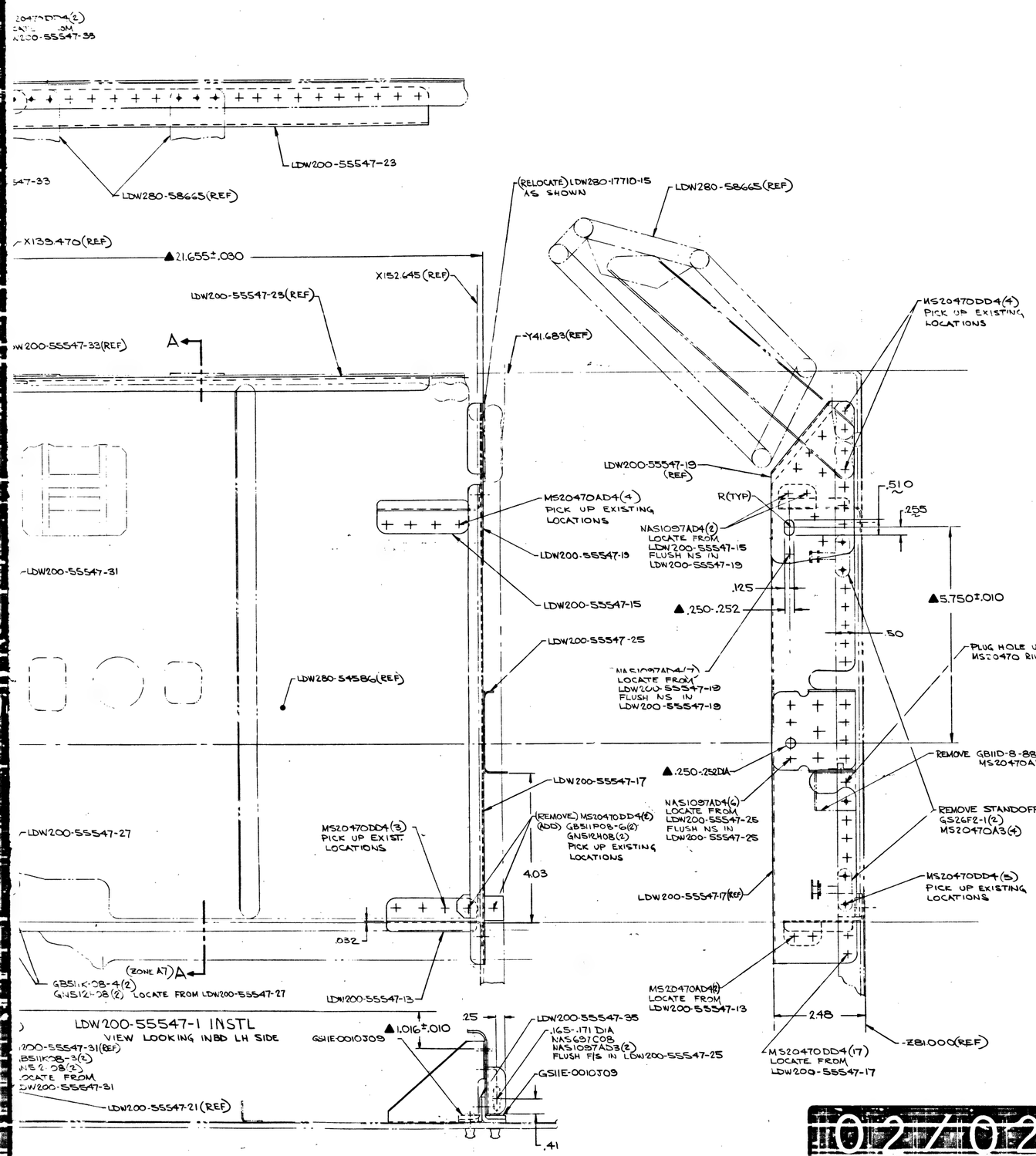
.033
GB51.K08-4(6) GN51CH08(6) LOCATE FROM LDW280M18101-11
VIEW B-B
(ZONE A7) A
GB511K-08-4(2) GN512H08(2) LOCATE FROM LDW200-55547-27
X131.173(REF)
3000 (REF)
LDW200-55547-1(REF)
LDW200-55547-1 INSTL
VIEW LOOKING INBD LH SIDE
LDW200-55547-31(REF)
GB511K08-3(2) GN512H08(2) LOCATE FROM LDW200-55547-31
LDW280M18101-11(REF)
LDW200-55547-21(REF)
X131.140(REF)
.073(REF)

01702
NAS 9-1100

CODE IDENT NO.	DWG NO.	REV	SHEET
26512	LDW200-55547		3

FRAME 1 FRAME 2

REVISIONS					
ZONE	LTR	DESCRIPTION	BY CODE	MODEL	DATE	APPROVED



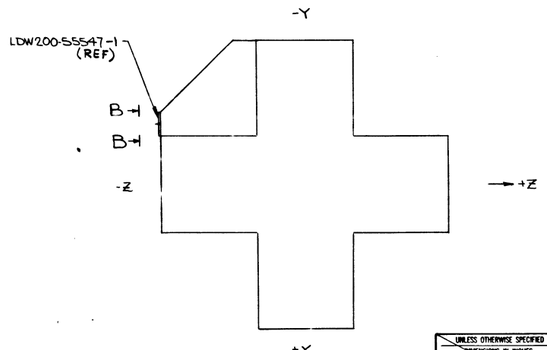
NOTES:

1.- SHIM AS REQD USING AL ALLOY SH 2024-T3 QQ-A-250/4 FINISH 76.
2.- SHIM PER LPC 280-53
3.- HOLES MARKED ▲ FORM PART OF AN INTERCHANGEABLE INTERFACE. SEE LDW340-58771 FOR CORRESPONDING HOLE PATTERN.
4.- AGE FROM T6511 CONDITION TO T73511 TEMPER PER LSP-14-5801. SULPHURIC ACID ANODIZE PER MIL-A-8625 TYPE II.

AFTER ANODIZING PROTECTIVE COAT USING ONE COAT OF PRIMER MIL-P-23377 PER LSP 14-4305.

SYMBOL LEGEND
FOR QUANTITY & LOCATION ONLY

+
+



VIEW LOOKING DOWN
ENGRG REF NO SCALE

02/02 NAS 9-1100

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES		
LINEAR TOL	.XX	± .03
	.XXX	± .010
ANGULAR TOL		± 0°30'
TOL ON LOFTED DELINEATIONS IS		

CONTRACT NO.

GRUMMAN AIRCRAFT ENGINEERING CORPORATION
BETHPAGE, NEW YORK 11714

DRAWN BY
LAYOUT BY
CHECKED BY
SR. LEADER
REL GROUP
PROJ ENGR
GOVT APPD

SIZE J | CODE IDENT NO. 26512 | LDW200-55547

SCALE FULL | SHEET 3 OF

DWG NO LDW200-55547 | REV | SHEET 3

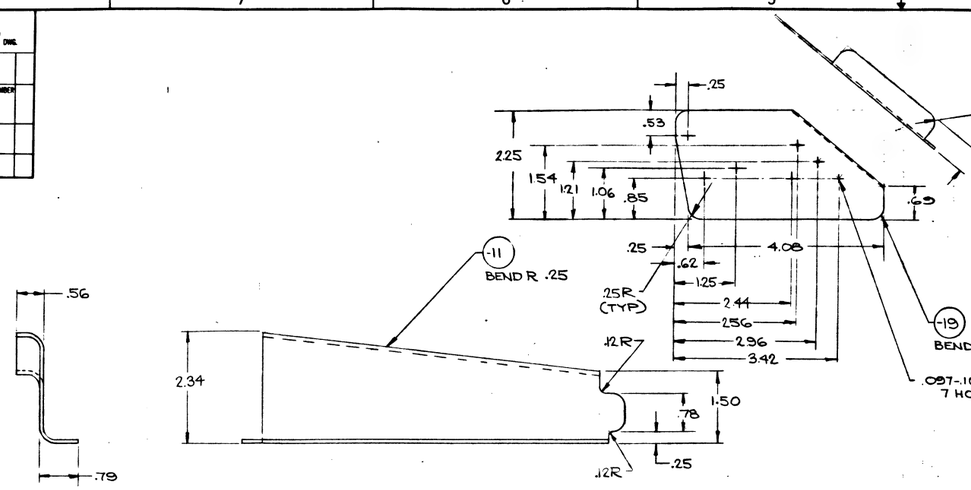
FRAME 1 | FRAME 2

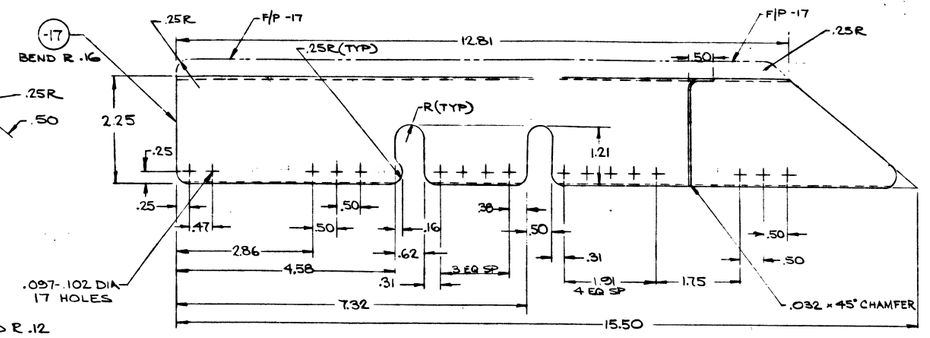
LDW200-55547

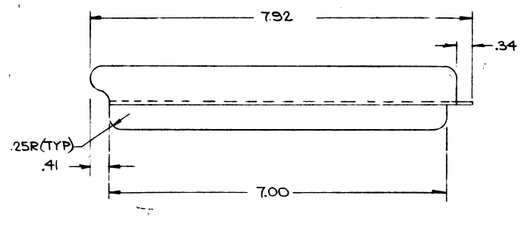
PRINTING INFO ONLY
ORIG. SIZE SHEET AREA ON 8 MIL = 24.5 SQ FT
½ SIZE SHEET AREA ON ¼ OF (FULL)= 6.5 SQ FT

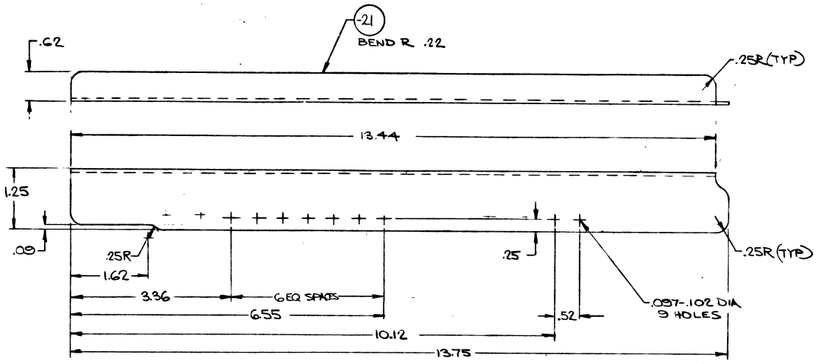
DISTR: LIST #

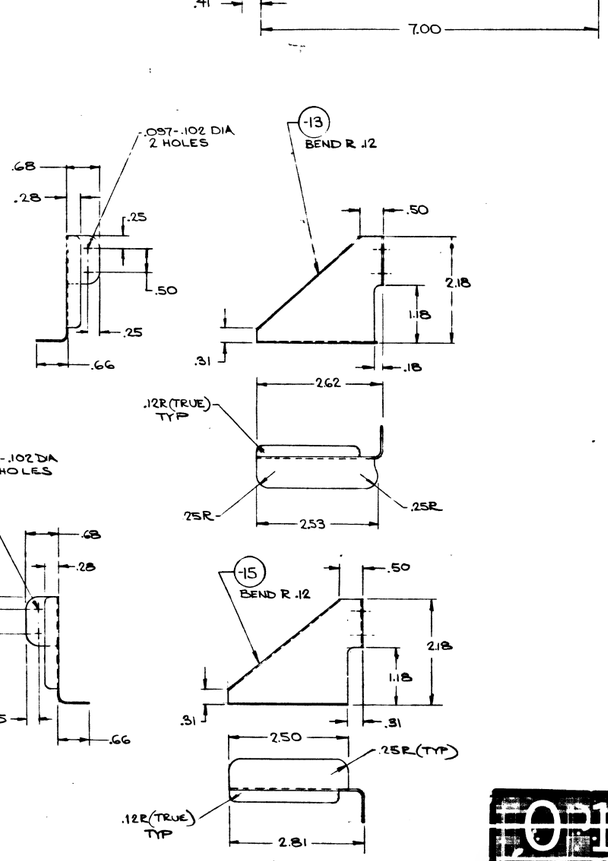
SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED (✓) APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH MIL STD-130.	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED (□) USE BOTH SIDES IF NECESSARY	
LENGTHS OF MS & NAS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL RIVETS IN ACCORDANCE WITH	

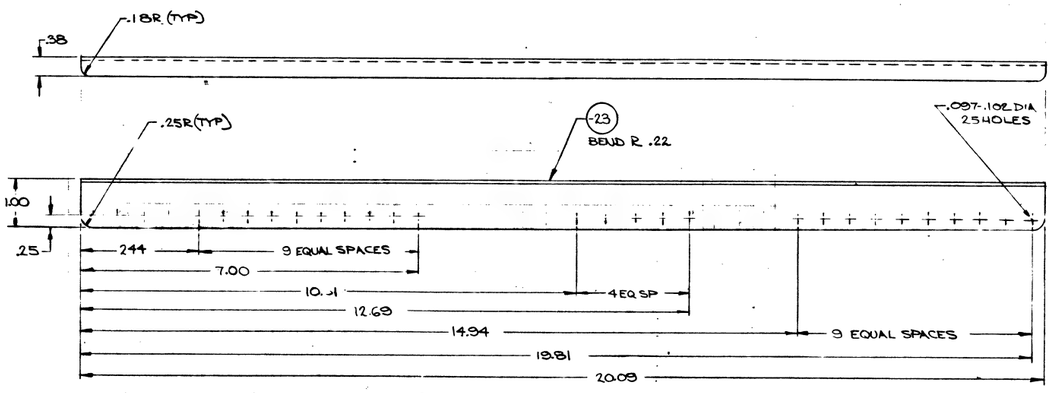


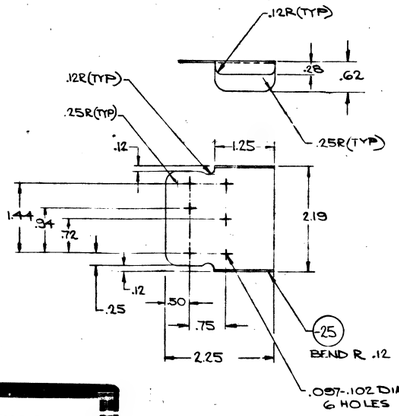


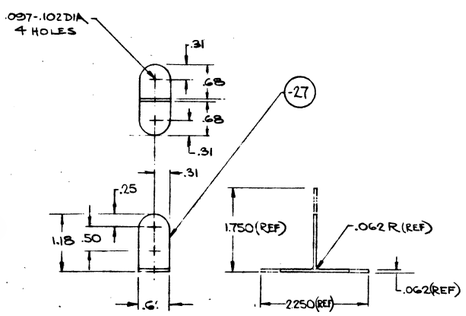












01

NAS 9-1100

GRUMMAN AEROSPACE CORPORATION BETHPAGE, NEW YORK 11714			
SIZE E	CODE IDENT NO. 26512	LDW200-55547	
SCALE FULL			SHEET 4.00

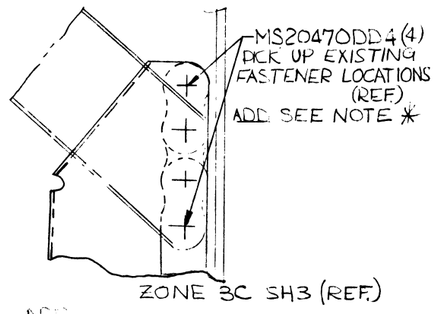
ENG 32.2 REV 3-65

GRUMMAN AEROSPACE CORPORATION
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW200-55547	EO NO. A1
CONTROL INFO NO. LDW280C0437	

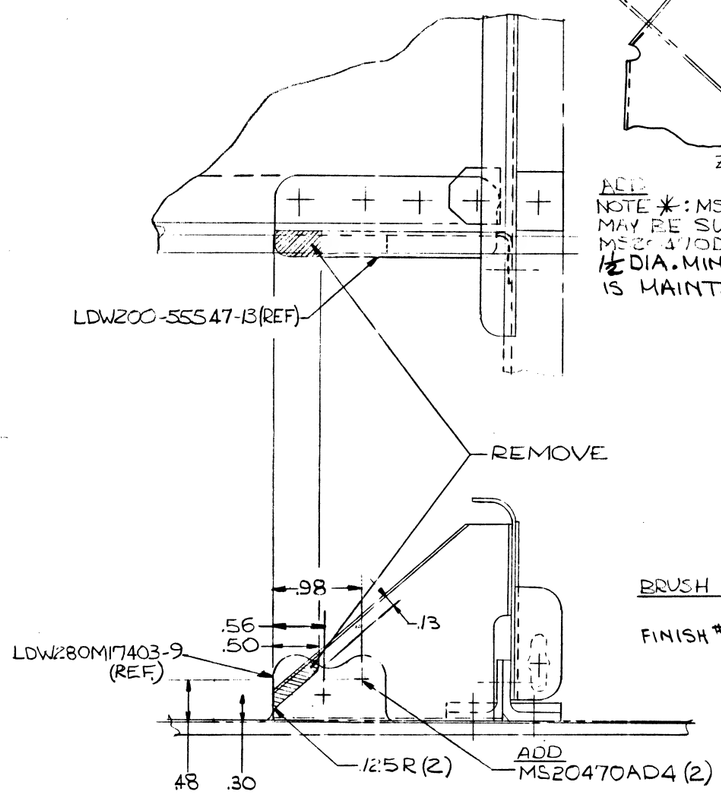
ON-1:
TRIM -13 AS SHOWN
ADD NOTE ✱
ADD MS20470AD4(2)

IN F/D:
REPLACE MS20470DD4 RIVETS WITH MS20470AD4 RIVETS (TYP) EXCEPT FOR AREA COVERED BY NOTE ✱



ZONE 3C SH3 (REF.)

ADD
NOTE ✱: MS20470AD5(4) RIVETS MAY BE SUBSTITUTED FOR MS20470DD4(4) RIVETS PROVIDED ½ DIA. MINIMUM EDGE DISTANCE IS MAINTAINED.



ZONE 4A SH3 (REF)

BRUSH ALODINE REWORKED AREAS
FINISH * 76 PER LSP14-9010

NAS 9-1100

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	LCD 5410 FRG E1

REASON FOR EO: TO ELIMINATE INTERFERENCE BETWEEN CORNER POST AND BRACKET; MS20470DD4 FASTENERS NOT READILY AVAIL. AT KSC

DESCRIPTION OF EO: ON-1: TRIMMED -13; ADDED NOTE ✱; ADDED MS20470AD4(2)
IN F/D REPLACED MS20470DD4 RIVETS WITH MS20470AD4 RIVETS EXCEPT AS NOTED

GAEC EO RELEASE

MODEL	EFFECTIVITY: PROGRAMMED I	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM558	LM-8(3R)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		✓	

APPROVED BY							
DATE	5/11/70	VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
					NM 5/11/70	5/11/70	5/11/70	5/11/70

PRIORITY: C
DRAWING TITLE: MAGNETOMETER SUPPORT ~ L.S. ~ QUAD II
DRAWING NO.: LDW200-55547
EO NO.: A1

5/11/70
ISSUED BY J. PEDERSON/G HANDMAN PAGE SECTION V.1 GROUP NO. 325 PL 25

LDW200-55548 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
	LFM 579	LDW280-54508	LM-8(38) 1
	LFM 579	LDW280-54508	LM-1(31) 1
PART NO. LDW200-55548-1		GAEC SCH NO.	

WORK PKG FUNCTION NO. 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00	1.10	2.00	3.00						
REV	A	A	A	A						
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED	~	GRUMMAN REL INFO A				
LAST DASH NO. USED	-3	PRIM NO.				
		207				

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
~ ±.03 ±1/2°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
	LCD5504, PKG 50

CONTRACT NO. NAS 9-1100 LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	SMALL 4/17/70				
LAYOUT BY	RAGAS				
CHECKED BY	[illegible] 4-28-70				
G.P. LEADER	GWH 3-20-70				
VDI	PST 3-20-70				
STRUCT	WJH 3-20-70	PROJ ENGR	RVP 3-20-70		
STRUCT		REL GROUP	LM 3-21-70		
THERMO	TMK 3-20-70				

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

COVER INSTL
DESCENT STAGE - MESA REL. PIN-INGRESS
EGRESS PLATF - REWORK OF LDW280-54508-LFM 579

SIZE	CODE IDENT NO.		
B	26512	LDW200-55548	A

SCALE NONE SHEET 1.00 OF 4

ENG 77.1 12-65

4-21-70

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00, 1.10 2.00, 3.00		LFM573		✓		EO A1 LCD 5504 PKG 50	EO A1 - INITIAL DWG RELEASE - PART MADE PER EO	LM-7 LM-8	NOT	REQD	SMALL 4/17/70		
	2	2.00 3.00		(2)		✓		LCD 5504 PKG 50	REF EO A1: GT535G-LCS-0035 WAS GT535GLCS; GS11N1-035 WAS GS11N-1-0035; IN NOTE 1, LSP14-22500 WAS LSP14-2200A. (DWG ERROR CORR) jdc J. McCormack 4-28-70						

CHG APPROVED	LTR	GROUP LDR	VDI	STRUCT	STRUCT	THERMO
	A	DJK 4/24/70	PST 4-30-70		WJN 4/24/70	

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW200-55548	A

SCALE NONE SHEET 1.10

ENG 77.15 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	PART NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
-3 -1											
A/R	MS20470AD4	E		RIVET	GOVT. STD.						
1	GT535G-LCS-0035			TAPE, LOOP	GRUMMAN STD.						
1	GS11N1-035			STRIP	GRUMMAN STD.						
1	LDW280-66667-1			COVER ASSY	SEE DWG						
1	LDW200-55548-3			STRIP ASSY (BONDED)	SEE NOTE 1				NONE	NONE	
	LDW200-55548-1	E		COVER INSTL					NONE	NONE	

SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH NONE

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW200-55548	A

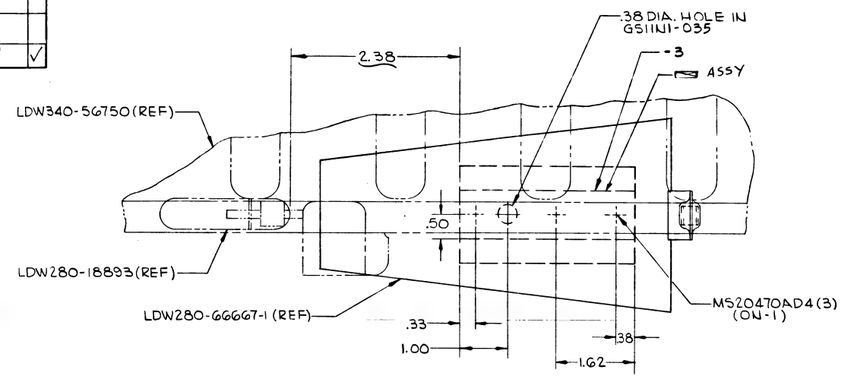
SCALE NONE SHEET 2.00

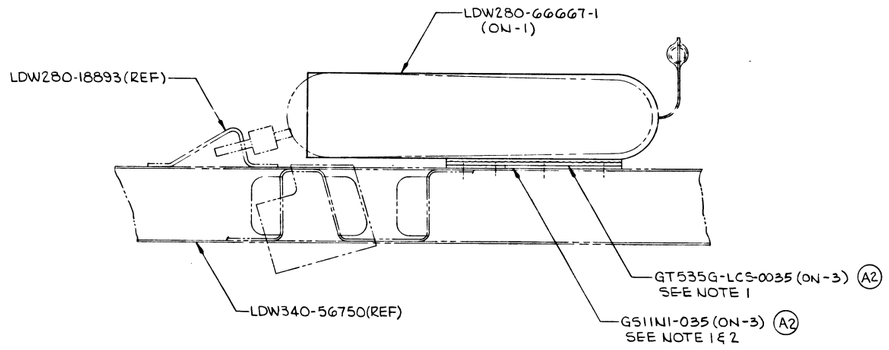
ENG 77.2 5-64

01 NAS 9-1100

SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION(mirror) MARKED ☐ USE BOTH SIDES IF NECESSARY	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL RIVETS IN ACCORDANCE WITH LSP14-15202	✓

NOTES:
1. BOND GT535G-LCS TO GS11N1-035 USING EPON 934 PER LSP14-22500, CURE RANGE I.
2. BREAK ALL SHARP CORNERS OF GS11N1-035.

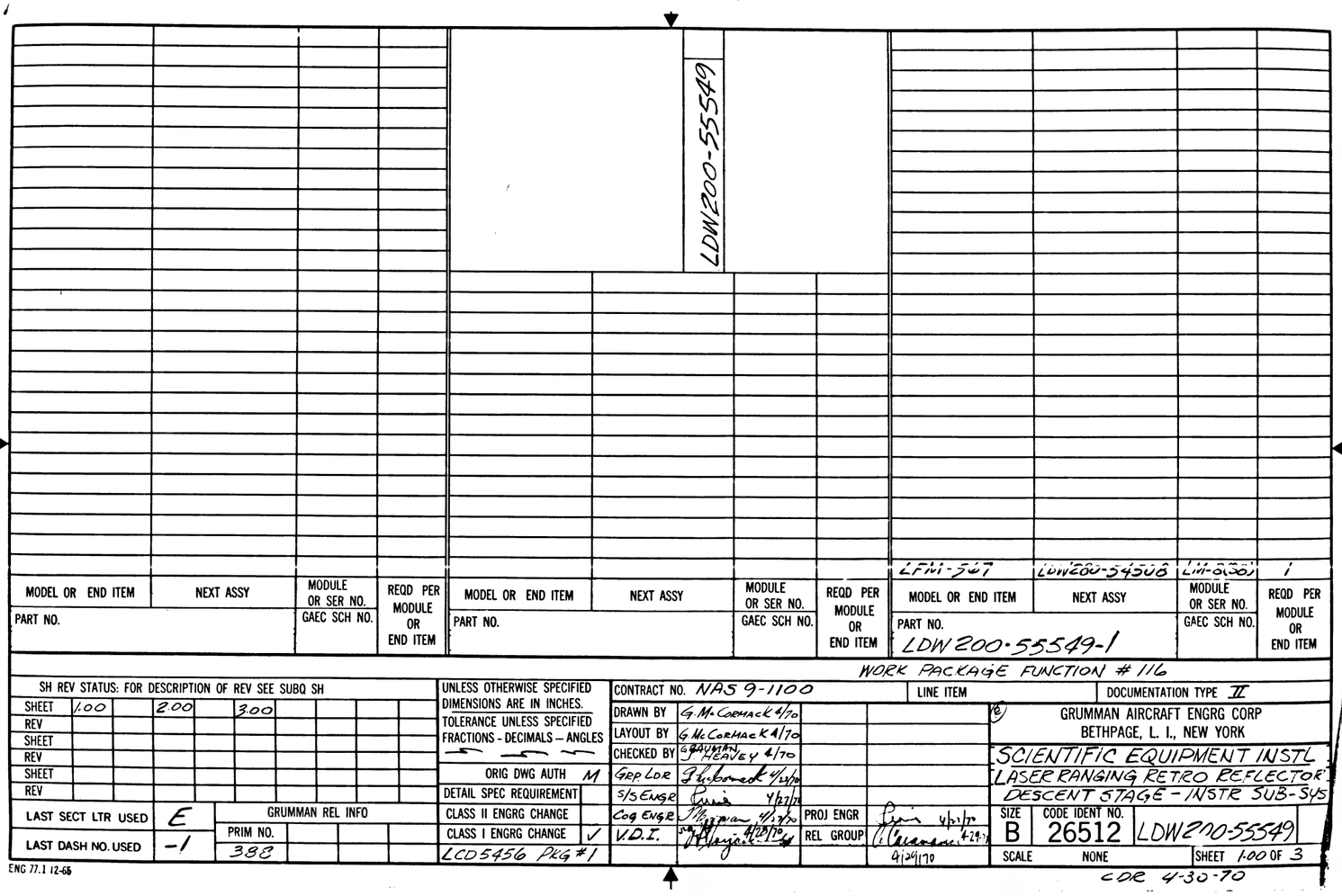




(A1) LDW200-55548-1 INSTL -3 ASSY (BONDED)

GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714			
SIZE D	CODE IDENT NO 26512	LDW200-55548	A
SCALE FULL		SHEET 3.00	

NAS 9-1100



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LFM-567	LDW200-54506	LM-2361	1
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW200-55549-1		GAEC SCH NO.	

WORK PACKAGE FUNCTION #116

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00		2.00		3.00					
REV										
SHEET										
REV										
SHEET										
REV										
LAST SECT LTR USED	E	GRUMMAN REL INFO								
LAST DASH NO. USED	-1	PRIM NO.	388							

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH	M				
DETAIL SPEC REQUIREMENT					
CLASS II ENGRG CHANGE					
CLASS I ENGRG CHANGE	✓				
LCD5456 PKG #1					

CONTRACT NO. NAS 9-1100 LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	G. McCormack 4/70			
LAYOUT BY	G McCormack 4/70			
CHECKED BY	G Grumman Heavey 4/70			
GRP LDR	G McCormack 4/30/70			
S/S ENGR	[illegible] 4/27/70			
COG ENGR	[illegible] 4/28/70	PROJ ENGR	[illegible] 4/29/70	
V.D.I.	[illegible] 4/28/70	REL GROUP	[illegible] 4-29-70	4/29/70

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

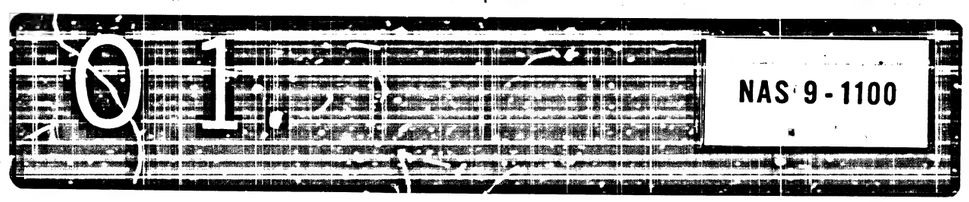
SCIENTIFIC EQUIPMENT INSTL
LASER RANGING RETRO REFLECTOR
DESCENT STAGE - INSTR SUB-SYS

SIZE	CODE IDENT NO.	
B	26512	LDW200-55549

SCALE NONE SHEET 1.00 OF 3

COR 4-30-70

ENG 77.1 12-65



QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
1		2345711-1		LASER RANGING RETRO REFLECTOR	GFE						
1		LDW200-55542-1	E	ADAPTER ASSY	SEE DWG						
-/		LDW200-55549-1	E	SCIENTIFIC EQUIPMENT INSTL.							

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

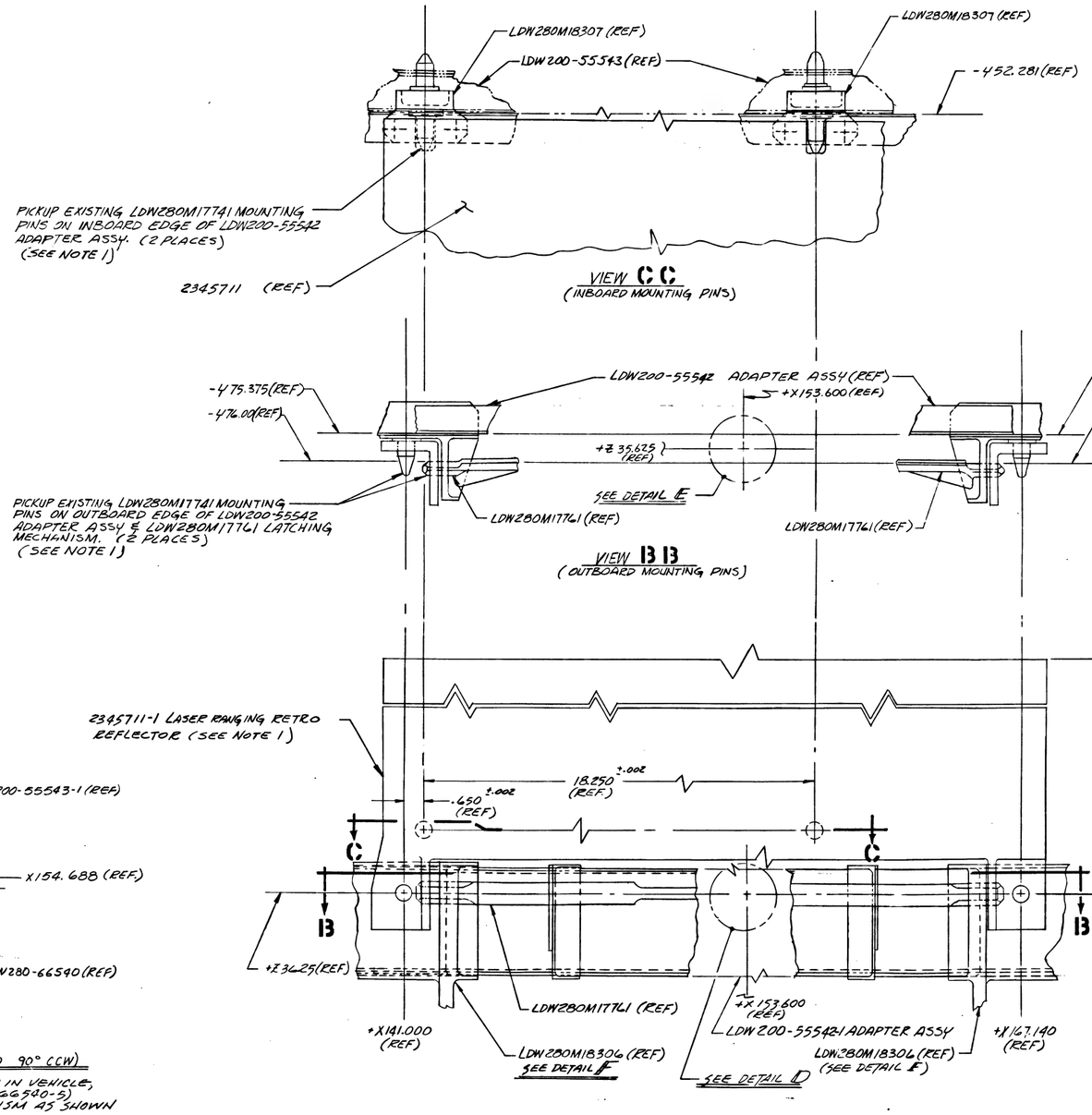
SIZE	CODE IDENT NO.	
B	26512	LDW200-55549

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

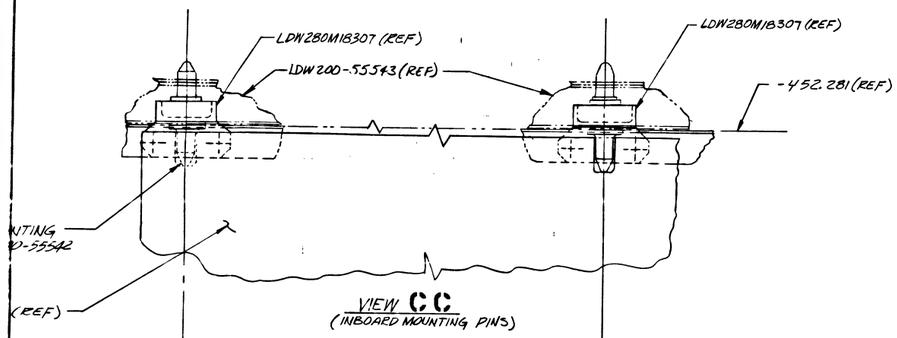


01/02

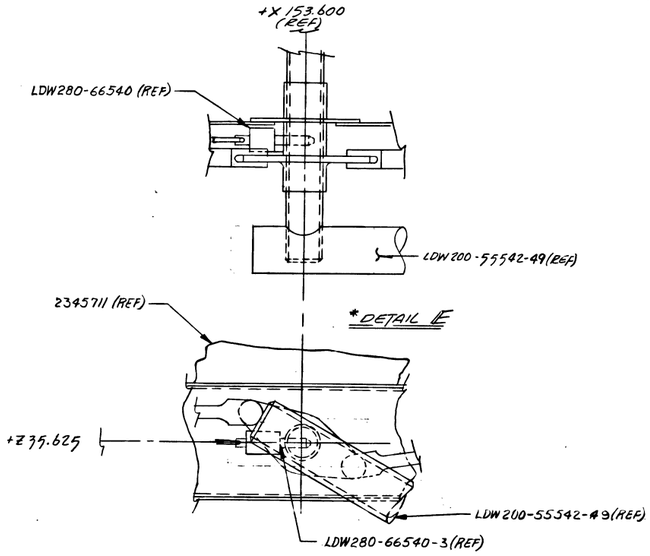
NAS 9-1100

NOTES

1. FOR INTERFACE DIMENSIONS REFER TO DWG. NUMBER LID 360-22830.

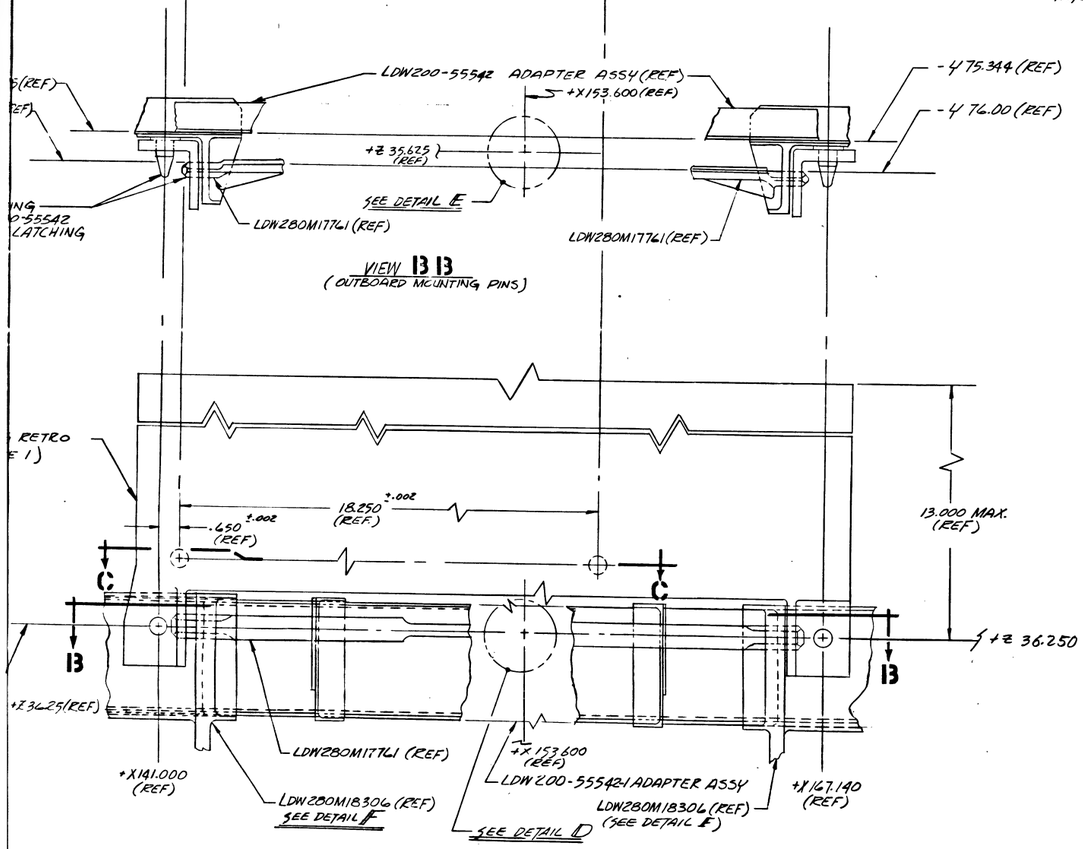


VIEW C C
(INBOARD MOUNTING PINS)



*DETAIL D

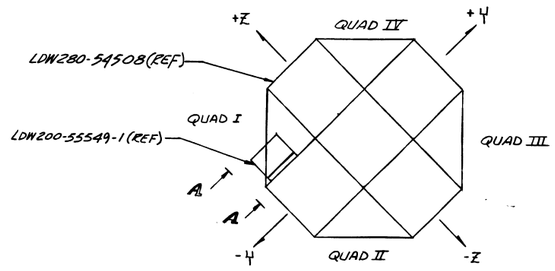
NOTE * INSTALL PIP PIN (LDW280-66540-3) TO LOCK LATCHING MECHANISM AS SHOWN ON LDW200-55542-1



VIEW B B
(OUTBOARD MOUNTING PINS)

VIEW A-A (ROTATED 45° C.W.)
(LOOKING INBOARD)

LDW200-55549-1 INSTALLATION



LM DESCENT STAGE
(VIEW LOOKING DOWN)

02402

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG. CORP. BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO	
E	26512	LDW200-55549

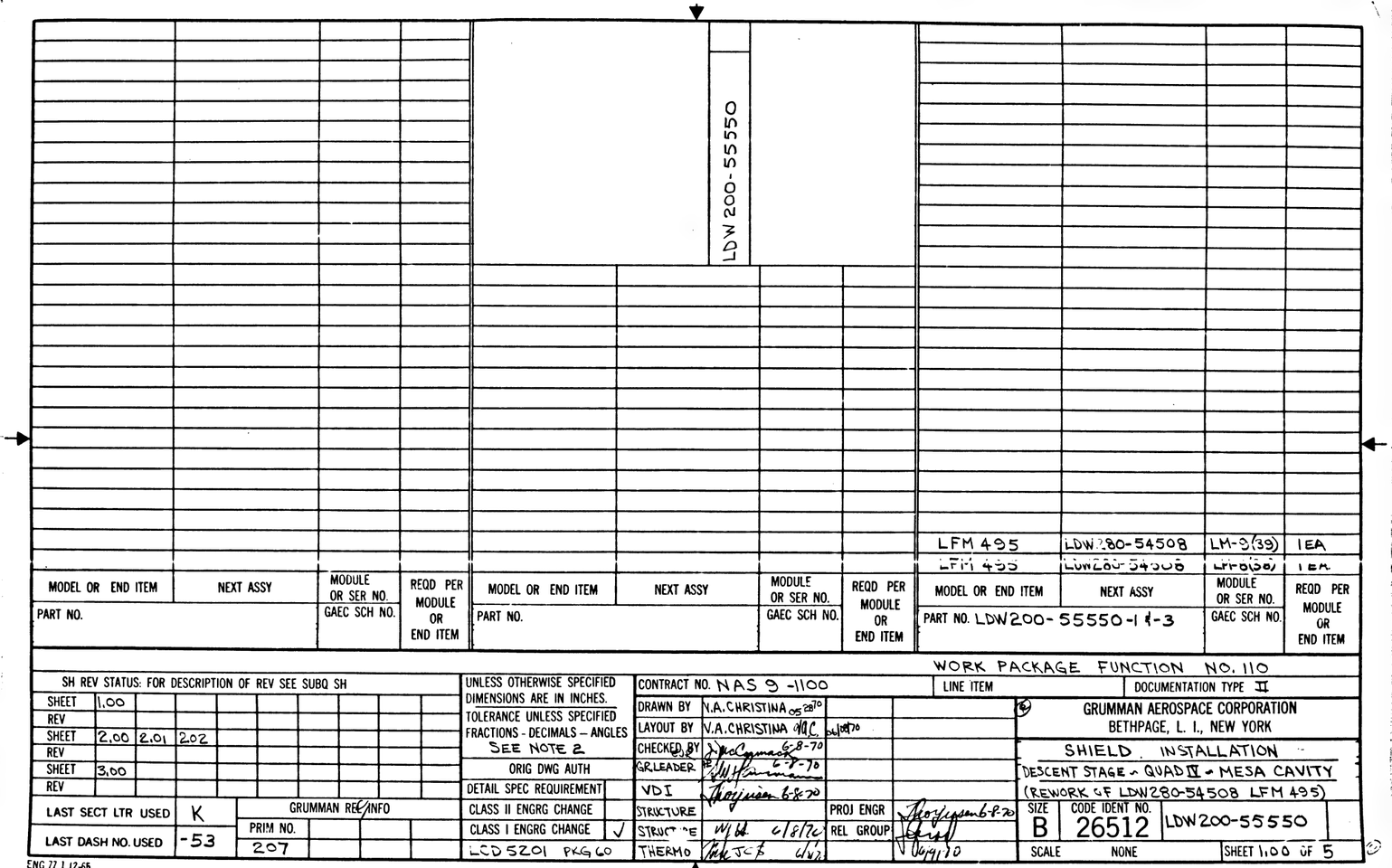
SCALE NONE SHEET 3 OF 3

DWG INFO 36 x 70

LDW200-55549 A

LDW200-55549 B

LDW200-55549 C



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW200-55550-1 & -3	LFM 495	LDW280-54508 LFM495	LM-3(39) LM-3(38)	1EA 1EA

WORK PACKAGE FUNCTION NO. 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00									
REV										
SHEET	2.00	2.01	2.02							
REV										
SHEET	3.00									
REV										

LAST SECT LTR USED	K
LAST DASH NO. USED	-53

GRUMMAN REC INFO: PRIM NO. 207

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES SEE NOTE 2
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE ✓ LCD 5201 PKG 60

CONTRACT NO. NAS 9-1100 | LINE ITEM | DOCUMENTATION TYPE II

DRAWN BY	N.A. CHRISTINA 05 28 70		
LAYOUT BY	N.A. CHRISTINA N.C. 06/08/70		
CHECKED BY	J. Cosmano 6-8-70		
GR LEADER	W. Hoffman 6-9-70		
VDI	Thorjussen 6-8-70		
STRUCTURE		PROJ ENGR	Thorjussen 6-8-70
STRUCTURE	W/bd 6/8/70	REL GROUP	6/9/70
THERMO	JCB 6/8/70		

GRUMMAN AEROSPACE CORPORATION
BETHPAGE, L. I., NEW YORK

SHIELD INSTALLATION
DESCENT STAGE - QUAD II - MESA CAVITY
(REWORK OF LDW280-54508 LFM 495)

SIZE	CODE IDENT NO.	
B	26512	LDW200-55550

SCALE NONE | SHEET 1.00 OF 5

ENG 77.1 12-68

CDR 06-08-70

01

NAS 9-1100

-31	-23	-27	-25	-23	-9	-7	-5	-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
QTY PER ASSEMBLY																				
AR											MS20470A3	E	RIVET	GOVT STD						
2											GS26E-1		STANDOFF	GRUMMAN STD						
								1			GT535G-HCS0020		TAPE HOOK							
AR	AR	AR	AR	AR			AR				GT835M-8		TAPE							
1											GS11P-1-510		STRAP							
			1								GS11P-1-313				(REWORK OF	GS11P-1-397)				
		1									GS11P-1-307				(REWORK OF	GS11P-1-406)				
	1										GS11P-1-293				(REWORK OF	GS11P-1-373)				
		1									GS11P-1-253				(REWORK OF	GS11P-1-322)				
							1				GS11P-1-241		STRAP		(REWORK OF	GS11P-1-287)				
						AR					GT835-AM1		THREAD	GRUMMAN STD						
								1			LDW200-55550-53		STRAP ASSY					NONE	NONE	2A
					1						-51		BLANKET							7B
					1						-49		BLANKET							7B
					2						-47		BLANKET							7B
								1			-41		SKIN ASSY							2A
								1			-39		SKIN							7B
							1				-37		SKIN	(REWORK OF	LDW280-58561-51)	(SEE NOTE 9)				6A
								1			-35		SKIN	(REWORK OF	LDW280-58561-218-93)	(SEE NOTE 9)				5D
								1			-33		STRAP ASSY	(REWORK OF	LDW280-58561-7)					2A
						1					-31									2A
						1					-29			(REWORK OF	LDW280-58561-81)					2A
						1					-27			(REWORK OF	LDW280-58561-75)					2A
						1					-25			(REWORK OF	LDW280-58561-73)					2A
						1					-23		STRAP ASSY	(REWORK OF	LDW280-58561-71)					2A
						1					-11		BLANKET ASSY	(REWORK OF	LDW280-58561-5)	(SEE NOTE 9)				2A
								1			-9		BLANKET ASSY							2A
							1				-7		BLANKET ASSY	(REWORK OF	LDW280-58561-7)	(SEE NOTE 9)				2A
								1			-5		SHIELD ASSY	(REWORK OF	LDW280-58561-5)	(SEE NOTE 9)				2A
											-3		SHIELD INSTL	(FIXED)						2A
											LDW200-55550-1	E	SHIELD INSTL	(REMOVABLE)				NONE	NONE	2A

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55550

SCALE NONE | SHEET 2.00

ENG 77.2 7-64

-53	-51	-49	-47	-45	-43	-41	-39	-11	-9	-7	-5	-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
												1			MS21043-06		NUT	GOVT STD						
2															MS20230WB10		WASHER	GOVT STD						
2															MS20230GB10		GROMMET	GOVT STD						
1															GW13A-08-0103		WEBBING	GRUMMAN STD						
												4			GW10R-06		WASHER	↑						
									1			4			GW10P-1		↓	↓						
							AR	AR	AR						GW10H-3									
								4	1						GW10H-1		WASHER							
						AR		AR	AR	AR	AR	AR	AR		GT835P-8		TAPE							
		AR													GT835BE-8		TAPE							
1															GT535G-LCS0012		TAPE LOOP							
	AR														GT535B-2-1.00		TAPE							
ALT															GT534E3		THREAD		(SEE NOTE 11)					
AR															GT534E2		THREAD		(SEE NOTE 11)					
											AR	AR			GT15C-2		TAPE							
							AR	AR	AR						GS577A-1		STAPLE							
												1			GS500AE-9		SPACER							
												4			GS20D-06-8		SCREW							
							AR	AR	AR						GR11B-1		RETAINER							
								2	1						GB10J-1		BUSHING							
												1			GB511J-08-5		BOLT	↓						
												1			GB511J-06-1		BOLT	GRUMMAN STD						
												1			AN960C6		WASHER	GOVT STD						
						3									LDW200-55550-45		SKIN					NONE	NONE	8D
						1									-43		SKIN					↓	↓	9D
				AR	1"R										-21		INSULATION	(SEE NOTES 2,8)						8C
							AR								-19		↑	↑						6B
	AR														-17									6B
		AR													-15									6B
			AR												LDW200-55550-13	E	INSULATION	(SEE NOTES 2,8)				NONE	NONE	6B

QTY PER ASSEMBLY

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55550

SCALE NONE SHEET 2.01

ENG 77.2 7-64

01

NAS 9-1100

QTY PER ASSEMBLY			CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ID ZONE
2	4	1		MS21042L08	E	NUT	GOVT STD						
AR				GT835M-8		TAPE	GRUMMAN STD						
1				GSIIP-1-080		STRAP	GRUMMAN STD						
2	4			GB511J-08-1		BOLT	GRUMMAN STD						
2	4	2		AN960D8L		WASHER	GOVT STD						
1				LDW280-5856-87	E	STRAP ASSY	(REWORK OF LDW280-58561-7)						
-33	-5	-1											

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

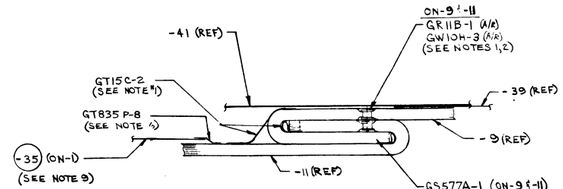
SIZE	CODE IDENT NO.	
B	26512	LDW200-55550

SCALE NONE SHEET 2.02

ENG 77.2 7-64

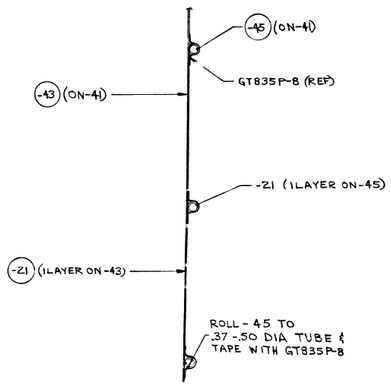
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NAS 9-1100

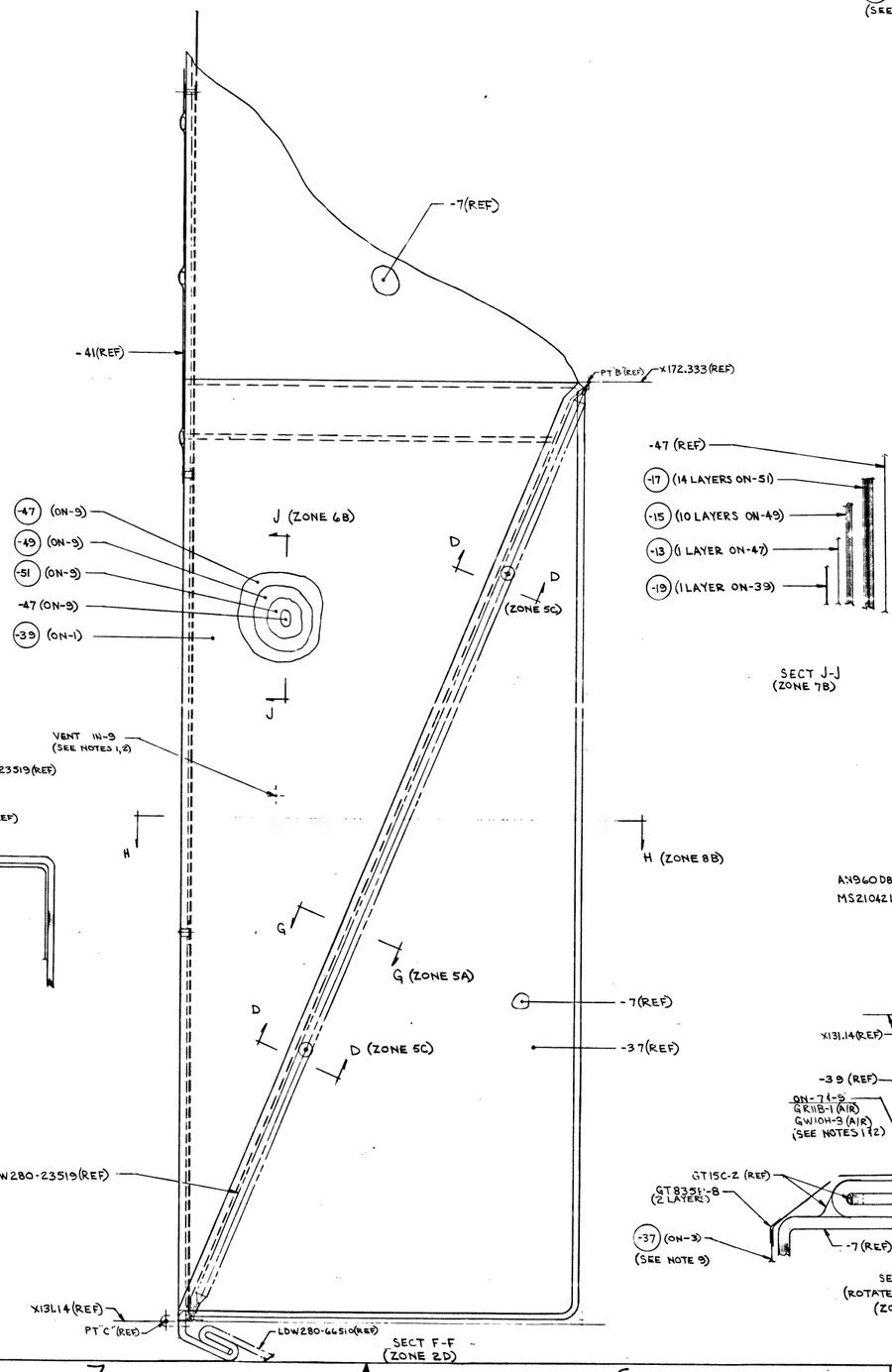


SECT A-A
(ZONE 3A & 3C)
(TYP 2 PLACES)

LDW280-58561-67(

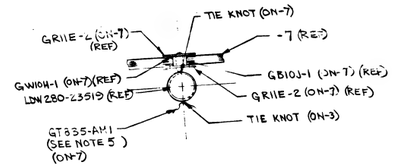


SECT K-K
(ZONE 3C)

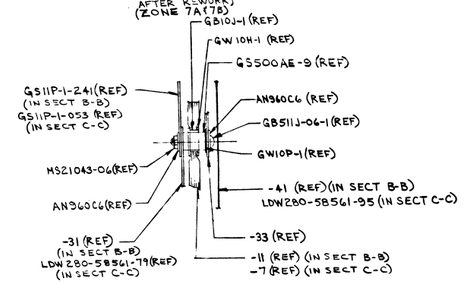


SECT F-F
(ZONE 2D)

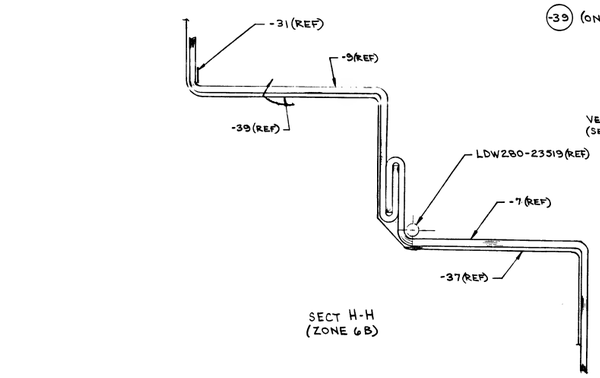
SECT J-J
(ZONE 7B)



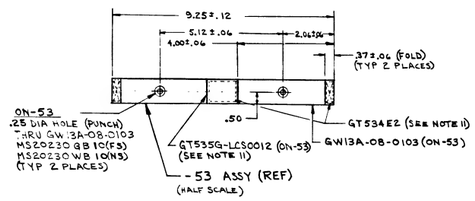
SECT D-D
(TYP 2 PLACES)
(RE-INSTALL HARDWARE AFTER REWORK)
(ZONE 7A/7B)



LDW280-58561-91(

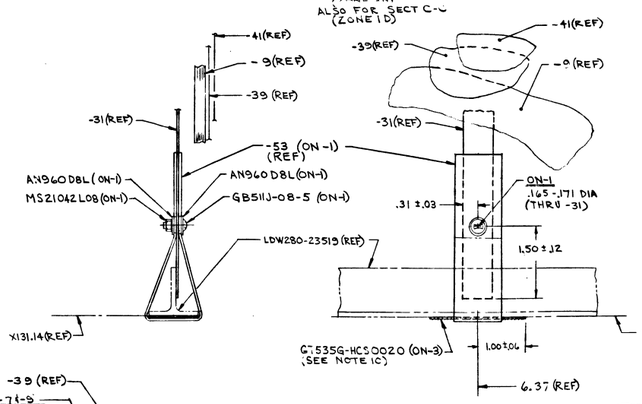


SECT H-H
(ZONE 6B)



SECT G-G
(ROTATED CLOCKWISE 60°)
(ZONE 7B)

SECT B-B SHW
ALSO FOR SECT C-C
(ZONE 1D)



DETAIL 'E'
(ZONE 3A)

INTERSECTION +Y81.00 & +Z27.00 (REF)

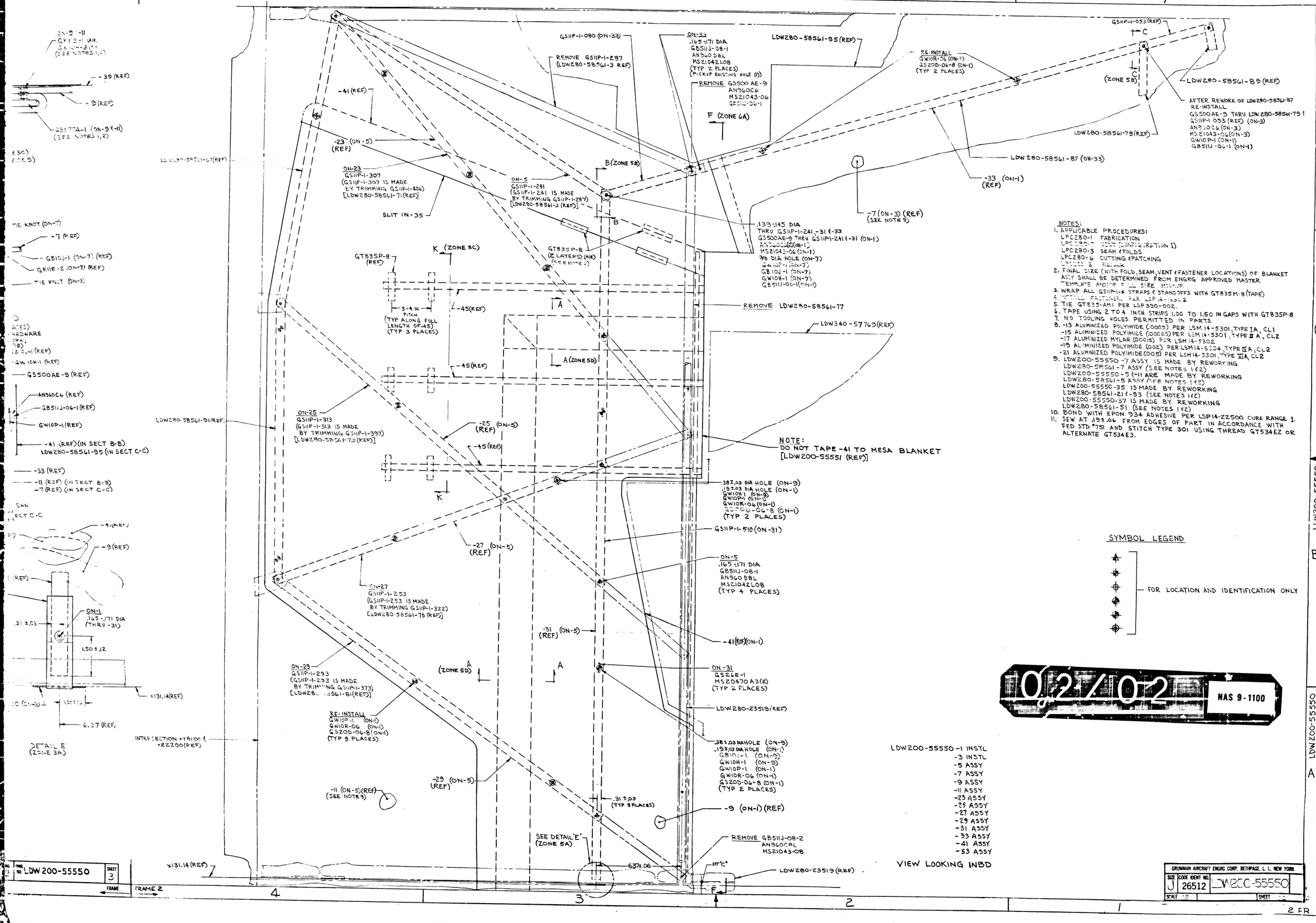
X:131.14 (REF)

CODE IDENT NO.	DWG NO.	SHEET
26512	LDW200-55550	3

FRAME 1 FRAME 2

01 / 02

NAS 9-1100



NOTES:
1. APPLICABLE PROCEDURES:
   LPC280-1 FABRICATION
   LPC280-2 TENT (CONFIGURATION 1)
   LPC280-3 SEAM & FOLDS
   LPC280-6 CUTTING & PATCHING
   LPC280-8 FASTENER
2. FINAL SIZE (WITH FOLD, SEAM, VENT & FASTENER LOCATIONS) OF BLANKET ASSY SHALL BE DETERMINED FROM ENGRG APPROVED MASTER TEMPLATE AND/OR FULL SIZE MOCKUP.
3. WRAP ALL GS11P-1-K STRAPS & STANDOFFS WITH GT835M-8 (TAPE)
4. INSTALL FASTENER PER LSP14-22502
5. TIE GT835-AMI PER LSP390-002.
6. TAPE USING 2 TO 4 INCH STRIPS 1.00 TO 1.50 IN GAPS WITH GT835P-8
7. NO TOOLING HOLES PERMITTED IN PARTS.
8. -13 ALUMINIZED POLYIMIDE (.0005) PER LSM14-5301, TYPE IA, CL1
   -15 ALUMINIZED POLYIMIDE (.00025) PER LSM14-5301, TYPE II A, CL2
   -17 ALUMINIZED MYLAR (.0015) PER LSM14-5302
   -19 ALUMINIZED POLYIMIDE (.002) PER LSM14-5304, TYPE IV A, CL2
   -21 ALUMINIZED POLYIMIDE (.005) PER LSM14-5301, TYPE III A, CL2
9. LDW200-55550-7 ASSY IS MADE BY REWORKING LDW280-58561-7 ASSY (SEE NOTES 1 & 2)
   LDW200-55550-5 & -11 ARE MADE BY REWORKING LDW280-58561-5 ASSY (SEE NOTES 1 & 2)
   LDW200-55550-35 IS MADE BY REWORKING LDW280-58561-21 & -93 (SEE NOTES 1 & 2)
   LDW200-55550-37 IS MADE BY REWORKING LDW280-58561-51 (SEE NOTES 1 & 2)
10. BOND WITH EPON 934 ADHESIVE PER LSP14-22500 CURE RANGE 1.
11. SEW AT .19±.06 FROM EDGES OF PART IN ACCORDANCE WITH FED STD #751 AND STITCH TYPE 301 USING THREAD GT534E2 OR ALTERNATE GT534E3.

SYMBOL LEGEND

FOR LOCATION AND IDENTIFICATION ONLY

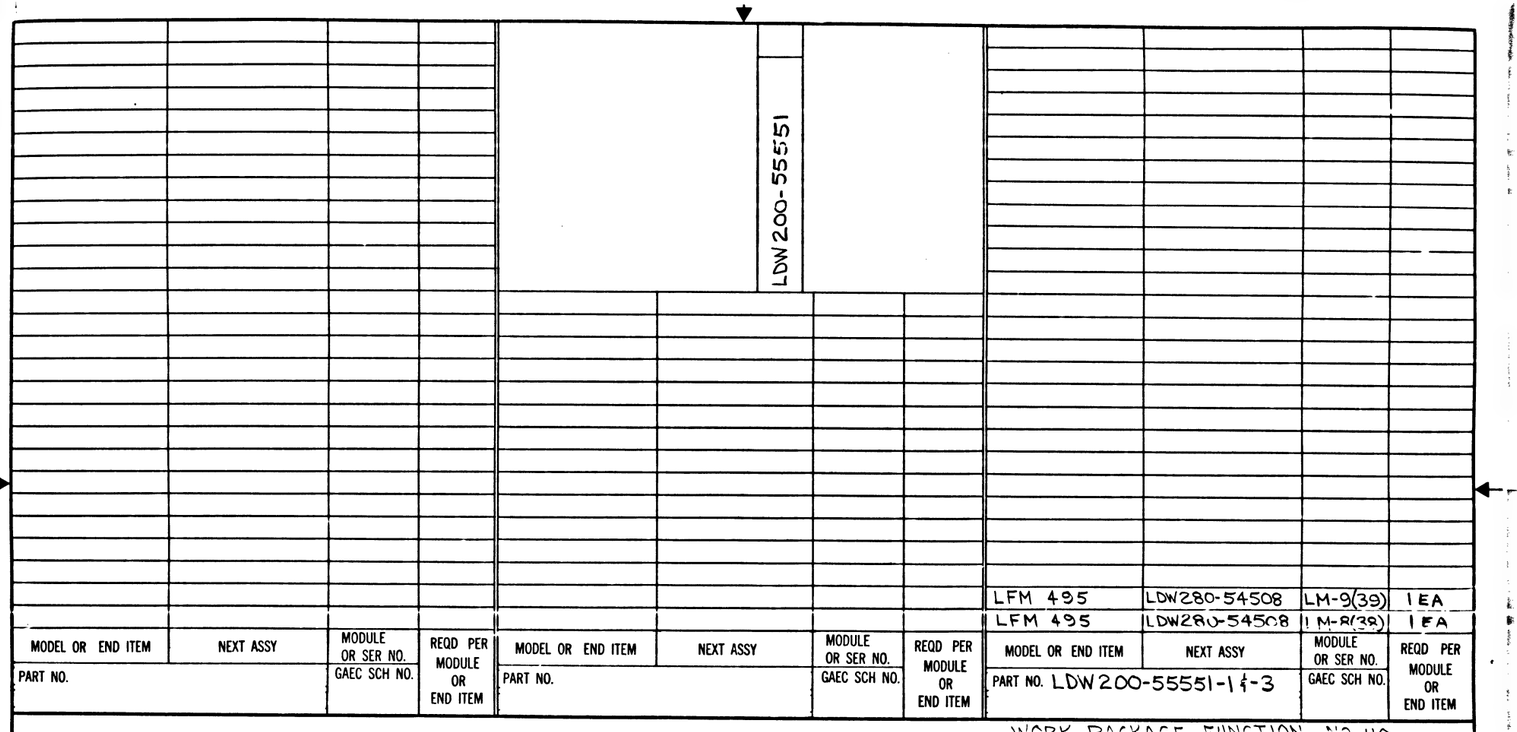
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NAS 9-1100

LDW200-55550-1 INSTL
-3 INSTL
-5 ASSY
-7 ASSY
-9 ASSY
-11 ASSY
-23 ASSY
-25 ASSY
-27 ASSY
-29 ASSY
-31 ASSY
-33 ASSY
-41 ASSY
-53 ASSY

VIEW LOOKING INBD

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK
SIZE J | CODE IDENT NO. 26512 | LDW200-55550
SCALE 3/2 | SHEET
2 FR



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	
LFM 495	LDW280-54508	LM-9(39)	1 EA
LFM 495	LDW280-54508	LM-8(39)	1 EA
PART NO. LDW200-55551-1 & -3		GAEC SCH NO.	

WORK PACKAGE FUNCTION NO. 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH											
SHEET	1.00										
REV											
SHEET	2.00										
REV											
SHEET	3.00										
REV											

LAST SECT LTR USED	C	GRUMMAN REL INFO	
LAST DASH NO. USED	-27	PRIM NO.	207

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES SEE NOTE 2

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	VDI
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 5201 PKG 60	

CONTRACT NO. NAS9-1100 | LINE ITEM | DOCUMENTATION TYPE II

DRAWN BY	V.A.CHRISTINA 6/8/70		
LAYOUT BY	V.A.CHRISTINA 6/8/70		
CHECKED BY	6-8-70		
GR LEADER	6/8/70		
STRUCTURE	Thorgison 6-8-70		
STRUCTURE	6/8/70	PROJ ENGR	Thorgison 6-8-70
THERMO	6/8/70	REL GROUP	6/9/70 pl

GRUMMAN AEROSPACE CORPORATION
BETHPAGE, L. I., NEW YORK

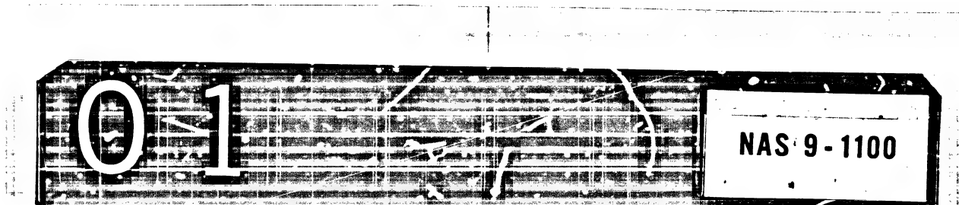
BLANKET INSTALLATION
DESCENT STAGE-STEREO CAMERA BRACKET~
PALLET (REWORK OF LDW280-54508 LFM 495)

SIZE	CODE IDENT NO.	
B	26512	LDW200-55551

SCALE NONE | SHEET 1.00 OF 3

ENG 77.1 12-65

CDR 06-08-70



QTY PER ASSEMBLY -25	-23	-21	-19	-7	-5	-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		AR							GT835E-8	E	TAPE	GRUMMAN STD						
			AR	AR					GW10H-3		WASHER							
			AR	AR					GR11B-1		RETAINER							
			AR	AR					GS577A-1		STAPLE							
	AR								GT835BE 8		TAPE							
AR									GT535B-2-1.00		TAPE							
							AR		GT15C-2		TAPE							
		AR	AR	AR	AR	AR	AR		GT835P-8		TAPE	GRUMMAN STD						
						1			LDW200-55551 -27		SKIN	(REWORK OF LDW280-58667-31) (SEE NOTE 6)				NONE	NONE	5A
					1				-25		BLANKET							3B
					1				-23		BLANKET							3B
					2				-21		BLANKET							3B
						1			-19		SKIN							3B
			AR						-17		INSULATION	(SEE NOTES 2,5)						5B
	AR								-15									5B
		AR							-13									5B
			AR						-11		INSULATION	(SEE NOTES 2,5)						5B
						1			-7		BLANKET ASSY	(REWORK OF LDW280-58667-3-1) (SEE NOTE 6)						3A
						1			-5		BLANKET ASSY	(DOOR)						3A
						1			-3		SHIELD INSTL							3A
									LDW200-55551 -1	E	SHIELD INSTL					NONE	NONE	3A

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW 200-55551

SCALE NONE SHEET 2.00

NG 77.2 7-64

01A

NAS 9-1100

NAS 9-1100

01/02

CODE IDENT NO	DWG NO	SHEET
26512	LDW200-55551	3

FRAME 1 — FRAME 2

VIEW LOOKING INBD

DETAIL "A"
(ZONE 1B)

LDW200-55551-1 INSTL
-3 INSTL
-5 ASSY
-7 ASSY

GT835P-8 (REF)

-7 (ON-3)
(SEE NOTE 6)

-27 (ON-3)
(SEE NOTE 6)

SECT C-C
(ZONE 2B)

-17 (1 LAYER ON-19)
-11 (1 LAYER ON-21)
-13 (4 LAYERS ON-23)
-15 (18 LAYERS ON-25)
-21 (REF)

B (ZONE 3D)

B

-19 (ON-1)
-21 (ON-5)
-23 (ON-5)
-25 (ON-5)
-21 (ON-5)

C (ZONE 5B)

C

VENT IN-3
(SEE NOTES 1,2)

LDW340-57769 (REF)

-5 (REF)

-19 (REF)

SECT B-B
(ZONE 3B)

-19 (REF)

-5 REF)

ON-5 &-7
GR-B-1 (A/R)
GWIRE-3 (A/R)
(SEE NOTES 1,2)

LDW340-57769 (REF)

-7 (REF)

ON-1
GR-5C-2 (A/R)
(SEE NOTE 1)

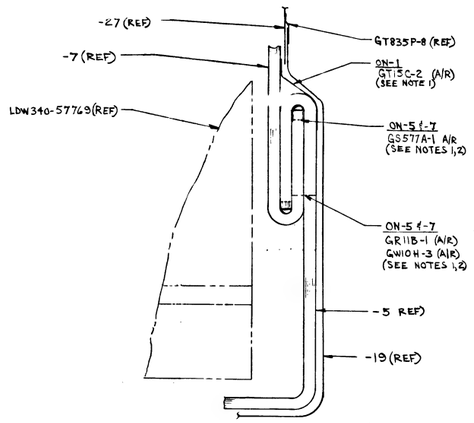
ON-5 &-7
G557A-1 A/R
(SEE NOTES 1,2)

-27 (REF)

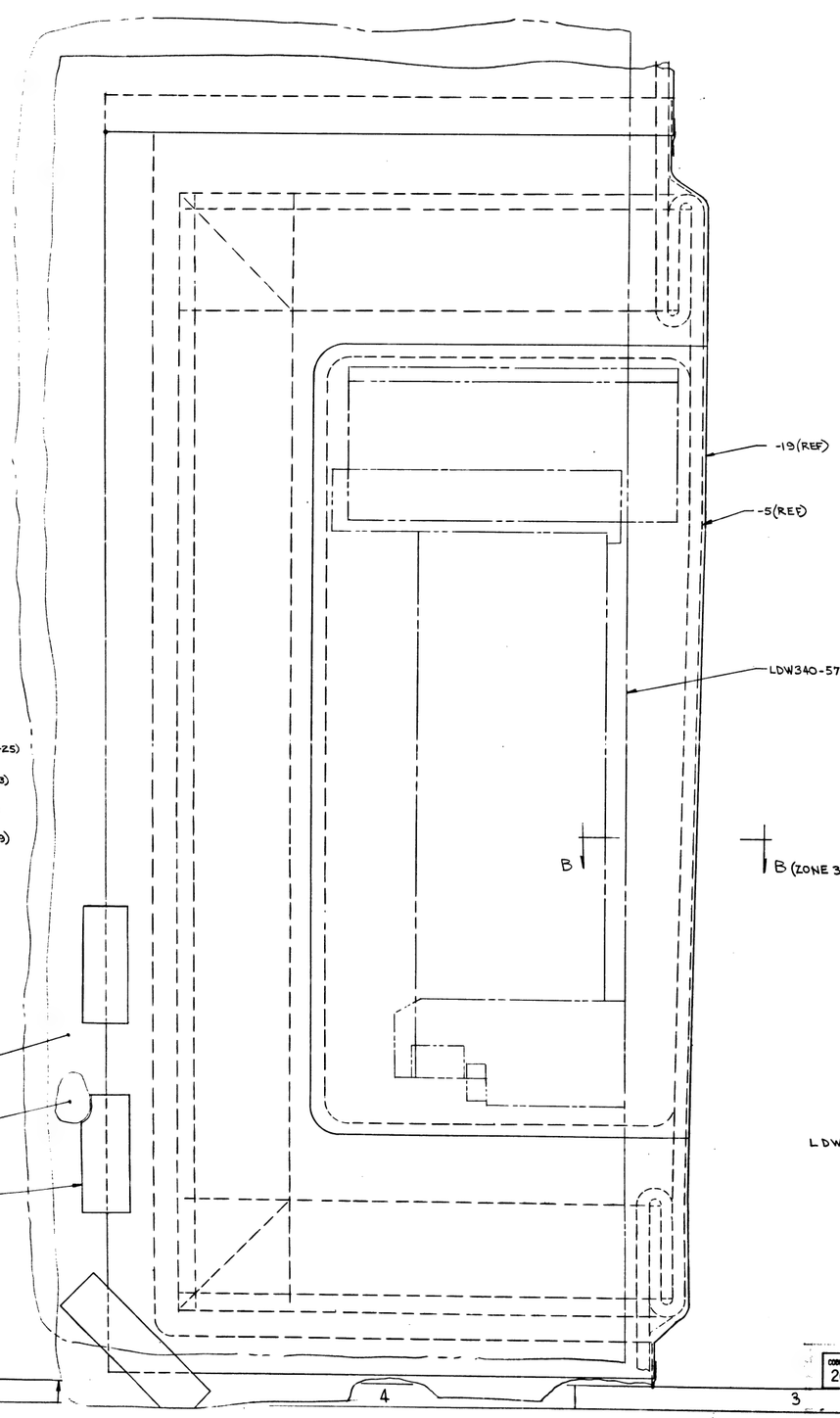
GT835P-8 (REF)

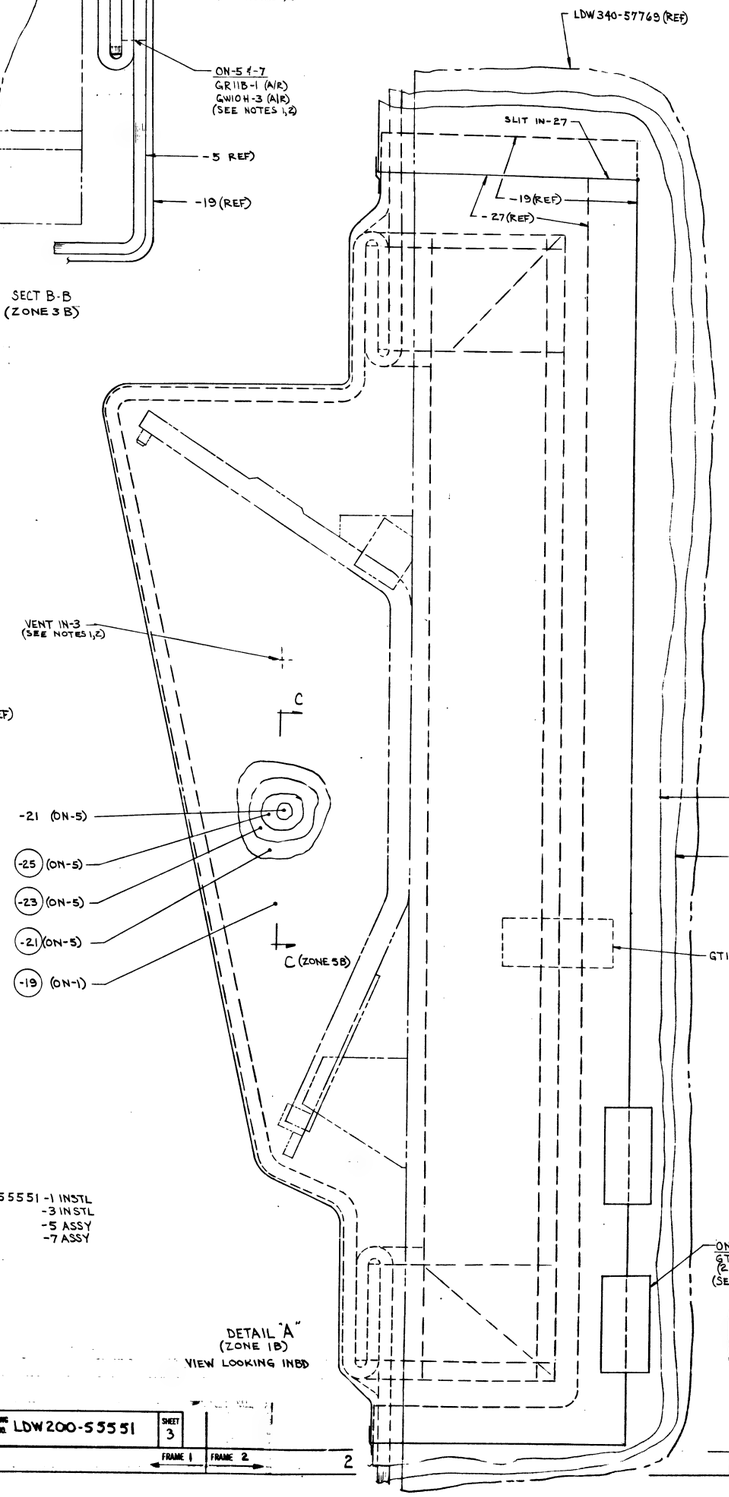
1 2 3 4 5 6

A B C D



SECT B-B
(ZONE 3 B)

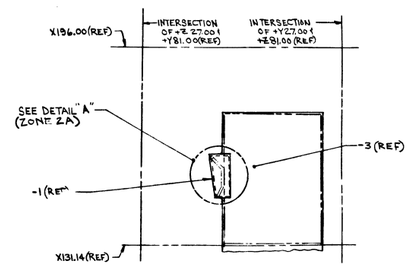




LDW200-55551 -1 INSTL
-3 INSTL
-5 ASSY
-7 ASSY

DETAIL "A"
(ZONE 1B)
VIEW LOOKING INBD

NOTES:
1. APPLICABLE PROCEDURES:
   LPC 280-1 FABRICATION
   LPC 280-2 VENT (CONFIGURATION 1)
   LPC 280-3 SEAM & FOLDS
   LPC 280-6 CUTTING & PATCHING
   LPC 280-8 REPAIR
2. FINAL SIZE (WITH FOLD, SEAM, VENT & FASTENER LOCATIONS) OF BLANKET ASSY SHALL BE DETERMINED FROM ENGRG APPROVED MASTER TEMPLATE AND/OR FULL SIZE MOCKUP.
3. TAPE USING 2 TO 4 INCH STRIPS 1.00 TO 1.50 IN GAPS WITH GT835P-8.
4. NO TOOLING HOLES PERMITTED IN PARTS.
5. -11 ALUMINIZED POLYIMIDE (.0005) PER LSM14-5301, TYPE IA, CL1
   -13 ALUMINIZED POLYIMIDE (.00025) PER LSM14-5301, TYPE II A, CL2
   -15 ALUMINIZED MYLAR (.0015) PER LSM14-5302
   -17 ALUMINIZED POLYIMIDE (.002) PER LSM14-5304, TYPE IV A, CL2
6. LDW200-55551-7 ASSY IS MADE BY REWORKING
   LDW280-58647-3-1 (SEE NOTE 1 f2)
   LDW200-55551-27 IS MADE BY REWORKING
   LDW280-58647-31 (SEE NOTES 1,f2)



QUAD IV
FOR ENGRG INFO ONLY

0 2 1 0 2

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	LDW200-55551
J	26512	
SCALE FULL		SHEET 3.00

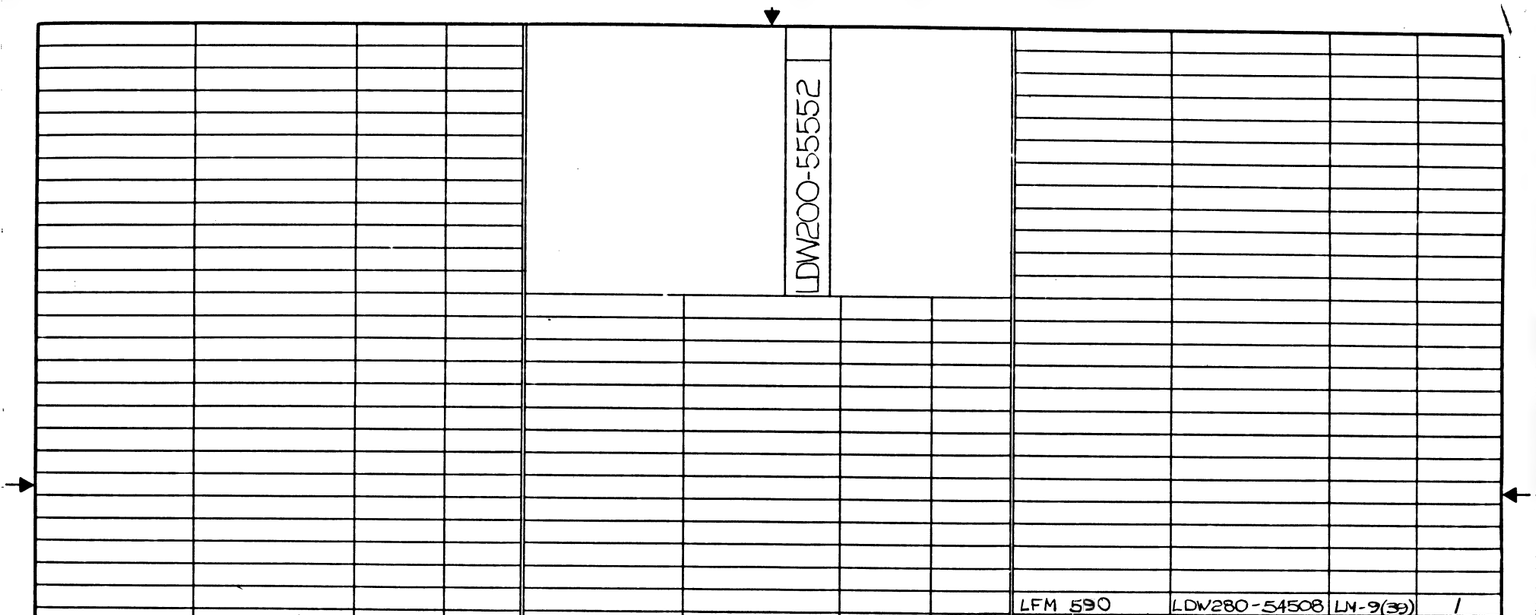
CODE IDENT NO.	DWG NO.	SHEET
26512	LDW200-55551	3

FRAME 1 FRAME 2

PRINTING INFO ONLY
FULL SIZE = 34 FT SQ (3.16 M²) 19 SQ FT
FULL SIZE SHEET = 44 FT SQ (4.09 M²) A/I SQ FT
½ SIZE SHEET = 22 FT SQ (2.04 M²)

LDW200-55551
LDW200-55551
LDW200-55551

2 FR



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM 590	LDW280-54508	LM-9(3B)	1
LFM 590	LDW280-54508	LM-8(3B)	1
PART NO. LDW200-55552-1		GAEC SCH NO.	

WORK PKG. FUNCTION * 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00		2.00	3.00					
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	A	GRUMMAN REL INFO	
LAST DASH NO. USED	-1	PRIM NO.	207

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
~~FRACTIONS~~ - DECIMALS – ANGLES
.XX ±.06 .XXX ±.030 ± ½°
ORIG DWG AUTH

DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD5568 PKG 50	

CONTRACT NO. NAS9-1100 | LINE ITEM | DOCUMENTATION TYPE III

DRAWN BY	A. GROSS			
LAYOUT BY	A. GROSS			
CHECKED BY				
GP LEADER		6-5-70		
VDI		6-5-70		
STRUCT			PROJ ENGR	R V PHILLIPS 6-5-70
STRUCT	NM	6-5-70	REL GROUP	6/5/70

GRUMMAN AEROSPACE CORPORATION
BETHPAGE, L. I., NEW YORK

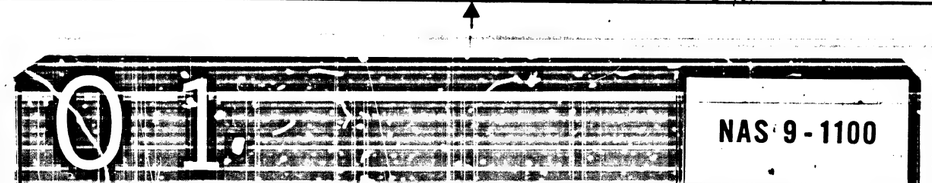
SHIELD INSTL~ DESCENT STAGE
PROPELLANT TANK COVER
METEOROID PROTECTION (REWORK OF LDW280-54508)

SIZE	CODE IDENT NO.	
B	26512	LDW200-55552

SCALE NONE | SHEET 100 OF 3

ENG 77.1 12-65

CDR 06/05/70



QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
A/R		MS21266-1N	E	GROMMET	GOVT STD						
		LDW200-55552-1	E	SHIELD INSTL					NONE	NONE	5A
-1											

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

ENG 77.2 7-64

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

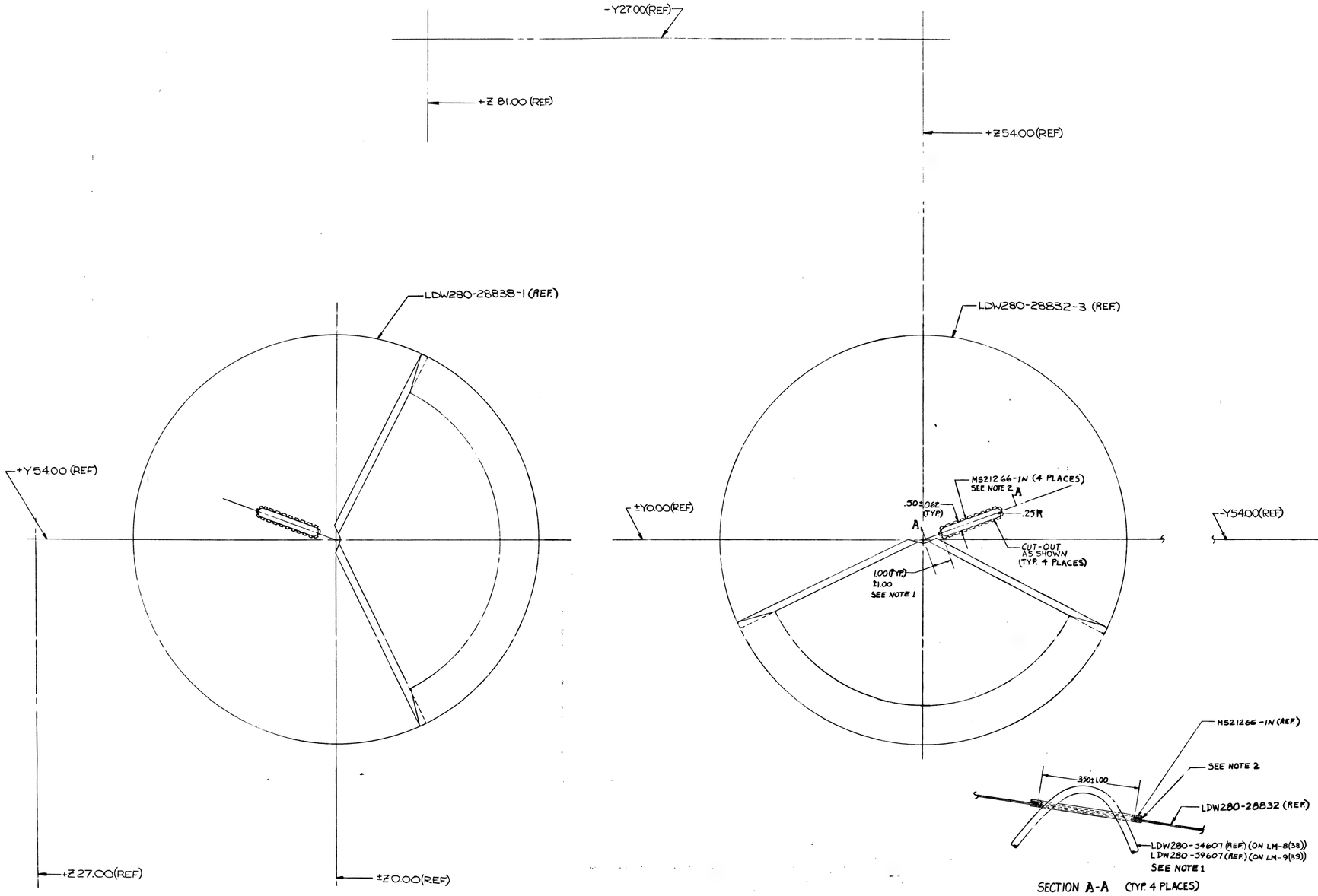
GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55552

SCALE NONE SHEET 2.00

Q-1

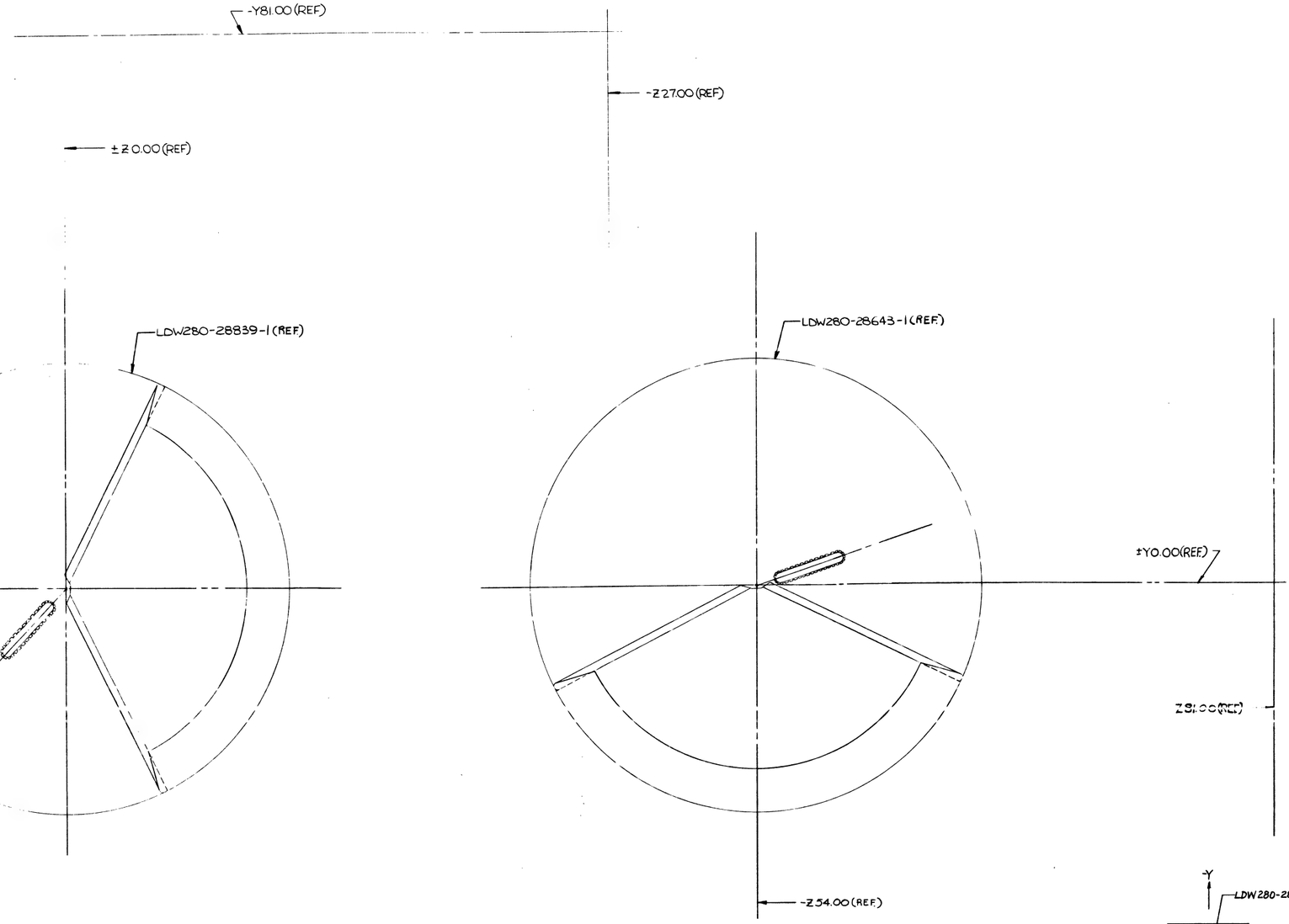
NAS 9-1100



SECTION A-A (TYP. 4 PLACES)
(SCALED FOR CLARITY)

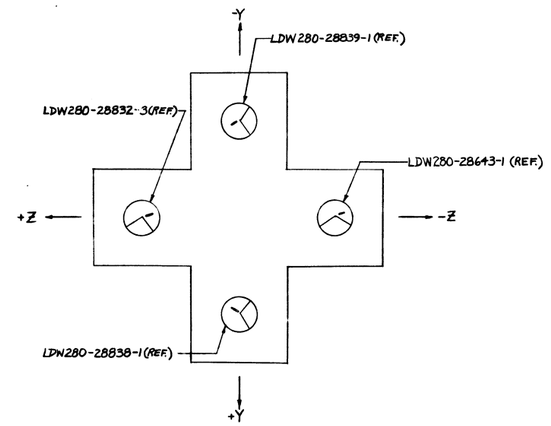
LDW200-55552-1 INSTL.
VIEW LOOKING UP

01702 NAS 9-1100



NOTES:

1. LOCATE AROUND P.Q.G.S. LINES RUN ON INSTL.
2. BOND IN ACCORDANCE WITH GBITB



VIEW LOOKING UP

LDW200-55552-1 INSTL. (REF.)

1266-IN (REF.)

OTE 2

0-28832 (REF.)

E.F.) (ON LM-8(38))
E.F.) (ON LM-9(39))

2-1 INSTL.
G UP

02/02 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I. NEW YORK			
SIZE	CODE IDENT NO.	LDW200-55552	
SCALE 1/2		SHEET 3 OF 3	

LDW200-55552 B

LDW200-55552 A

LDW200-55553

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW200-55553-15-3		GAEC SCH NO.	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SHBQ SH									
SHEET	1.00	2.00	3.00	4.00					
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REF INFO
LAST DASH NO. USED	- 3	PRIM NO. 480

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE ✓
LCD 5563

CONTRACT NO. NAS-9-1100 | LINE ITEM | DOCUMENTATION TYPE

DRAWN BY	J. Perez 7-15-70		
LAYOUT BY			
CHECKED BY	C.W. Bath 7-16-70		
LIAISON	C. Hedy 7-16-70		
STRESS	J ALBANESE 7/16/70		
PROPULSION	K Bath 7/16/70	PROJ ENGR	
		REL GROUP	J Bath 7-16-70

(P)

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SENSING UNIT INSTL, REWORK
PROPULSION FEED SYSTEM
PROPELLANT TANK-DESCENT

SIZE	CODE IDENT NO.	
B	26512	LDW200-55553

SCALE NONE | SHEET 1 OF 4

ENG 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY			CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
AR	AR			MS20995C32	E	LOCK WIRE	STD. PART						
	AR			LED520-35	E	SEALANT(VISTANEX)	SEE NOTE 4						
AR				LED520-34	E	SEALANT(NITROSE)	SEE NOTE 4						
1	1			GS13AK-147	E	'O' RING SEAL	GRUMMAN STD						
8	8			LDW270M10033-13	E	BOLT	SEE DWG						
1	1			LDW270M15563-11	E	RING	SEE DWG						
1				LDW270-56542-3-3	E	SENSING UNIT	SEE DWG						
	1			LDW270-56542-1-2	E	SENSING UNIT	SEE DWG.						
				LDW200-55553-3	E	SENSING UNIT	INSTL. - OXIDIZER				NONE	NONE	
				LDW200-55553-1	E	SENSING UNIT	INSTL. - FUEL				NONE	NONE	
-3	-1												

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55553

SCALE NONE SHEET 2

ENG 77.2 7-65

01

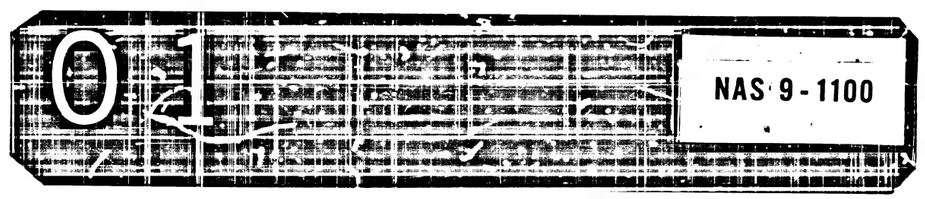
NAS 9-1100

NOTES:

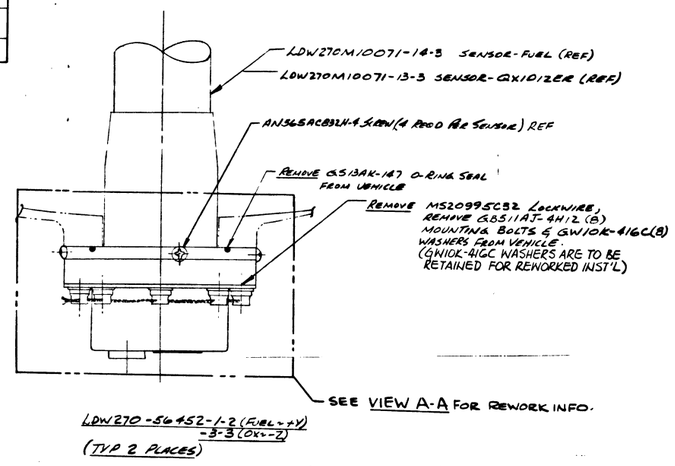
1. INSTALL ALL BOLTS FINGER TIGHT & TORQUE IN SEQUENCE AS FOLLOWS:
   a) PHYSICAL LOCATION FOR START OF SEQUENCE (BOLT #1) IS OPTIONAL.
   b) TORQUE ALL BOLTS PER SEQUENCE TO 14-16 INCH POUNDS)
   c) REPEAT STEP b) ABOVE APPLYING 28-30 INCH-POUNDS & THEN 48 TO 50 INCH POUNDS.
   d) REPEAT STEP b) ABOVE APPLYING 70-75 INCH-POUNDS FOR FINAL TORQUE. TORQUE TO HIGH LIMIT.
2. AFTER INITIAL INSTALLATION, THE BOLT PATTERN MUST BE SEQUENTIALLY RETORQUED TO THE FINAL TORQUE VALUE OF 70-75 INCH-POUNDS AT 72 HOUR INTERVALS. THIS PROCEDURE SHALL BE REPEATED TWICE, I.E. THE INITIAL INSTL PLUS TWO (2) RETORQUES.
3. BOLTS SHALL BE SAFETIED PER MS33540 FOLLOWING THE SECOND RETORQUE CYCLE (144 HOURS AFTER INITIAL INSTL).
4. ON-1 INSTL (FUEL) APPLY LED 520-55 VISTANEX SEALANT AT THESE THREADED HOLES, &
5. ON-3 INSTL (OXIDIZER) APPLY LED 520-34 NITROSO SEALANT IN ACCORDANCE WITH LPC 280-46. 'O' RING MINOR DIAMETER FOR EACH SENSOR TO BE ESTABLISHED IN ACCORDANCE WITH LPC 280-42.
6. TO PRECLUDE POSSIBLE CONTAMINATION OF ALUMINUM SENSORS RESULTING FROM EXPOSURE TO REFEREE PROPELLANTS, SENSORS SHALL NOT BE INSTALLED IN VEHICLES UNTIL VEHICLE HAS COMPLETED COLD FLOW ONE (1) TESTING.

GRUMMAN AEROSPACE CORPORATION BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW200-55553	
SCALE NONE		SHEET 3	

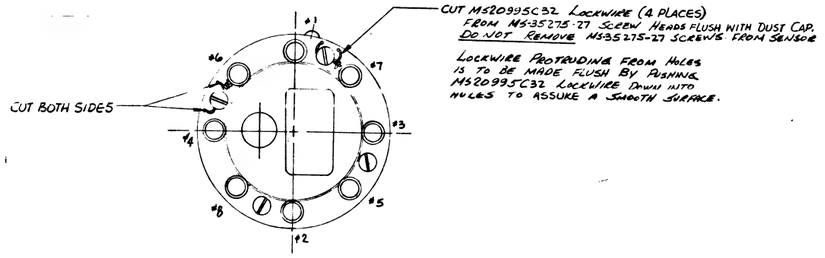
ENG 79.1 6-64

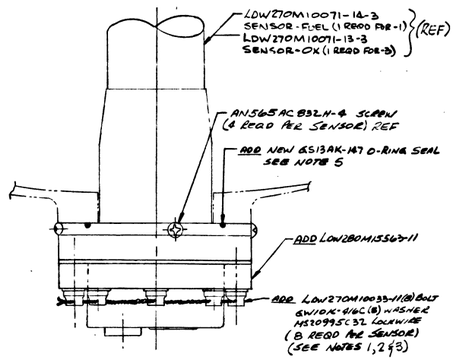


SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊏⊐ USE BOTH SIDES IF NECESSARY	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL RIVETS IN ACCORDANCE WITH	



LDW270-56452-1-2 (FUEL +Y)
-3-3 (OX -Z)
(TYP 2 PLACES)





VIEW A-A
(TYP 2 PLACES)
LDW200-55553-1 (FUEL +Y)
-3 (OX -Z)

GRUMMAN AEROSPACE CORPORATION BETHPAGE, NEW YORK 11714		
SIZE D	CODE IDENT NO. 26512	LDW200-55553
SCALE NONE		SHEET 4

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200-55553 | EO NO. A1

CONTROL INFO NO. LM-5-22997

ON-1 & -3, IN FLD VIEW A-A,

LDW270M10033-13(8) REQD WAS
LDW270M10033-11(8) REQD

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG
		4LCO 5568

REASON FOR EO: DUE TO RE-DESIGN OF PQGS LONGER GRIP LENGTH BOLT REQ'd.

DESCRIPTION OF EO: ON-1 & -3 LDW270M10033-13(8) WAS LDW270M10033-11(8)

GAEC EO RELEASE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP	APPROVED BY / DATE	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
LM	LEM 590	LM-8 (38)		✓		✓		RJT 7-22-70			7/21/70	7/14/70	7/14/70	7/15/70
								7-16-70 VDI				KC	KC	7-16-70

PRIORITY: C

DRAWING TITLE: SENSING UNIT INSTL-REWORK PROP. FEED SYSTEM-PROP TANK D/S.

DRAWING NO.: LDW200-55553 | EO NO.: A1

ISSUED BY: [illegible] S. GRECO X86755 SECTION V.D.I. GROUP NO. 335 PL 25

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LOW200-55553 | EO NO. A2
CONTROL INFO NO. LM-5-23023

ON-1 & -3

IN FLD, ZONE B7,

LOW270-56452-1-2(FUEL+Y)
-1-2(FUEL-Y)
-3-3(OX-Z)
LOW270-56452-3-3(OX+Z)
(TYP 4 PLACES)

WAS

LOW270-56452-1-2(FUEL+Y)
-3-3(OX-Z)
(TYP 2 PLACES)

IN FLD VIEW A-A, ZONE 03
LOW270M10071-14-3 SENSOR-FUEL (2 REQD FOR-1) WAS (1 REQD FOR-1) REF
LOW270M10071-13-3 SENSOR-OX (2 REQD FOR-3) WAS (1 REQD FOR-3) REF

IN FLD & B/M - FOR -1 & -3, VIEW A-A,
LOW280M15563-11 (2) WAS LOW280M15563-11(1)
LOW270M10033-13 (16) SEE NOTE * WAS LOW270M10033-13(1)
LOW270-56452-1-2 (2) WAS LOW270-56452-1-2(1)
LOW270-56452-3-3 (2) WAS LOW270-56452-3-3(1)
GS13AK-147 (2) WAS GS13AK-147 (1)

ADD NOTE *
AS AN ALTERNATE GS511AJ-4H20 BOLTS MAYBE SUBSTITUTED FOR LOW270M10033-13. SAME TORQUE VALUES APPLY TO BOTH TYPE BOLTS (REF NOTE 1.)

IN M/B

LOW200-55553-1 & -3 N/A LOW280-54900 (2 EA REQD) WAS (1 EA REQD)

EFF: LM-8 (38) & LM-9 (39) WAS LM-8 (38) - LFM-590
LFM-590

IN VIEW A-A, ZONE B3

LOW200-55553-1 (FUEL+Y)
-1 (FUEL-Y)
-3 (OX+Z)
LOW200-55553-3 (OX-Z)

WAS

LOW200-55553-1 (FUEL+Y)
-3 (OX-Z)

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | LCD 5568 'B' CHG.

REASON FOR EO: TO INSURE AGAINST PRGS SEAL LEAK

DESCRIPTION OF EO: ON-1, & -3 NOTED ABOVE

GAEC EO RELEASE

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM570	LM-8(38) &	
	LFM590	LM-9(39)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: REWORK | SCRAP ✓
APPROVED BY: DATE 7-21-70 | SUPPORT | RELIAB. GROUP
GROUP LEADER 7/31/70 | STRESS GROUP 7/21/70 | LIAISON ENGRG 7/24/70 | PROJ ENGRG 7/31/70 | 7-27-70

PRIORITY C
DRAWING TITLE: SENSING UNIT ASSY, REWORK - PROP. FEED SYSTEM - PROP. TK. DIS
DRAWING NO. LOW200-55553
EO NO. A2

ISSUED BY LIAISON S. GRECO 24755 SECTION V.O.I. GROUP NO. 335 PL 25

NAS 9-1100

GRUMMAN AEROSPACE CORPORATION

CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG NO. LOW200-55553 | EO NO. A3

CONTROL INFO NO. LM-5-23037

IN FLD, M/B & B/M,

CREATE LOW200-55553-5 & LOW200-55553-7 IDENTICAL TO LOW200-55553-1 & LOW200-55553-3 RESPECTIVELY, EXCEPT LOW270-25452-1-1 & LOW270-25452-3-1 REPLACES LOW270-56452-1-2 & LOW270-56452-3-3 RESPECTIVELY.
ADD IN M/B N/A LOW280-60900 FOR -5 & -7 (2EA)

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | LLD 5568 'B' CHG

REASON FOR EO: TO INSURE AGAINST POOR SEAL LEAK

DESCRIPTION OF EO: CREATED -5 & -7 IDENTICAL TO -1 & -3 RESP. EXCEPT LOW270-25452-1-1 & LOW270-25452-3-1 REPLACES LOW270-56452-1-2 & LOW270-56452-3-3 RESP

GAEC EO RELEASE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LEM 590	LTA-5/R(15V)	

DRAWING CHANGE REQD: ✓ REVISE DWG | RECORD EO

DISPOSITION OF PARTS: NOT REQD REWORK | SCRAP

APPROVED BY / DATE: 7-22-70 | SUPPORT | RELIAB GROUP | GROUP LEADER 7/23/70 | STRESS GROUP 7/23/70 | LIAISON ENGRG 7/23/70 | PROJ ENGRG 7/23/70

PRIORITY: C

DRAWING TITLE: SENSING UNIT INSTL REWORK — PROP. FEED SYSTEM — PROP. TK D/S

DRAWING NO.: LOW200-55553

EO NO.: A3

ISSUED BY LIAISON S. GRECO X86755 SECTION U.D.I. GROUP NO. 335 PL 25

01

NAS 9-1100

GRUMMAN AEROSPACE CORPORATION

CODE IDENT NO. 26512

ENGINEERING ORDER

DWG NO. LDW200-55553 | EO NO. A4

CONTROL INFO NO. LM 270-1447

BNG 32.1 REV 3-65

FOR LM-8 (38) ONLY

DELETE: -3

EFF: LFM #583 N/A LDW 280-54900 QTY 1 LM-8 (38)

ADD: -3

EFF: LFM #583 N/A LDW 280-54900 QTY 1 LM-8 (38)

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD 5520 PKG 2

4 MODIFIED SENSORS INSTALLED ON LM-8 INSTEAD OF 3.

DESCRIPTION OF EO: NOTED ABOVE

GAEC EO RELEASE

MODEL	EFFECTIVITY: ~~PROCURING ACTIVITY NO.~~	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 583	LM-8 (38)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: REWORK ✓ | SCRAP

APPROVED BY / DATE: PROP | SUPPORT | RELIAB GROUP | GROUP LEADER | STRESS GROUP | LIAISON ENGRG | PROJ ENGRG

PRIORITY: C

DRAWING TITLE: SENSING UNIT INSTL. REWORK - PROP. FEED SYST. PROP. TK. D/S

DRAWING NO.: LDW200-55553

EO NO.: A4

ISSUED BY B.Z ANG X1472 14 SEPT 1970 SECTION LM PROPULSION DESIGN GROUP NO. 345 PL 39

01

NAS 9-1100

LDW200-55554

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
		GAEC SCH NO.	
PART NO.			

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
		GAEC SCH NO.	
PART NO.			

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
		GAEC SCH NO.	
PART NO. LDW200-55554-1	LFM606	LDW280-60508	LM-13(43) 1
	↕	↕	LM-12(42) 1
	↕	↕	LM-11(41) 1
	↕	LDW280-60508	LM-10(40) 1
	↕	LDW280-54508	LM-9(39) 1
	LFMG06 _	LDW280-54508	LM-8(38) 1

WORK PACKAGE FUNCTION NO. 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00			2.00		3.00	4.00		
REV									
SHEET									
REV									
SHEET									
REV									
LAST SECT LTR USED	B	GRUMMAN REQ'D							
LAST DASH NO. USED	-1	PRIM NO.							
		240	???	???					

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓ LCD5531 PKG5

CONTRACT NO. NAS9-1100			LINE ITEM	DOCUMENTATION TYPE II
DRAWN BY	J. ROGERS / J. BOHUN			
LAYOUT BY	J. ROGERS / J. BOHUN			
CHECKED BY	AP 8/17/70			
GR. LDR	[signature] 8/17/70			
GR. LDR	[signature] 8/17/70			
VDI	[signature] 8-20-70	PROJ ENGR	[signature] 9-21-70	
STRUCT		REL GROUP	[signature] 9-21-70	
STRUCT	[signature] 8/21/70			

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

S He TANK REPLACEMENT ~ DESCENT STAGE ~ AFTER LM/SLA MATE

SIZE	CODE IDENT NO.	
B	26512	LDW200-55554
SCALE	NONE	SHEET 1.00 OF 4

ENG 77.1 12-68

LCD5531 PKG5 CDR 9-18-70

0-1

NAS 9-1100

QTY PER ASSEMBLY	PART NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
N 1	LSC269-504-4	E		SEAL	SEE NOTE 16						
N 1	-252-2			TEE	↕						
N 1	-224-4			UNION							
N 4	-218-8			UNION							
N 1	LSC269-218-6			UNION	SEE NOTE 16						
	LDW280-17388										
L 1	-567			WELDED ASSY	SEE DWG						
L 1	-339DSH-8			TUBE	↕						
L 1	-338DSH-8			TUBE							
L 1	-337DSH-8			TUBE	SEE DWG						
	LDW280-17388										
	LDW200-55554-1	E		REPLACEMENT INSTL							
CL -1											

CL=CLEANLINESS LEVEL/LSP14-0011

SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH NONE

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

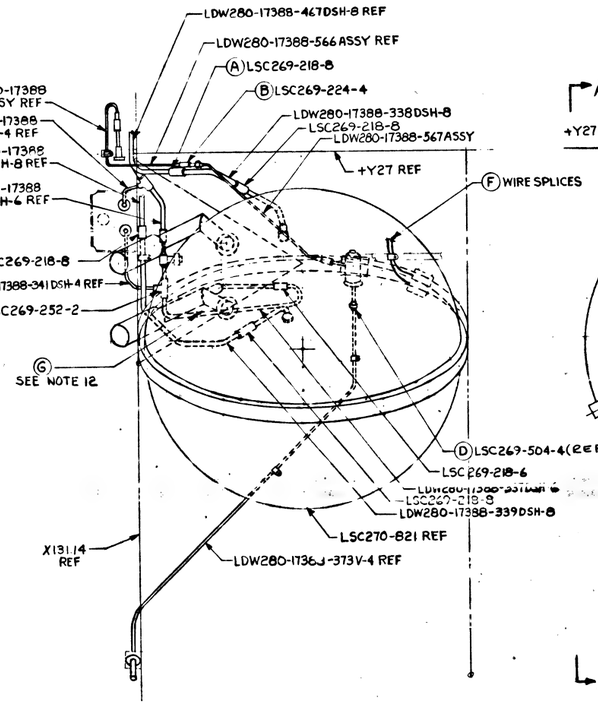
SIZE	CODE IDENT NO.	
B	26512	LDW200-55554

SCALE NONE SHEET 2.30

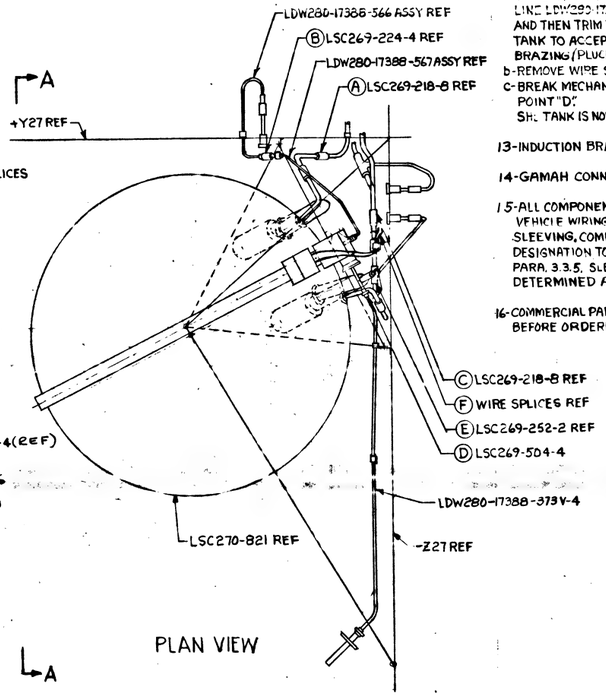
ENG 77.2 5-64

051

NAS 9-1100



VIEW A-A



PLAN VIEW

11- REPLACEMENT SHe TANK PREPARATION FIXTURE LSC270-821-13 BZF2 IS USED FOR ALIGNMENT AND BRAZING OF THE FOUR (4) LINES BEFORE TANK IS INSTALLED ON VEHICLE. LINE NUMBERS LDW280-17388-337 DSH-6, -338DSH-8, AND -339 DSH-8 ARE BRAZED TO THE THREE (3) TANK STUBS AND LDW280-17388-567 ASSY IS BRAZED TO TEST PORT ON DUAL BURST DISC ASSY. SHe TANK IS NOW READY FOR INSTALLATION.

12- SHe TANK REMOVAL PREPARATION TANK REMOVAL ON VEHICLE SHOULD BE DONE AS FOLLOWS:-
a- PLUCK BRAZED FITTINGS AT POINTS A, B, C & E.
NOTE: POINT 'E' MAY BE DIFFICULT TO PLUCK AND RE-BRAZE. AN ALTERNATE SOLUTION WOULD BE TO CUT LINE LDW280-17330-337DSH-6 AS SHOWN AT POINT "G" AND THEN TRIM THAT SAME LINE ON REPLACEMENT TANK TO ACCEPT AN LSC269-218-6 FITTING FOR BRAZING (PLUCK BRAZED LINES PER LSP14-6306)
b- REMOVE WIRE SPLICES AT POINT "F"
c- BREAK MECHANICAL (GAMAH) CONNECTION AT POINT "D".
SHe TANK IS NOW READY FOR REMOVAL FROM VEHICLE.

13- INDUCTION BRAZE FITTINGS PER LSP14-6303

14- GAMAH CONNECTIONS PER LSP14-17402

15- ALL COMPONENT PIGTAILS WHICH SPLICE INTO VEHICLE WIRING SHALL BE COVERED WITH GS830CF SLEEVING, COMPONENT ELECTRICAL REFERENCE DESIGNATION TO BE HOT STAMPED PER LSP390-002 PARA. 3.3.5. SLEEVING SIZE AND LENGTH TO BE DETERMINED AT FABRICATION.

16- COMMERCIAL PART, SEE SPECIFICATION CONTROL DWG BEFORE ORDERING

D/S SHe TANK REPLACEMENT PROCEDURE AFTER LM/SLA MATE

1- PREPARE REPLACE TANK PER NOTE 11

2- REMOVE PAYLOAD SUPPORT STRUCTURE LDW280-60560-1 (NOT ON LM8 & LM9) (SHEET 4)

3- REMOVE THERMAL SHIELDING (DETAIL 'B' SHT 4)
LM8 & LM9 ACCESS COVERS LDW280-58817-1, LDW280-58651-1
LDW280-58815-1
QUAD SHIELDING & SUPPORT STRAPS LDW280-58661-1
CATENARY BLANKETS (AS REQ'D) LDW280-66510-1
LM 10 & SUBQ ACCESS COVERS LDW280-60817-1, LDW280-60651-1
LDW280-60815-1
QUAD SHIELDING & SUPPORT STRAPS LDW280-60666-1
CATENARY BLANKETS (AS REQ'D) LDW280-60511-1

4 INSTALL GSE HOIST AND SLING LDW420-63010 TO SUPPORT TANK.

5 REMOVE TANK SUPPORT STRUCTURE LDW280-23580-9 (SEE SHT 4) INDIVIDUALLY TAG & BAG EACH UPON REMOVAL)
a- REMOVE UPPER BIPOD/TANK ATTACHMENT BOLT LDW280M17360-7 (1)
b- REMOVE UPPER BIPOD/VEHICLE ATTACHMENT BOLTS & NUTS LDW280M17344-7 (2) & -9 (3)
C- REMOVE UPPER BIPOD ASSY
d- REMOVE LOWER BIPOD/TANK ATTACHMENT BOLT LDW280M17360-5 (4)
e- REMOVE LOWER BIPOD/VEHICLE ATTACHMENT BOLTS & NUTS LDW280M17344-3 (5) & -1 (6)
F- REMOVE LOWER BIPOD ASSY.
G- REMOVE INBOARD VERTICAL BIPOD/VEHICLE LOWER ATTACHMENTS LDW280M17344-5 (2) (7)

6- PREPARE TANK FOR REMOVAL PER NOTE 12.

7- LIFT AND REMOVE SHe TANK FROM QUAD AND LOWER ON TO GSE PEDESTAL

8- INSTALL GSE RAILS, TRANSFER TANK TO RAILS AND REMOVE TANK FROM SLA.

9- REMOVE INBOARD VERTICAL BIPOD FROM OLD TANK LDW280M17360-5 (8) AND ATTACH TO REPLACEMENT TANK.

10- RETRACE STEPS 8 THRU 2 & INSTALL PER VEHICLE DWGS.

REVISIONS

ZONE	LTR	DESCRIPTION	EFF CODE	MODEL	DATE	APPROVED

0.1

NAS 9-1100

FOR PARTS LIST, USAGE DATA, AND DWG SH STATUS, SEE DOCUMENT SAME NUMBER PREFIXED PL

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES
LINEAR TOL .XX ± .03 .XXX ± .010
ANGULAR TOL ± 1°-00'
TOL ON LOFTED DELINEATIONS IS

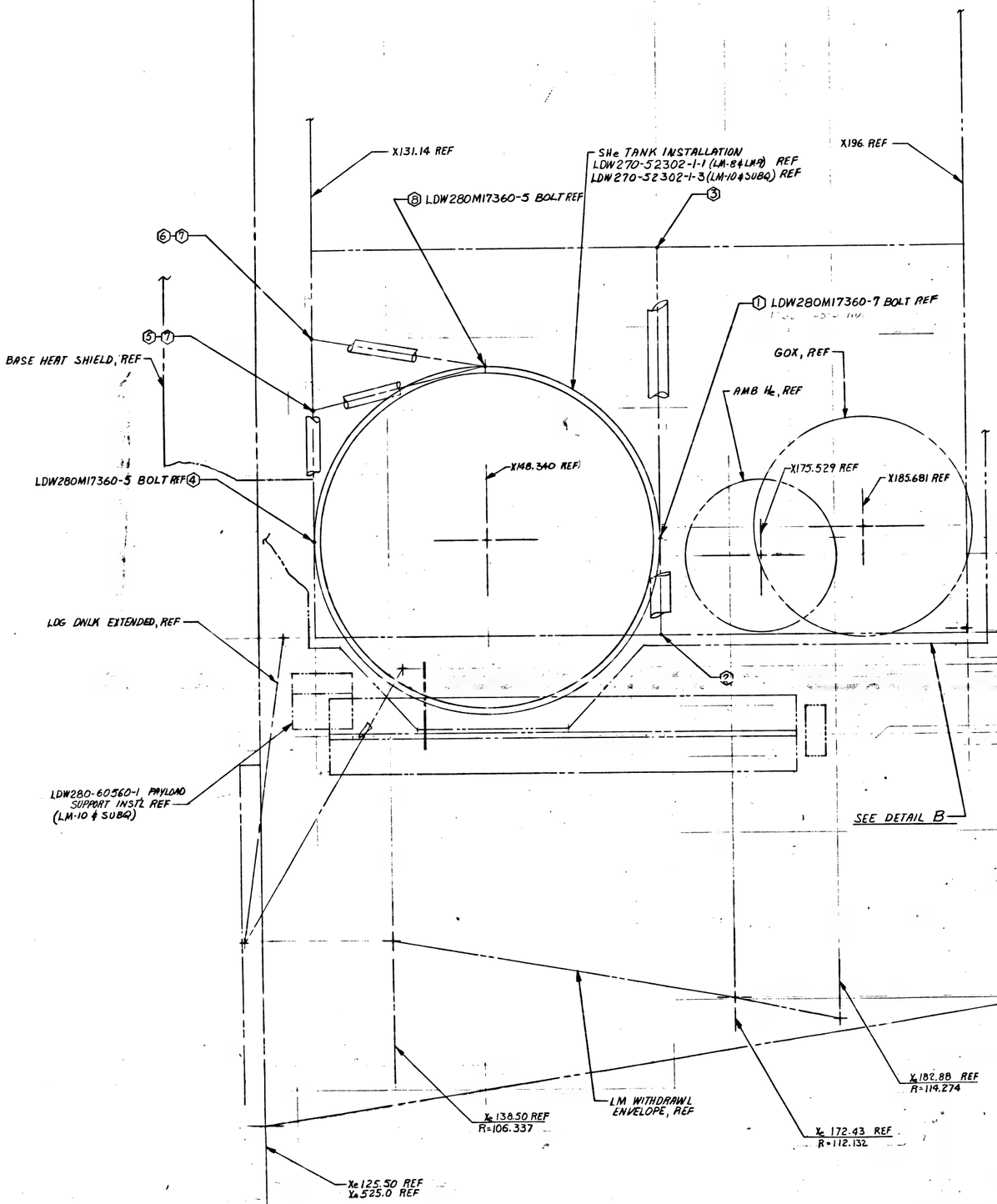
CONTRACT NO.
DRAWN BY
LAYOUT BY
CHECKED BY
SR. LEADER
REL. ENGR.
PROJ. ENGR.
GOVT APPD

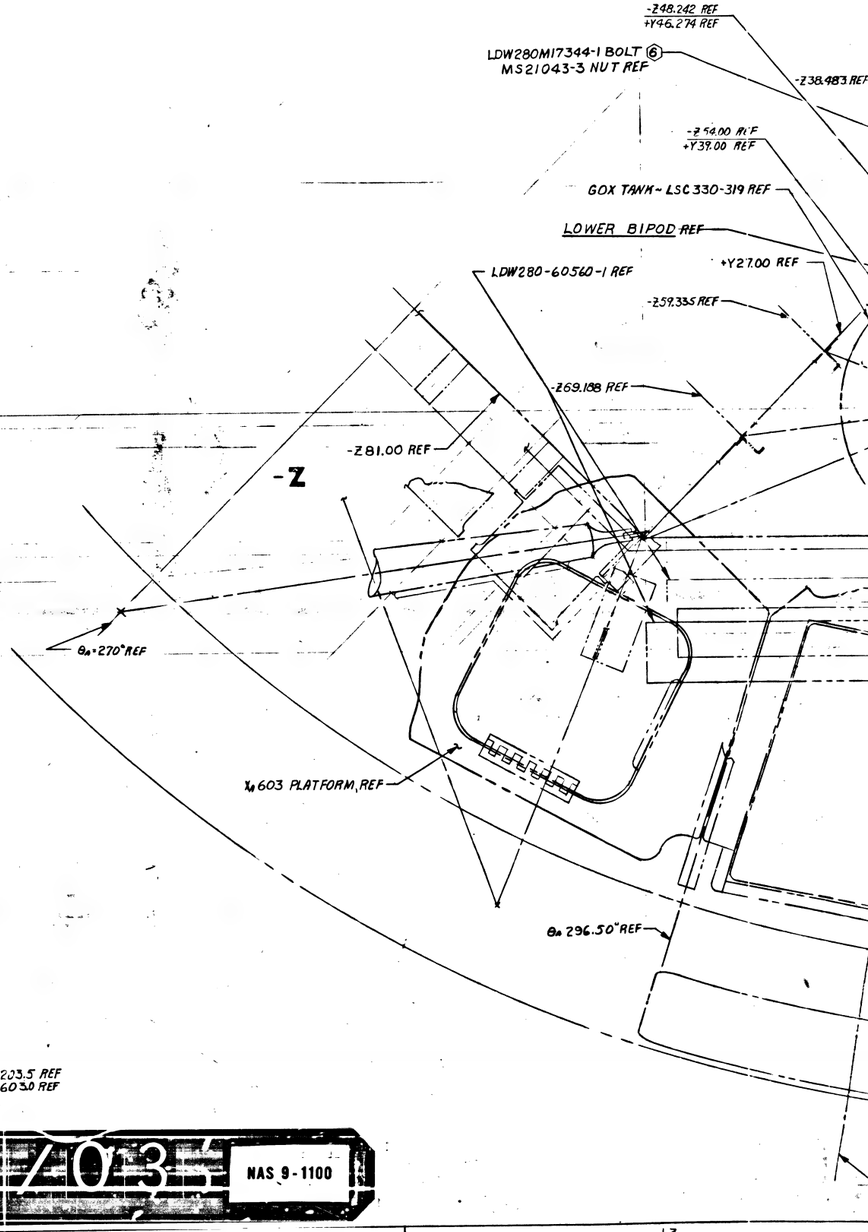
GRUMMAN AIRCRAFT ENGINEERING CORPORATION
BETHPAGE, NEW YORK 11714

SIZE F | CODE IDENT NO 26512 | LDW200-55554
SCALE | SHEET 3 OF 4

DISTR LIST #

LDW200-55554





041/043

NAS 9-1100

SHe TANK~LSC 270-821 REF

③ LDW280M17344-9 BOLT REF
MS21043-3 NUT REF

⑦ LDW280M17344-5 BOLT(2) REF
MS21043-3(2) REF

INBOARD VERTICAL BIPOD REF

-Z48.242 REF
+Y96.274 REF

LDW280M17344-1 BOLT ⑥
MS21043-3 NUT REF

-Z38.483 REF

⑧

-Z54.00 REF
+Y39.00 REF

+Y38.483 REF

+Y48.475 REF

GOX TANK~LSC 330-319 REF

-Z27.00 REF

LOWER BIPOD REF

⑤ LDW280M17344-3 BOLT REF
MS21043-3 NUT REF

+Y27.00 REF

LDW280-60560-1 REF

AFT INTERSTAGE REF

-Z59.335 REF

AMBIENT He TANK~ REF
-Z37.00, +Y59.371 REF

+Y81.00 REF

+Y

-Z69.188 REF

① ④ (LUG)

.995 REF

-Z81.00 REF

+Z

② LDW280M17344-7 BOLT REF
MS21043-3 NUT REF

SLA IML
Xe 203.5 REF

UPPER BIPOD

Xe 603 PLATFORM, REF

LDW280-23580-9 SHe TANK SUPPORT INSTL REF

SLA IML
Xe 125.5 REF

θe 296.50° REF

θe 305° REF

θe=315° REF

LDW 200-55554-1 INSTL~SPT. STRUTS
SHe TANK REPLACEMENT KIT
VIEW LOOKING DOWN

LDW280-58817-1 REF
LDW280-60817-1 REF

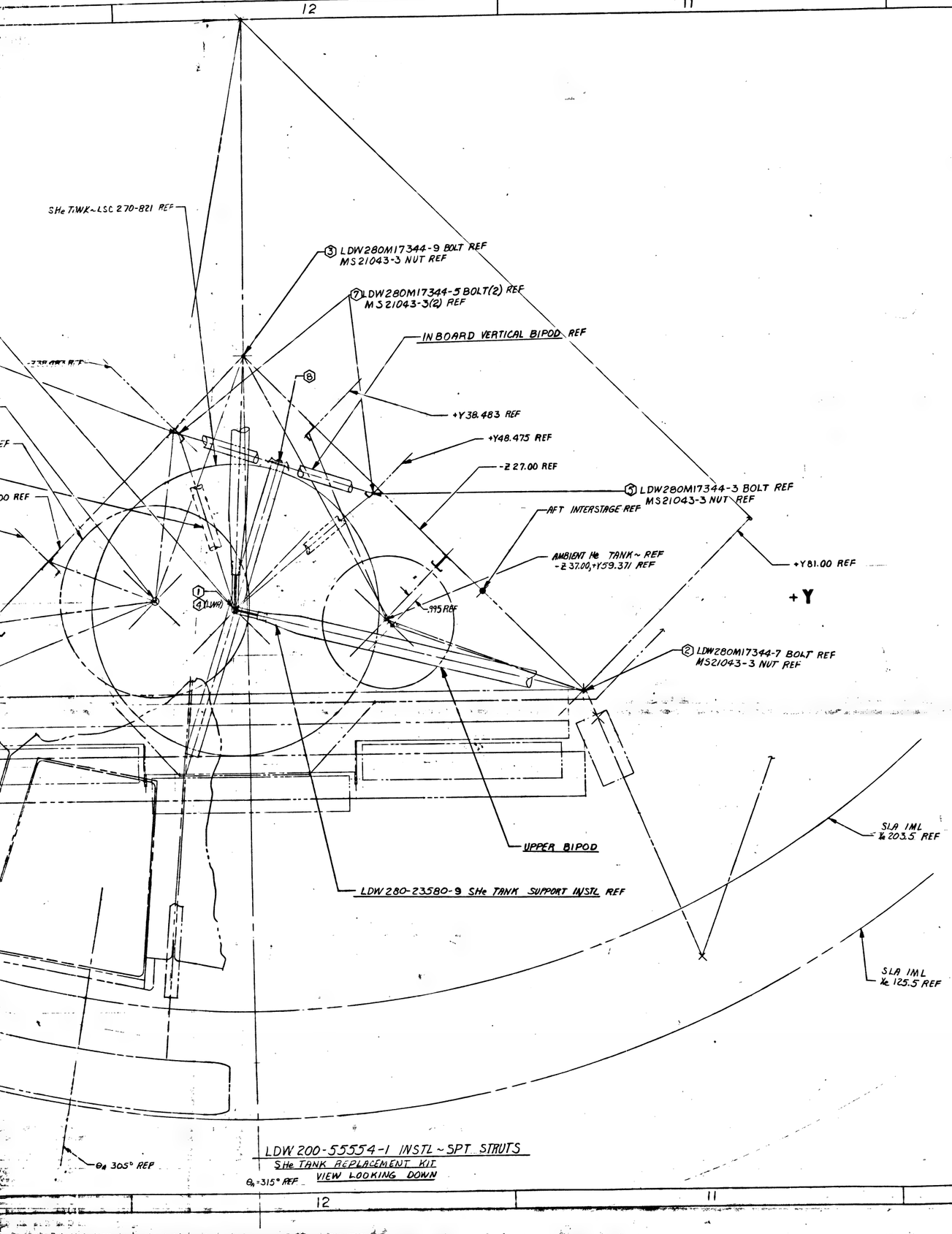
LDW280-58651-
LDW280-60651-

LDW 280-66.5
LDW 280-605

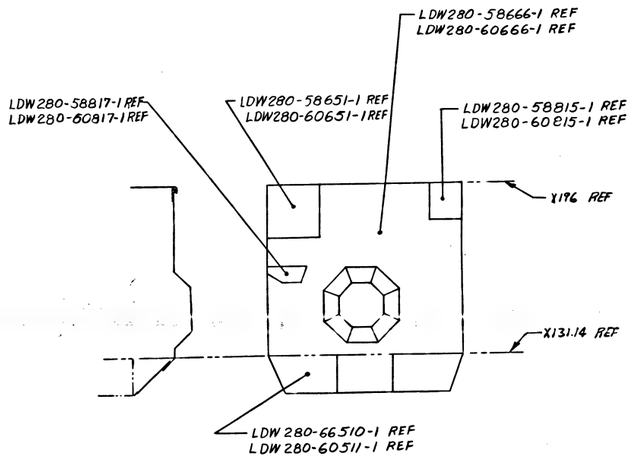
DETAIL B (N
VIEW LOOKING INBOARD

02/03

NAS 9-1100



LDW200-55554-1 INSTL~SPT STRUTS
SHe TANK REPLACEMENT KIT
VIEW LOOKING DOWN



DETAIL B (NO SCALE)
VIEW LOOKING INBOARD QUAD III THERMAL SHIELD

03703 NAS 9-1100

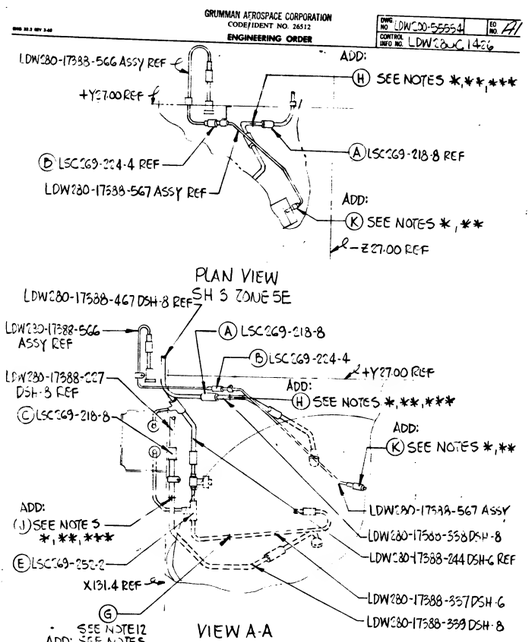
CRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK			
SIZE J	CODE IDENT NO. 26512	LDW200-55554	
SCALE 1/4 FULL		SHEET 4.00	

LDW200-55554 B
LDW200-55554 A

RESTRICT NOTE NO.12 TO -1 INSTL
CREATE -3 ALTERNATE INSTL FOR LM9-12 IDENTICAL TO -1 INSTL
EXCEPT AS NOTED.
ADD NOTE * FOR -3 INSTL
SHe TANK REMOVAL PREPARATION - 3 INSTL
TANK REMOVAL ON VEHICLE SHOULD BE DONE AS FOLLOWS:
a. AS AN ALTERNATE TO PLUCKING AT POINTS A,B,C & E (REF -1 INSTL) THE FOLLOWING IS ACCEPTIBLE OR FOR EXPEDIENCY ANY BRAZED FITTING (POINTS A,B,C & E) MAY BE PLUCKED IN LIEU OF CUTTING. (PLUCK PER LSP14-6309)
POINT (A) - CUT LINE LDW280-17588-339 DSH-8 AT POINT (H). TRIM SAME LINE ON REPLACEMENT TANK TO INTERFACE AT POINT (H). JOIN WITH LSC269-218-8 AT POINT (H) WHEN INSTALLING REPLACEMENT TANK.
POINT (B) - CUT EXISTING LSC269-224-4 UNION ON THE ℄ BETWEEN LDW280-17588-566 & 567 ASSYS. AFTER REMOVAL OF TANK DEPLUCK HALVES OF LSC269-224-4 FROM THE -566 & -567 ASSYS. JOIN WITH LSC269-224-4 AT POINT (B) ON REPLACEMENT TANK. TO ALLOW FOR EASIER INSTALLATION OF REPLACEMENT TANK, IT IS PERMISSABLE TO REPOSITION JOINT AT POINT (B) BY BENDING LDW280-17588-566 & -567 ASSYS (MINIMUM BEND RADIUS 7/16 AT ℄ OF TUBE). LENGTH OF LDW280-17588-567 ASSY MAY BE CHANGED TO OBTAIN INTERFACE AT POINT (D). IT IS ALSO PERMISSABLE TO JOIN THE LDW280-17223 & -566 & 567 ASSYS AT POINT (B) PRIOR TO INSTALLATION OF REPLACEMENT TANK AND MAKE LAST CONNECTION AT POINT (K) WITH AN LSC269-224-4 AFTER TANK IS INSTALLED.
POINT (C) - CUT LINE LDW280-17588-339 DSH-8 AT POINT (J). TRIM SAME LINE ON REPLACEMENT TANK TO INTERFACE AT POINT (J). JOIN WITH LSC269-218-8 AT POINT (J) WHEN INSTALLING REPLACEMENT TANK.
POINT (E) - CUT LINE LDW280-17588-337 DSH-6 AT POINT (G). TRIM SAME LINE ON REPLACEMENT TANK TO INTERFACE AT POINT (G). JOIN WITH LSC269-218-8 AT POINT (G) WHEN INSTALLING REPLACEMENT TANK.
POINT (K) - AS AN ADDITIONAL ALTERNATE TO PROCEDURE OUTLINED IN POINT (B) ABOVE THE FOLLOWING IS ACCEPTIBLE. CUT EXISTING LSC269-224-4 UNION AT POINT (K) ON THE ℄ BETWEEN THE TANK STUB & LDW 280-17588-567 ASSY. AFTER REMOVAL OF TANK DEPLUCK HALF OF LSC269-224-4 FROM THE -567 ASSY. JOIN WITH LSC269-224-4 UNION AT POINT (K) WHEN INSTALLING REPLACMENT TANK.
b. BEFORE CUTTING AT POINTS G,H&J BE CERTAIN THERE IS ENOUGH STRAIGHT LINE FOR FITTING & ADEQUATE SPACE FOR BRAZING TOOL.
c. REMOVE WIRE SPLICES AT POINT (F).
d. BREAK MECHANICAL CONNECTION (GAMAH) AT POINT (D).
e. TANK IS NOW READY FOR REMOVAL FROM VEHICLE.
ADD NOTE ** FOR -3 INSTL
IN THE EVENT OF TUBING MISALIGNMENT WHEN INSTALLING REPLACEMENT TANK TAKE EXTREME CAUTION NOT TO INDUCE A LOAD INTO LINES THAT ARE PART OF TANK.
ADD NOTE *** FOR -3 INSTL
IF ALTERNATES MENTIONED IN NOTE *a POINTS (A)(B)(C)(E) ARE CHOSEN REIDENTIFY LINES AS FOLLOWS:

LINE OR ASSY NO.		REIDENTIFY AS NO.
(a) LDW280-17588-337 DSH-6		LDW200-55554-11 (TANK SIDE)
(b) -337 DSH-6		-13 (VEHICLE SIDE)
(c) -338 DSH-8		-15 (TANK SIDE)
(d) -338 DSH-8		-17 (VEHICLE SIDE)
(e) -339 DSH-8		-19 (TANK SIDE)
(f) -339 DSH-8		-21 (VEHICLE SIDE)
(g) -566 ASSY		-23
(h) -567 ASSY		-25

IN BIM LSC269-224-4 (c) WAS (1).
IN NOTE G "PER NOTE 12 & NOTE *" WAS "PER NOTE 12"



GRUMMAN AEROSPACE CORPORATION

ENG 22.1 REV 3-65

CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LDW200-55554 | EO NO. A2

CONTROL THRU NO. LDW280C1430

THIS IS A REVISION OF E.O. A1

EFFECTIVITY LM10(40) THRU LM12(42) WAS LM9 (39) THRU LM12(42)

DETAIL SPEC PTO | CL II ENGRG CHG | CL I ENGRG CHG | MLCD5531

REASON FOR EO: TO MAKE E.O. EFFECTIVITY AGREE WITH EFFECTIVITY OF LCD

DESCRIPTION OF EO: REF E.O. A1 EFFECTIVITY LM10(40) THRU LM12(42) WAS LM9(39) THRU LM12(42)

GAEC EO RELEASE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM		LM9 (39)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: REWORK NOT | SCRAP REQD

	APPROVED BY	DATE	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
		6-28-71	6-28-71			6-29-71
VDI						
SUPPORT						
RELIAB. GROUP						

PRIORITY: C

DRAWING TITLE: SHe TANK REPLACEMENT - D/S AFTER LM/SLA MATE

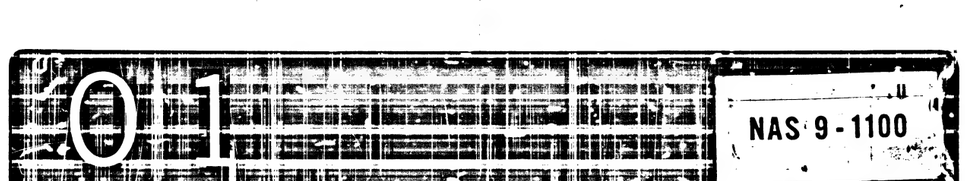
DRAWING NO.: LDW200-55554

EO NO.: A2

CDR 7-1-71

ISSUED BY A. PRESTINARI X1443

SECTION VDI (EQUIP LINES) GROUP NO. 0332 PL 025



ALL SHEETS

CANCELLED

BY DCRF No. 323-2022

DATE 12/17/70

NO REPLACEMENT

LCD 5201 CLASS I LFM495

GRP C. Vaughan 12-17-70

PROJ [illegible] 12-17-70

12-18-70

GRUMMAN AIRCRAFT ENGRG CORP.
BETHPAGE, L. I., N. Y.

BKT INSTL - CP - MESA
REWORK OF LDW340-57769 LFM495

SIZE	CODE IDENT. NO.	
A	26512	LDW200-55555A
SCALE NONE		SHEET 1 OF 1

ENG 163A REV. 8-66

01

NAS 9-1100

LDW200-55557

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LFM 602	LDW280-54508	LM-9(39)	1 EA
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW200-55557-1,-3		GAEC SCH NO.	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00		2.00		3.00					
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED	S-S	GRUMMAN REL NO.	
LAST DASH NO. USED	-5	PRIM NO.	207

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
XX ±.03 XXX ±.010 ±0°30'

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
	LCD 5610 PRG 50

CONTRACT NO. NAS 9-1100 LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	R. CLARK 8/27/70		
LAYOUT BY	R CLARK 9/6/70		
CHECKED BY	J. Marsh 9-4-70		
GP LEADER	Klo 9/4/70		
VEH DES INT.			
STRUCTURES		PROJ ENGR	
STRUCTURES	W/H 9/8/70	REL GROUP	J. Marsh 9.4.70
WEIGHTS			

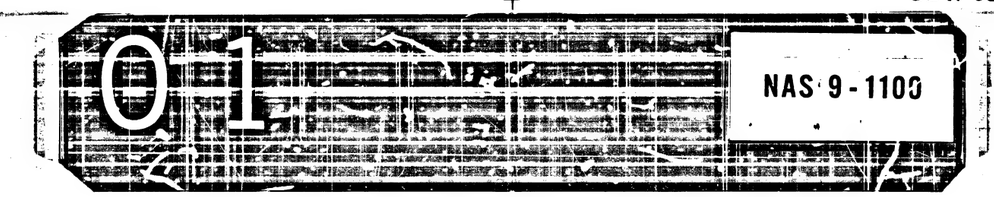
GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

TRUSS INSTALLATION (REWORK OF LDW280-54516) D/S END BULKHEAD & LANDING GEAR OUTRIGGER

SIZE	CODE IDENT NO.	
B	26512	LDW200-55557
SCALE NONE		SHEET 1.00 OF 3

ENG 77.1 12-65

CDR 09-04-70



	8	GF510C 6-5	E		FASTENER-BLIND	GRUMMAN STD							
2	1	GF511C 6-4				GRUMMAN STD							
30	15	MS90354-0805				STD PART							
18	10	MS90354-0606				STD PART							
34	17	MS90354-0604			FASTENER-BLIND	STD PART							
1		LDW200M17425-8			FITTING	SEE DWG							3B
2	1	LDW280M18348-11			FITTING	SEE DWG							20/4D
2	1	LDW280M18346-11			STRUT	SEE DWG							20/4D
1		LDW200-55557-5			TRUSS ASSY						NONE	NONE	3A
		LDW200-55557-3	E		TRUSS INSTL.						NONE	NONE	3A
		LDW200-55557-1	E		TRUSS INSTL.						NONE	NONE	6A
-5	-3	-1											
QTY PER ASSEMBLY		PART NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE	

SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH NONE

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55557

SCALE NONE SHEET 2.00

ENG 77.2 5-64

01 NAS 9-1100

01/02 NAS 9-1100

X 196.000 REF
UPPER DECK REF PLANE

LDW280M17449-21 REF

LDW280M17419-1-1 REF

LDW280M17419-1-1 REF

LDW280M17449-21 REF

LDW280M17425 REF

-Z 27.00 REF

LDW280M17450 REF

PICK UP EXISTING CSK HOLE
IN LDW280M17425
LINE REAM .199-.202
GF5110 6-4

PICK UP EXISTING HOLES IN LDW280M17425
LINE REAM .199-.202 17 HOLES
MS90354-0604 17PL
SEE NOTE 1 & 2

LDW280M18348-11 REF
LDW280M18346-11 REF

.187 TYP 18PL

LDW280M18346-11 REF
LDW280M17425 REF

SECTION D-D
ON-1

LINE REAM .199-.202 18 HOLES
LOCATE FROM LDW280M18346
MS90354-0606 18 PL
SEE NOTE 2

SECTION E-E SHOWN
SECTION F-F OPP
ON-5

PICK UP EXISTING HOLE
LINE REAM .6972-.6
REINSTALL LDW280M17419
GN10U-820
AN960D8L UNDER NUT
ON-3

LDW280M17425 REF
LDW280M18346-11 REF

.375

SECTION J-J
ON-1

+Z 27.00 REF

-Z 27.00 REF

LDW280M18346-11 REF
LDW280M18348-11 REF

.375 ±.06

SECTION K-K

LINE REAM
MS90354-0606
SEE NOTE

LINE REAM .199-.202 10 HOLES
LOCATE FROM LDW280M18346
MS90354-0606 10 PL
SEE NOTE 2

LDW280M18346-11REF

.187 TYP 18PL

LDW280M18346-11 REF

SECTION
SECTION
ON-5

LDW280M18346-11
LDW280M18348-11

REPLACES
LDW280M17451-7

LINE REAM
LOCATE FROM LDW280M18346
GF5110C 3-5 8PL
SEE NOTE 2

LDW280M18348-11 REF

SECTION C-C
ON-1

REMOVE & REINSTALL
LDW280M17449-21
ON-5

REMOVE & REINSTALL
LDW280M17419-1-1
MS21040L7
AN960D716L
ON-3

PICK UP EXISTING HOLE IN CORNER POST
LINE REAM .6620-.6630
REINSTALL LDW280M17419-5-1
GN10U-820
AN960D8L UNDER NUT
ON-3

LDW200-55557-1 INSTL.

VIEW A-A
SCALE: HALF

X 131.140 REF
LOWER DECK REF PLANE

CODE IDENT NO	DWG NO	REV	SHEET
26512	LDW200-55557		3

PICK UP EXISTING HOLE IN CORNER POST
LINE REAM .6972 -.6982
REINSTALL LDW280M17419-3-1
GN10U-820
AN960D816L UNDER NUT
ON-3

X 131.140 REF
LOWER DECK REF PLANE

LDW280M18348-11
LDW280M18346-11
REPLACES LDW280M17450-5

LINE REAM .199-.202 18 HOLES
LOCATE FROM LDW280M18346
MS90354060G 18 PL
SEE NOTE 2

SECTION E-E SHOWN
SECTION F-F OPP
ON-5

LDW280M18348-11 REF

.375±.06

LDW280M18346-11 REF

SECTION N-N SHOWN
SECTION P-P OPP
ON-5

LDW280M17425-8 REF

LDW280M18346-11 REF

.75

SECTION J-J
ON-1

-Z 27.00 REF

REMOVE EXISTING INCORRECTLY NUMBERED LDW280M17425-8 AND REPLACE WITH CORRECTLY NUMBERED LDW280M17425-8

PICK UP EXISTING HOLE IN CORNER POST
LINE REAM .6620-.6630
REINSTALL LDW280M17419-5-1
GN10U-820
AN960D816L UNDERNUT
ON-3

LDW280M18348-11
LDW280M18346-11
REPLACES LDW280M17451-7

02/02

NAS 9-1100

NOTE:

1. FOR -1 & -3 PERMISSIBLE GAP BEFORE POTTING MAX GAP OF .013 BETWEEN LDW280M17425 & LDW280M17449 & MAX OF .020 BETWEEN LDW280M17425 & LDW280M18346 IS ACCEPTABLE AFTER INSTL.
2. FOR -1 & -3 USING A MOLD RELEASE PER 3.1(C) OF LSP14-1801, COAT O.D. OF INSIDE MEMBER & FASTENERS USED TO ORIENT TUBES & FITTING. DO NOT PULL FASTENERS. MIX EPON 934 PER LSP14-22500A & APPLY MATERIAL TO SPACE BETWEEN TUBE & FITTING. CURE USING CURE RANGE 2 "PULL" ALL FASTENERS AFTER CURING. PAINT 2 INCHES BOTH SIDES OF CENTERLINE OF FASTENERS PER LSP14-4407 USING WHITE #17875 PER FED-STD-595.

PICKUP EXISTING HOLES 15PL
IN LDW280M17449
LINE REAM .260-.263 15PL
MS90354-0805 15PL
SEE NOTE 1 & 2

LDW280M17425-8 REF

+Z 27.00 REF

LDW280M17449 REF

SECTION R-R SHOWN
SECTION S-S OPP
ON-5

LINE REAM .199-.202
CSK 100° X.385
GFSIIC 6-4

LINE REAM .199-.202 17HOLES
MS90354060H 17PL
SEE NOTE 1 & 2

.187 TYP 18PL

LDW280M18346-11 REF

LDW280M17425-8 REF

SECTION G-G SHOWN
SECTION H-H OPP
ON-5

LDW280M18346-11 REF

.375

LDW280M17425-8 REF

SECTION L-L SHOWN
SECTION M-M OPP
ON-5

LDW200-55557-3

B B

-Z +Z

FWD

A A

+Y

LDW200-55557-1

VIEW LOOKING DOWN
SCALE NONE
FOR ENGRG REF ONLY

LINE REAM .199-.202 10 HOLES
LOCATE FROM LDW280M18346
MS90354060G 10 PL
SEE NOTE 2

LDW280M18346-11 REF

LINE REAM
LOCATE FROM LDW280M18346
GFSIOC 6-5 8PL
SEE NOTE 2

LDW280M18348-11 REF

SECTION C-C
ON-1

REMOVE & REINSTALL
LDW280M17449-21
ON-5

REMOVE & REINSTALL
LDW280M17449-21 ON-5

REMOVE & REINSTALL
LDW280M17419-1-1
MS21042L7
AN960D716L
ON-3

LDW200-55557-3 INSTL.
LDW200-55557-5 ASSY
VIEW B-B
SCALE: HALF

X 196.000 REF
UPPER DECK REF PLANE

DWG SIZE X
PRINTING INFO ONLY
PRINT ITEM LINE
FULL SIZE SHEET AREA (.36 x .65 in) = 22.0 sq in
W SIZE SHEET AREA (36 IN OF PAPER) = 3.5 sq in

LDW200-55557 REV A

DWG #	REV	SHEET
LDW200-55557		3

GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE, L. I., NEW YORK			
SIZE	CODE IDENT NO.		
	26512	LDW200-55557	
SCALE		SHEET 3.00	

ENG 32.1 REV 3-65

GRUMMAN AEROSPACE CORPORATION
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW200-55557 | EO NO. A1
CONTROL INFO NO. LM-5-23433

IN B/M ONLY

ON-5 ASSY (-3 INSTL) MS90354-0606 (18) S/B MS90354-0606 (36)

ON-1 INSTL REMOVE MS90354-0805 (15)

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | LCD 5610 PKG 50

REASON FOR EO: CORRECT B/M TO CONFORM WITH FLD/DWG REQUIREMENTS.

DESCRIPTION OF EO: IN B/M ONLY
MS90354-0606 QTY(36) WAS QTY(18)
REMOVED MS90354-0805(15)

GAEC EO RELEASE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 602	LM-9(39)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: REWORK ✓ | SCRAP

	APPROVED BY	DATE
	WJ	10/14
	VDI	10-8-70

SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
		10/15/70	10/14/70	10-8-70	10-15-70	10/12/70
		KC				

PRIORITY: C

DRAWING TITLE: TRUSS INSTL (REWORK OF 280-57516) D/S END BLKHD LAND. GEAR OUT RIGGER

DRAWING NO.: LDW200-55557

EO NO.: A1

ISSUED BY: LIAISON, P. HUSTED, 86255 SECTION: VDI GROUP NO. 335 PL 25

01

NAS 9-1100

LDW200-55560

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LFM 537	NONE	LM-8(38)	1
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW200-55560-1		GAEC SCH NO.	

WORK PKG FUNCTION NO. 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH												
SHEET	1.00											
REV												
SHEET	2.00											
REV												
SHEET	3.00											
REV												

LAST SECT LTR USED		GRUMMAN REL INFO
LAST DASH NO. USED	-1	PRIM NO. 799

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
XX-±.03, XXX±.010 ± 0°30'

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 5370 D PKG. 1	

CONTRACT NO. NAS9-1100 LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	V. NARONIS			
LAYOUT BY	M. BECKER			
CHECKED BY	E.R.B. 10-30-70			
GR. LEADER	M.W. Becker 10/30/70			
SUB SYS ENG				
STRUCTURES	G.D. W.P.B. 10/31/70	PROJ ENGR	N. Lakey 10/31/70	
STRUCTURES	W.H. 10/31/70	REL GROUP	J. Marsh 10-30-70	
WEIGHTS				

GRUMMAN AEROSPACE CORPORATION
BETHPAGE, L. I., NEW YORK

T.V. CAMERA INSTL (REWORK OF LDW340-57769) HANDLE STOWAGE RELOCATION

SIZE	CODE IDENT NO.	
B	26512	LDW200-55560

SCALE NONE SHEET 1.00 OF 3

ENG 77.1 12-65

10-30-70

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
-1		MS20470AD4	E	RIVET							
		LDW200-55560-1	E	CAMERA INSTL					NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

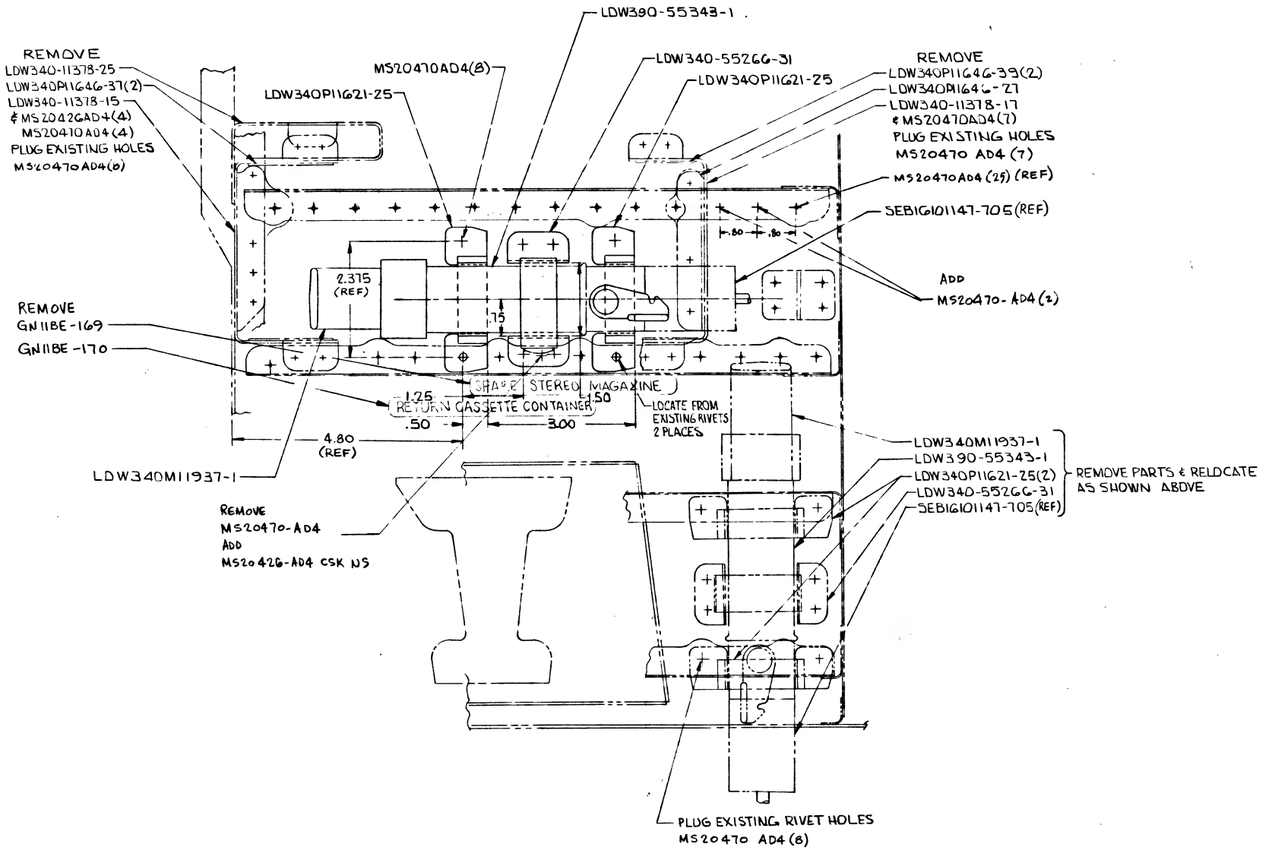
SIZE	CODE IDENT NO.	
B	26512	LDW200-55560

SCALE NONE SHEET 200

ENG 77.2 7-64

NAS 9-1100

SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTE: THESE DO NOT APPLY TO THIS DWG	
MARK PART NUMBER IN ACCORDANCE WITH MIL STD 130	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MAY BE USE BOTH SIDES IF NECESSARY	
LENGTHS OF AN, NAS & MS-DD ALT RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	V
INSTALL RIVETS IN ACCORDANCE WITH SP14-15302	V



LDW200-55560-1 INSTL (REWORK OF LDW340-57769-5-3 INSTL)
ZONE 61B SH 7

GRUMMAN AIRCRAFT ENGINEERING CORPORATION
BETHPAGE, NEW YORK 11714

SIZE	CODE IDENT NO	LDW200-55560
F	26512	
SCALE FULL		SHEET 5 OF 8

LDW200-55560

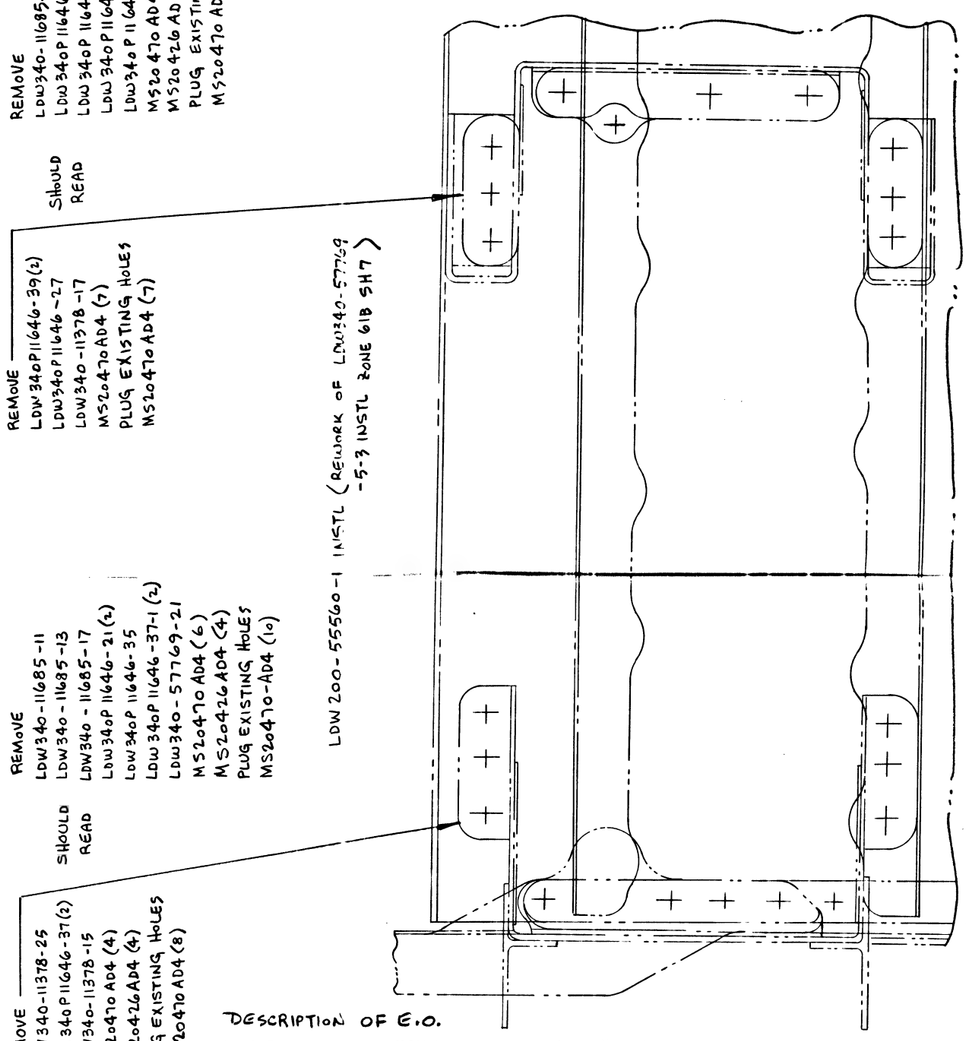
NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AEROSPACE CORPORATION
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW200-55560		EO NO. A1
CONTROL INFO NO. LDW340-9064		

NAS 9-1100



DESCRIPTION OF E.O.

1. IN FIELD OF DWG REVISE CALLOUTS AS SHOWN.
2. DECIMAL TOLERANCE TO BE ±.25 WAS XX=±.03, XXX ±.010.

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD 5370 D PKG. NO. 1

REASON FOR EO: CALLOUTS PER ORIGINAL LM-8 CONFIGURATION & SHOULD BE PER LFM 495 (REF E.O. KG, ETC.)

DESCRIPTION OF EO: NOTED ABOVE

GAEC EO RELEASE: W.D.H. 11-21-70

MODEL	EFFECTIVITY EI (PROCURING ACTIVITY NO.)	GAEC UNIT NO.	SUB CONTR UNIT NO	M
LM	LFM537	LM-8(38)		

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
REVISE DWG	RECORD EO	RL WORK	SCRAP	DATE	11.18	UPR		11.18				
					11.19.70	11-21-70		11-18-70	11-21-70			
					SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG		

PRIORITY: C

DRAWING TITLE: T.V. CAMERA INSTL (REWORK OF LDW340-57769) HANDLE STOWAGE RELOCATION

DRAWING NO.: LDW200-55560

EO NO.: A1

11-19-70 ISSUED BY N.W. BECKER x84108/7277 SECTION CREW PROVISIONS GROUP NO. 0356 PL 025

LDW200-55561

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LFM 639	LDW280-54508	LM8(38)	1
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW200-55561-1		GAEC SCH NO.	

WORK PKG FUNCTION NO 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00		200	300						
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED	E	GRUMMAN REL INFO	
LAST DASH NO. USED	-21	PRIM NO.	207

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
~~FRACTIONS~~ - DECIMALS – ANGLES
.XX ± .03, XXX ± .010 ∂ ± 30'

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE ✓

LCD 5750 PKG# 50

CONTRACT NO. NAS-9-1100 LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	J. ROGERS	THERMO		
LAYOUT BY	D RAGAS			
CHECKED BY				
GR LEADER	12/21/70			
VEH DESIGN	12/21/70			
STRUCTURES		PROJ ENGR		
STRUCTURES	N.M 12/22/70	REL GROUP	JR 12-22-70	
THERMO	12/22/70			

GRUMMAN AEROSPACE CORPORATION
BETHPAGE, L. I., NEW YORK

REWORK INST'L-DESCENT STAGE
QUAD III GOX TANK CHANGEOUT
(REWORK OF LDW280-54508)

SIZE	CODE IDENT NO.		
B	26512	LDW200-55561	G

SCALE NONE SHEET 1.00 OF 3

ENG 77.1 12-65

CDR 12-22-70

0.1

NAS 9-1100

QTY PER ASSEMBLY						CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
				2			AN960C8L	E	WASHER	STD PART						
				6			GB511J-08-2	E	SCREW	GRUM STD						
A/R		A/R		A/R			GS577A-1	E	STAPLE	GRUM. STD						
A/R		A/R		A/R			GT835P-8		TAPE	GRUM. STD						
				2			MS21043-08		NUT	STD PART						
				2			GB511J-08-3		BOLT	GRUM STD						
			6				MS20426-AD3		RIVETS	GRUM STD						
			3				NAS680-08		NUT PLATE	STD PART						
				40			GN512H08		COLLAR	GRUM STD						
				40			GB511K08-2		FASTENER	↕						
A/R		A/R					GW10H-3		WASHER	↕						
A/R		A/R					GR11B-1		RETAINER	GRUM STD						
				1			LDW200-55561-21		BLANKET ASSY							8A
A/R							-19		INSULATION	(SEE NOTE 3)						
				1			-17		HAT	AL PLATE	QQ-A-250/12	7075-T7351	1X5X5	FP	SEE NOTE 4	1A
				2			-15		COVER	AL ALLOY SH	↕	7075-T6	.040X5X5	NONE	#76	6D
				2			-13		DOUBLER	↕	↕	↕	.040X6X6	↕	↕	6D
			1				-11		DOUBLER	AL ALY SH	QQ-A-250/12	7075-T6	.040X6X6	NONE	#76	6D
				1			-7		FITH ASSY	(REWORK OF LDW280-53501-21)						
				1			-5		BLANKET ASSY	(REWORK OF LDW280-53514-41-1)						
				2			-3		FLANGE ASSY							
							LDW200-55561-1	E	REWORK INST'L							
-21			-5	-3	-1											

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
7G	ALODINE	LSP14-9010
FP	ZYGLO	MIL-I-6866

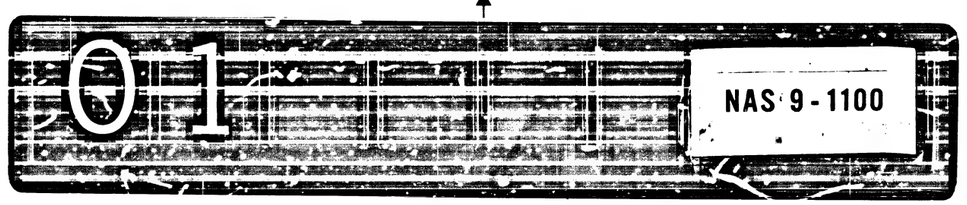
I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55561

SCALE NONE SHEET 2.00

ENG 77.2 7-64



SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG	
MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130.	✓
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☐ USE BOTH SIDES IF NECESSARY.	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
INSTALL RIVETS IN ACCORDANCE WITH	
FOR -17 ONLY	
MISMATCH STEP OF .005 MAX PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES	✓
REMOVE ALL BURRS BREAK ALL EDGES .015-.031	✓
SURFACE ROUGHNESS IN ACCORDANCE WITH MIL-STD-10	✓
125 ✓ FOR ALL SURFACES	✓
200 ✓ FOR ALL HOLES	✓
FILLET & INSIDE CORNER RADII TOLERANCE .01G R TO .062R ±.010 .063R TO .250R ±.015 OVER .250R ±.030	✓

Z 81.00 REF)

+Y27.00 (REF)

4" DIA HOLE, -11, -13 & -15 ARE OPTIONAL AT THIS LOCATION ON -1

120°

1.5R (-11) (3PLCS)

.44 (3PLCS) (-11)

1.88R (-11)

.25R (TYP) (-11)

22° (3PLCS) (-11)

4.25 DIA (-15)

4.0 DIA HOLE (-13)

5.25 DIA (-11) & (-13)

GB511J-08-2(3) ON-1
DRILL (.165-.171 DIA) 3 HOLES IN -15 & -11
NAS680-08 (3) ON-3 ASSY
MS20426-AD3(6) ON-3 ASSY
(OPTIONAL INSTL 2 PLACES)

GB511K-08-2(20)
GN512H-08 (20)
DRILL (.164-.168 DIA)
DRILL (.097-.102) (20
(20 EQUAL SPACES
(OPTIONAL INSTL 2

-15 COVER

-11 DOUBLER ON -3

4.0 DIA

-13 DOUBLER

-7 TRIM LDW280-53501-21 INSTL (SEE NOTES 1 & 2)

ON-5 & -21
GR11B-1 A/R
GW10H-3 A/R

-21 (REF)

GS577A-1 (REF)

ON-1 ADD -17 (SEE DETAIL F)
GB511J-08-3(2)
MS21042-08(2)
HN960C8L(2) BETWEEN HEAD AND -7 ASSY.

-5 (REF)

SEE DETAIL E

GT835P-8 ON-1

3 TO 4 IN PITCH

GS577A-1

3 TO 4 IN PITCH (ON -21 & -5)

.38 (3 PLCS)

.25 (3 PLCS)

-13

-15

-11 ON-3 (REF)

.31 (TYP)

H-FILM (REF)

SECTION B-B

DETAIL A
ROTATED 45° C'C'WISE

ON-1
(-21) (26 LAYERS OF -19)

CREATE -5 BLANKET ASSY BY TRIMMING LDW280-53514-41-1 AS SHOWN (SEE NOTES 1 & 2)

ON-1 ADD -21 BLANKET ASSY

LDW200-55561-1 INSTL
-3 ASSY
-5 ASSY
-21 ASSY

.42 TRIM OF LDW280P17609-11 ON -7

.00/.050

-17 (REF)

-7 (REF)

SECTION C-C

01/03

NAS 9-1100

GB511K-08-2(20) } ON-1
GN512H-08 (20) }
DRILL (.164-.168)(20 HOLES) THRU-116-13 ON-1
DRILL (.097-.102)(20 HOLES) } IN-11.
(20 EQUAL SPACES - 7.3 APPROX. SPACING)
(4 PLACES)

-15 COVER

-11 DOUBLER ON-3

40 DIA.

-13 DOUBLER

-7
TRIM LDW280-53501-21 INSTL
(SEE NOTES 1&2)

S1-21
B1 A/R
H-3 A/R

-21 (REF)

G5577A-1 (REF)

-5 (REF)

TRIM OF LDW280P18609-11 ON-7

-17 (REF)

SECTION C-C

REMOVE & REPLACE AFTER COMPLETION OF REWORK
LDW280-56714-1 SHIELD.

REWORK LDW280-53514-41-1 AS SHOWN IN DETAIL A (REF)

REWORK LDW280-53501-21
AS SHOWN ON DETAIL A

REWORK IN THIS AREA
IS OPTIONAL. SEE
DETAIL A FOR REWORK.

REMOVE & REPLACE AFTER COMPLETION OF REWORK
LDW280-58666-1 INSTL

ON-5
TRIM SEE DETAIL A
ADD -21 ON-1 INSTL
SEE DETAIL A

QUAD III
VIEW LOOKING DOWN

.060/.080 (TYP)
.125 R
.250 R
CHAMFER 45° X .060
CHAMFER 45° X .090
.780
1.62 (REF)
LDW200-55561-17 (REF)
.42 TRIM OF LDW280P18609-11 (REF)

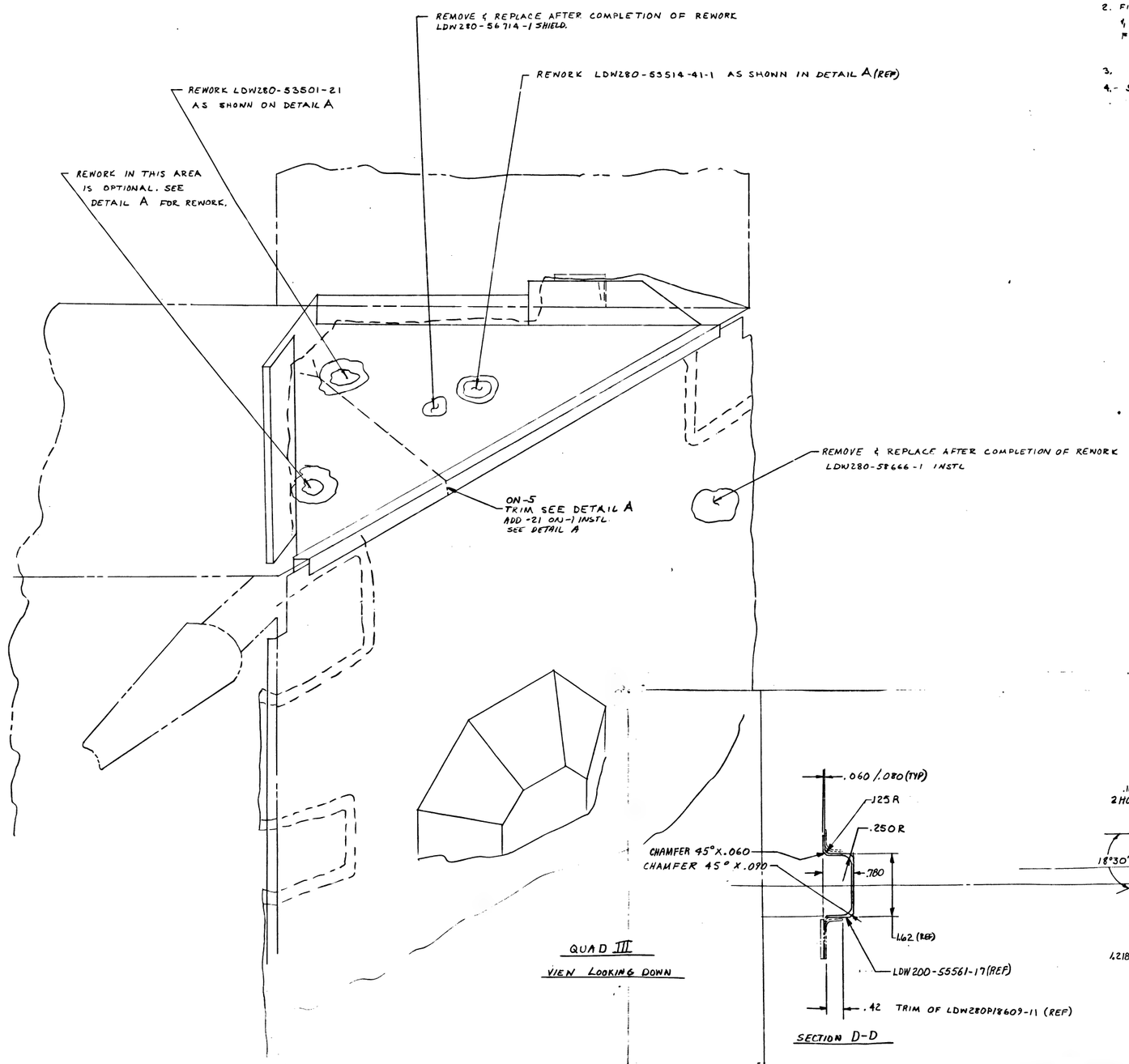
SECTION D-D

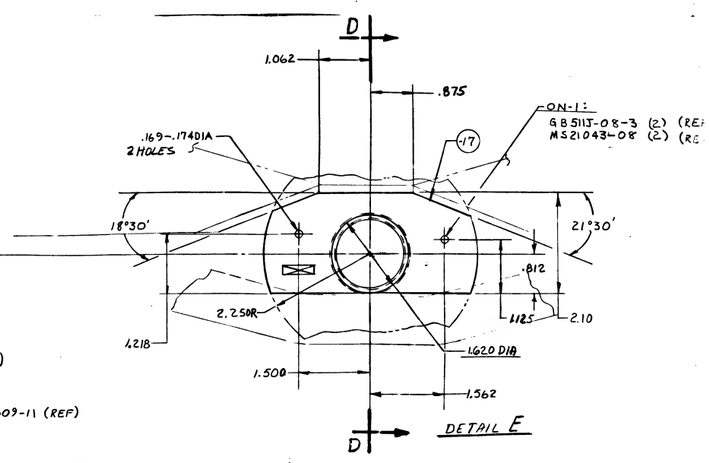
D
1.062
.169-.174 DIA
2 HOLES
18°30'
2.250 R
1.218
1.500
D

NOTE:
1. APPLICABLE PROCEDURES
LPC 280-1 FABRICATION
LPC 280-2 VENTING
LPC 280-3 BEAMS
LPC 280-6 CUTTING
2. FINAL SIZE OF BLANKET ASSYS (WITH
& FASTENER LOCATIONS, CUTOUTS IN SH
FROM ENGINEERING APPROVED MAST
3. -19 ALUMINIZED POLYIMIDE (.0005)
4. - SULPHURIC ACID ANODIZE PER MIL-A-1

NOTE :

1. APPLICABLE PROCEDURES
   LPC 280-1 FABRICATION
   LPC 280-2 VENTING
   LPC 280-3 SEAMS
   LPC 280-6 CUTTING
2. FINAL SIZE OF BLANKET ASSYS (WITH FOLD, SEAM, VENT & FASTENER LOCATIONS, CUTOUTS IN SHIELDS SHALL BE DETERMINED FROM ENGINEERING APPROVED MASTER TEMPLATES.
3. -19 ALUMINIZED POLYIMIDE (.0005) PER LSM 14-53014, TYPE IA, CLASS 2.
4. - SULPHURIC ACID ANODIZE PER MIL-A-8625, TYPE II. (-17 ONLY)





03/03 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I. NEW YORK
SIZE J | CODE IDENT NO. 26512 | LDW200-55561
SCALE NONE | SHEET 3 OF 3

00-55561 REV 3

ENG 32.1 REV 3-65

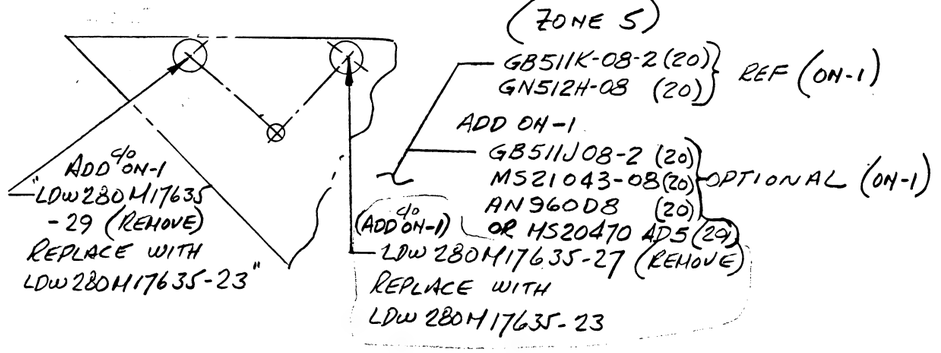
GRUMMAN AEROSPACE CORPORATION

CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LDW200 55561		EO NO. A1
CONTROL INFO NO. LDW280C1215		

IN F/D FROM ON-1 REMOVE LDW280M17635-27 (1) & -29 (1) REPLACE WITH LDW280M17635-23 (2) & ADD OPTIONAL HARDWARE



DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	☑ LCD 5-7150 NC PEG 50

REASON FOR EO: TO ADD OPTIONAL HARDWARE CALLOUT & REPLACE BOLT

DESCRIPTION OF EO: IN F/D & P/M ON-1 NOTED REMOVE LDW280M17635-27 & -29 REPLACED WITH LDW280M17635-23 (2), GB511J08-2 (20) MS21043-08 (20) & AN960D8 (20) OR MS20470AD5 (20) OPTIONAL

GAEC EO RELEASE: 12-29-70

MODEL	EFFECTIVITY: PROCURING ACTIVITY	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	EI		
LM	LEM 631	LM-8 (33)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	DATE	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
✓		✓		P&M	12-23-70	VD1		12/23/70	12/23/70	12/30/70	12/30/70 DONE

PRIORITY: C

DRAWING TITLE: REWORK INSIL-N DIS ~60X TOOL CHANGEOUT

DRAWING NO.: LDW200-55561

EO NO.: A1

CDR 12-28-70

ISSUED BY R. CLARK / G. HANSMANN 8-7222 SECTION VD1 GROUP NO. 0335 PL 025

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AEROSPACE CORPORATION

CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LDW200 55561 | EO NO. A2

CONTROL INFO NO. LDW280C1221

THIS EO IS A REVISION OF EO. A1.
ON-1, DELETE & ADD C/O ON-1
LDW280M17635-27 & -29
(REMOVE) REPLACE WITH
LDW280M17635-23(2)

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD 5750A PKG 51

REASON FOR EO: BOLTS NOT REQUIRED ON THIS DWG.

DESCRIPTION OF EO: ON-1 REF E O A1 DELETED ADD C/O ON-1 LDW280M17635-27 & -29 (REMOVE) REPLACE WITH LDW280M17635-23(2)

GAEC E EO RELEASE: W-24, 12-30-70

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO. E	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM639	LM-8(39)	

DRAWING CHANGE REQD: ✓ REVISE DWG | RECORD EO

DISPOSITION OF PARTS: ✓ REWORK | SCRAP

PRIORITY: C

DRAWING TITLE: REWORK INSTL ~ D15 ~ GOX TANK CHANGEOUT

	APPROVED BY	DATE								
							NM			
		12/30/70	VDI			12/30/70	12/30/70	12/30/70	12/30/70	~~COMP~~
			SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG		

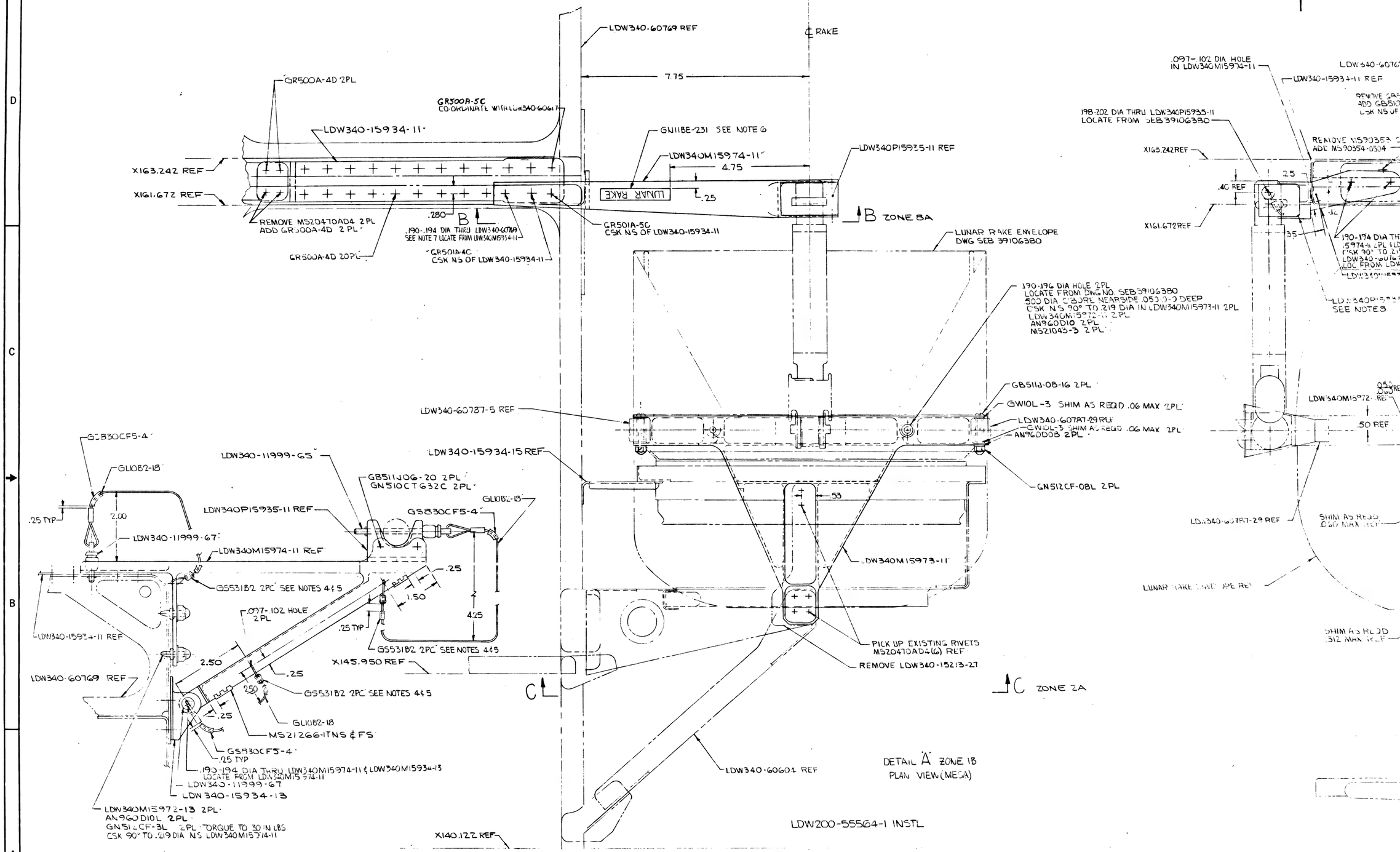
DRAWING NO. LDW200-55561

EO NO. A2

12/30/70
ISSUED BY R. CLARK/G. HANSMANN 8-7222 SECTION VDI GROUP NO. 0335 PL 025

0-1

NAS 9-1100



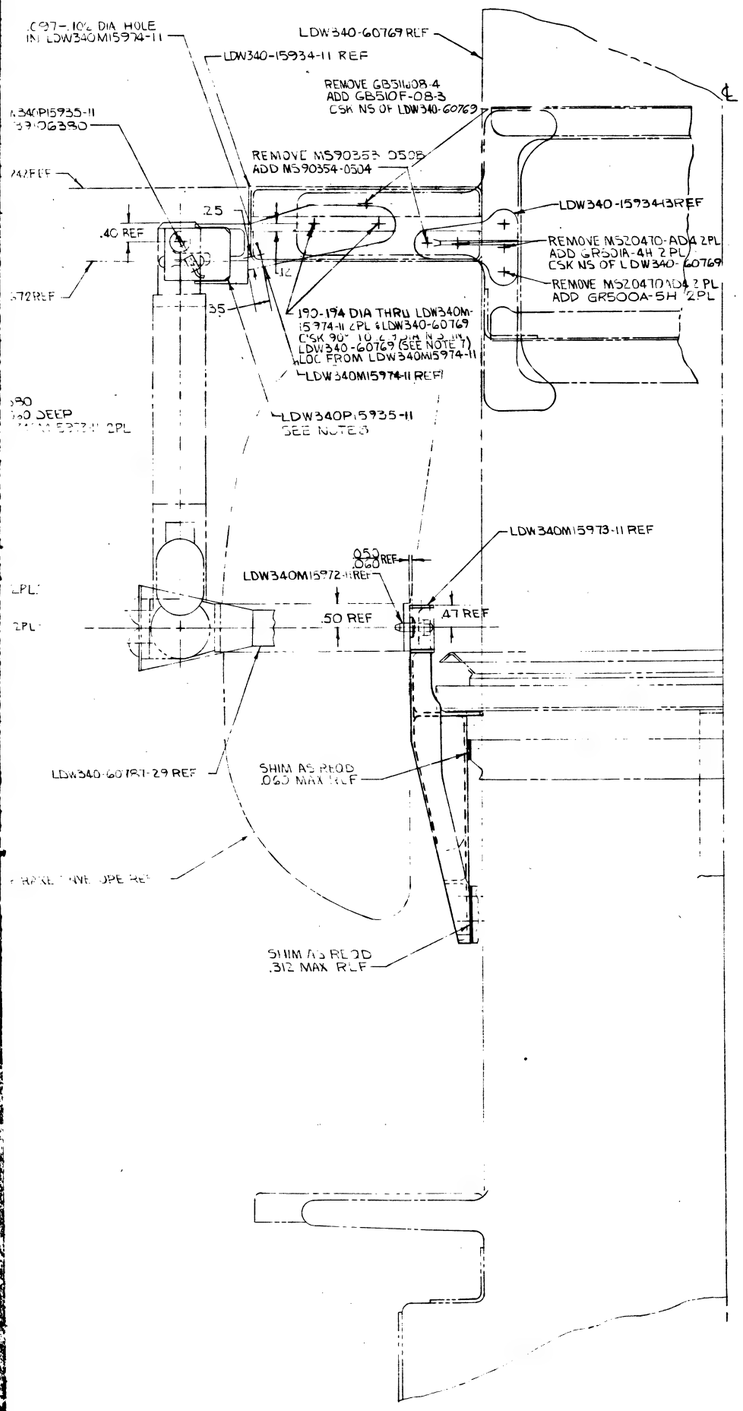
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NAS 9-1100

CODE IDENT NO	DWG NO	REV	SHEET
26512	LDW200-55564		3

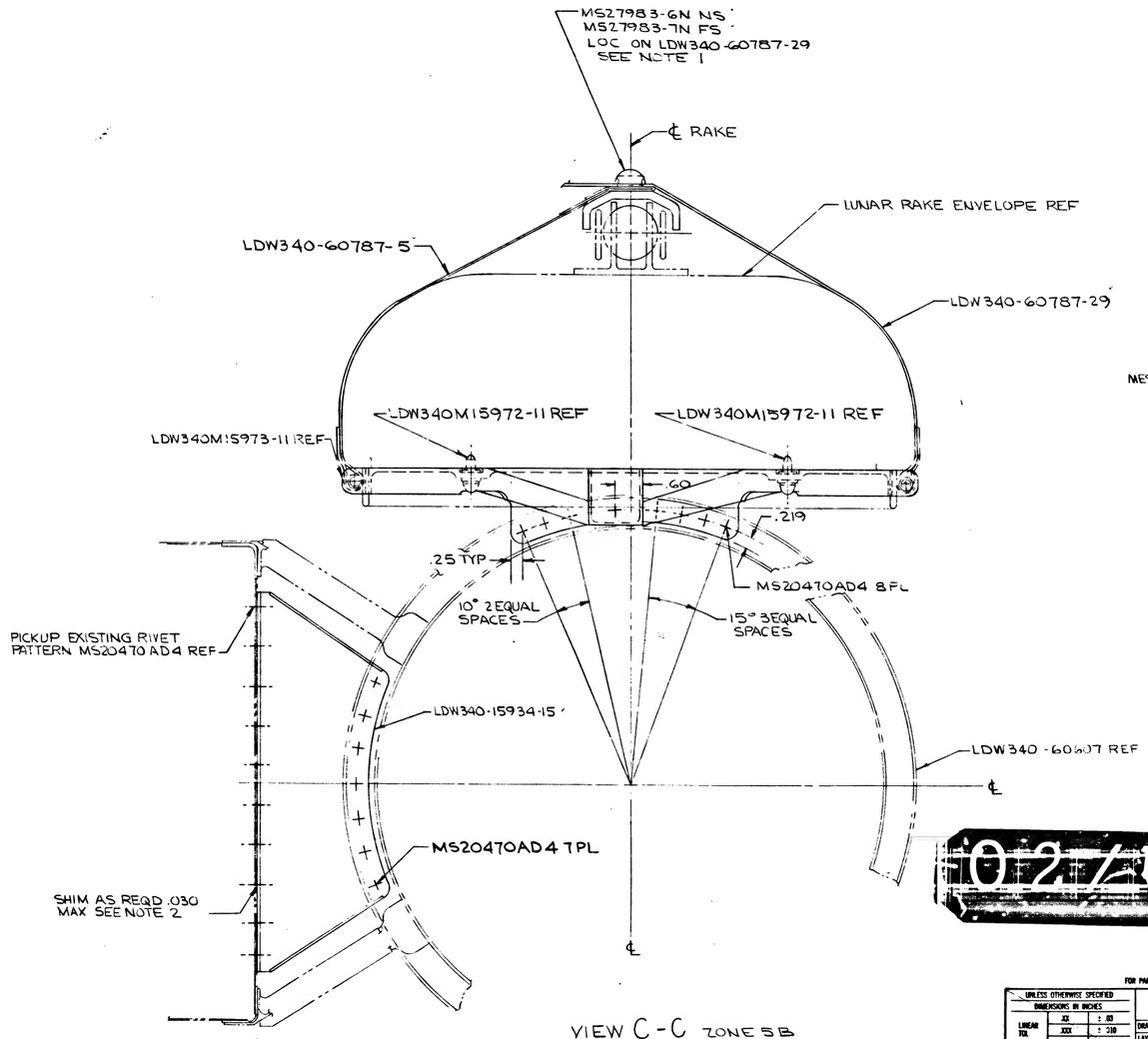
FRAME 1 FRAME 2

REVISIONS						
ZONE	LTR	DESCRIPTION	EFF CODE	MODEL	DATE	APPROVED

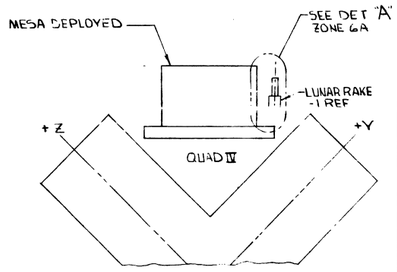


NOTES

1. PULL STRAP TAUT AGAINST LUNAR RAKE OR ITS MASS REPRESENTATION BEFORE INSTALLING SNAPS ON LDW340-60787-29 TO INSURE SNUG FIT. OPENING SYMBOL ON STRAPS SHALL BE ORIENTED IN THE DIRECTION OF THE FREE END OF LDW340-60787-29.
2. SHIM AS REQD USING LAMINATED SHIM STOCK PER MIL-S-22499A, COMP I, TYPE I, CLASS II.
3. INSTALL FASTENERS PER LSP14-15302, LSP14-15303, LSP14-15306.
4. CUT 38±12 PROTRUDING END OF LANYARD FLUSH WITH SLEEVE AT BOTH ENDS.
5. INSTALL LOOP PER GL10J3.
6. BOND IN PLACE USING EPON 934 IN ACCORDANCE WITH LSP14-22500 CURE RANGE I. ROOM TEMP CURE PERMISSIBLE.
7. FINISH AREA WITH LUBRIBOND-N. APPLY PER LEI 280 PARA 3.2. MAY BE WAIVED.
8. FOR NOMINAL GAPS OF LESS THAN .010 INCH, CLOSE GAP WITH EPON 934 PER LSP-14-11700, TYPE II.



VIEW C-C ZONE 5B



FOR ENGR REF ONLY
PLAN VIEW - DESCENT STAGE

02702 NAS 9-1100

FOR PARTS LIST, USAGE DATA, AND DWG SH STATUS, SEE DOCUMENT SAME NUMBER PREFIXED PL

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES			CONTRACT NO.	GRUMMAN AEROSPACE CORPORATION BETHPAGE, NEW YORK 11714
LINEAR TOL	XX	±.03	DRAWN BY	
	XXX	±.010	LAYOUT BY	
ANGULAR TOL		±0°30'	CHECKED BY	
TOL ON LOFTED DELINEATIONS IS			GR LEADER	
			REL GROUP	
			PROJ ENGR	SIZE J · CODE IDENT NO 26512 · LDW200-55564
			GOVT APPD	SCALE NONE · SHEET 3 OF

LDW200-55564 A · LDW200-55564 B

PRINTING INFO ONLY
DWG SIZE 34 X 88
FULL SIZE SHEET AREA (36 X 90) = 24.5 SQ FT
½ SIZE SHEET AREA (½ OF FULL) = 6.5 SQ FT

DISTR LIST #

GRUMMAN AEROSPACE CORPORATION

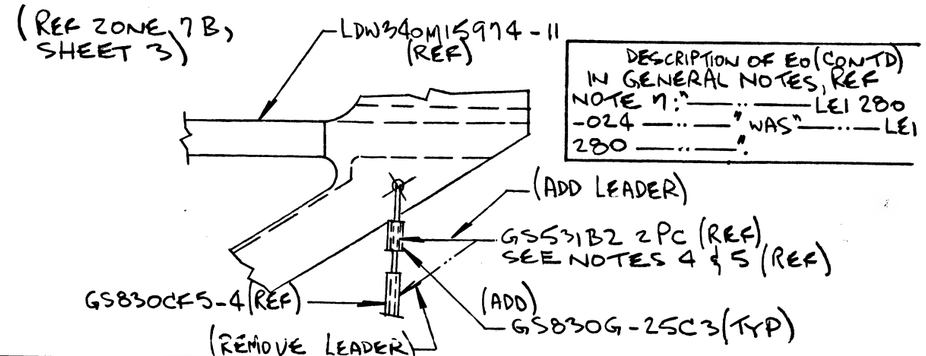
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200-55564		EO NO. A1
CONTROL INFO NO. LM-5-23901		

ON -1, REVISE AS SHOWN. DRAFTSMAN NOTE: PICTURE FOR LANYARD END IS TYPICAL. REVISE OTHER LANYARDS (3) TO AGREE. ADD GS830G-25C3 TO B/M "AS REQD."



DESCRIPTION OF EO (CONT'D) IN GENERAL NOTES, REF NOTE 7: "—··—··— LEI 280 -024 —··—··—" WAS "—··—··— LEI 280 —··—··—".

DETAIL SPEC REQ		CL II ENGRG CNG		CL I ENGRG CNG	X LCD 5756

REASON FOR EO (RTE 05-131-962): PICTURE CORRECTION; GS830G-25C3 SHOWN BUT NOT CALLED OUT.

DESCRIPTION OF EO: ON -1, CORRECTED PICTURE & ADDED GS830G-25C3 (TYP). (CONTINUED ABOVE)

GAEC EO RELEASE: 4/5/71

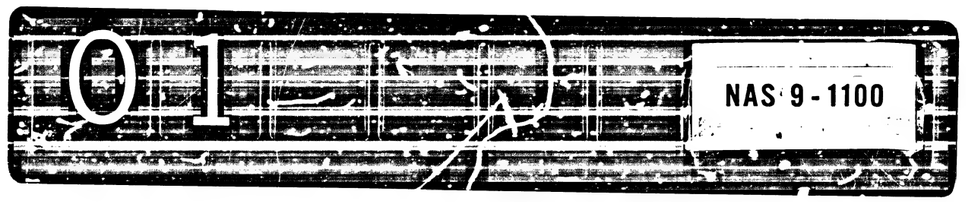
MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY: DATE	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
LM	LFM654	LM-10(40)		X		X		4/1/71		4/15/71	4/15/71	4/1/71	4/16/71	4-5-71

PRIORITY: C

DRAWING TITLE: LUNAR RAKE INSTL ~ CREW PROV. D/S ~ RWK OF DWG LDW340-60169

DRAWING NO.: LDW200-55564 EO NO.: A1

ISSUED BY: DESIGN ENGR ART WILSON X86755 SECTION CREW PROVISIONS GROUP NO. 0343 PL 025



GRUMMAN AEROSPACE CORPORATION

ENG 32.1 REV 3-65

CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. (DIV) NO. 200-55564 | EO NO. A2

CONTROL INFO NO. LM-5-23934

FOR -1
IN F/D & B/M

REMOVE GN512CF08L (2) & REPLACE WITH

GN510C832 (2)

REMOVE GN512CF3L (2) & REPLACE WITH

MS21042-3 (2) SEE NOTE *

ADD NOTE *

COVER EXPOSED THREADS WITH EPON 934 PER LSP14-22500. CURE RANGE #1 (ROOM TEMP. CURE PERMISSABLE). SPREAD ADHESIVE SMOOTHLY SO NO SHARP EDGES ARE APPARENT.

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD 5756 PKG 1

REASON FOR EO: INPROPER HARDWARE CALLOUT

DESCRIPTION OF EO: FOR -1 IN F/D & B/M GN510C832 (2) WAS GN512CF08L(2) MS21042-3 (2) WAS GN512CF3L (2) & ADDED NOTE *.

GAEC EO RELEASE: 4

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM654	LM-10(4)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: REWORK ✓ | SCRAP

	APPROVED BY	DATE	NITE	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	SHIFT
	JSM	4-13-71				AW 4-14-71	KC 4/19/71	ALW 4/19/71	[illegible] 4/19/71	Scott 4-16-71 NED

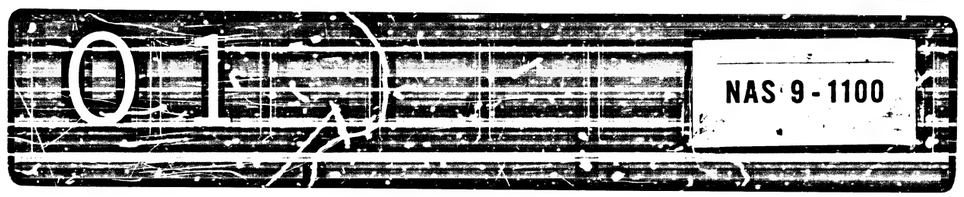
PRIORITY: 3

DRAWING TITLE: C/P W/S BRKT INSTL MCSA QUAD IV

DRAWING NO.: LDW200-55564

EO NO.: A2

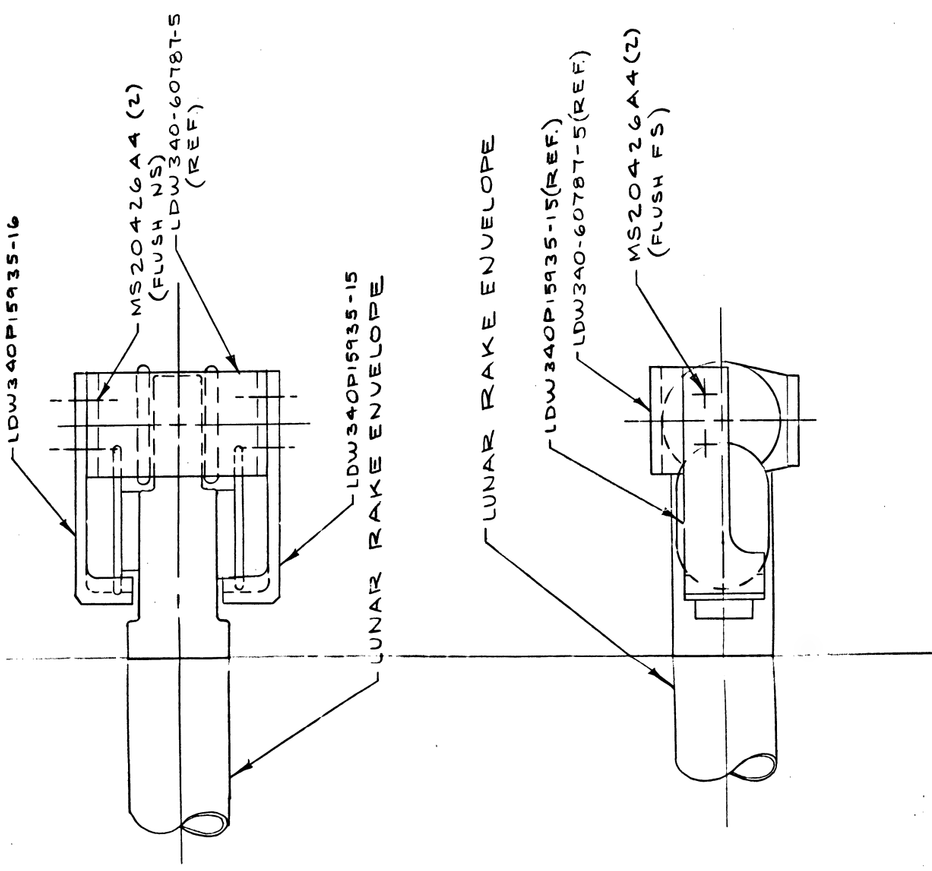
ISSUED BY: VEH PROD ENGRG / VARVAIRO / E.V. BERGSMAN X-86755 SECTION: CREW PKG. 1 GROUP NO. 0343 PL 025



GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.2 REV 3-65

DWG. NO. LDW200-55564		EO NO. A3
CONTROL INFO NO. LDW340.9651		



NAS 9-1100

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	√	LCD 5899 PKG #1

REASON FOR EO: TO INSURE POSITIVE RETENTION OF RAKE ASSY

DESCRIPTION OF EO: INFLD & BM ON-1 ASSY ADDED LDW340P15935-15 & -16 & MS20426A4 (4)

GAEC EO RELEASE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP
LM	LFM 693	LM-10(40)		✓		✓	

APPROVED BY						
DATE				SUPPORT	RELIAB. GROUP	GROUP LEADER: 5-6-71
						STRESS GR'UP: 5-6-71
						LIAISON ENGRG:
						PROJ. ENGRG: 5-10-71 / 5-11-71

PRIORITY: C

DRAWING TITLE: LUNAR RAKE INSTL CREW PROV D/S

DRAWING NO.: LDW200-55564

EO NO.: A3

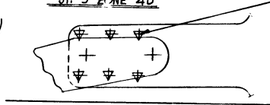
ISSUED BY R GHISOLFI X7277 SECTION CREW PROV GROUP NO 393 PL 025

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW200-35564 | ED. NO. 15
CONTROL REQ. NO. LDW340-9928

ON-3

1.) SH 3 ZONE 4D REF DR# 188

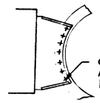


ADD
REMOVE GB511J08-4 6 PL
ADD GB510F-08-3 6 PL
CSK NS OF LDW340 60769

WAS
REMOVE GB511J08-4
ADD GB510F-08-3
CSK NS OF LDW340 60769

SH3 ZONE 3A REF DR# 189

2.)

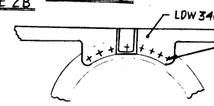


ADD
GB511J08-1 7 PL
AN960D8L 7 PL
MS21043-08 7 PL

ON-3
WAS
MS 20470AD4 7PL

SH3 ZONE 2B REF DR# 190

3.)



LDW340M15973 ON-3

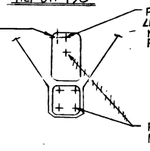
ADD
GB511J08-2 8PL
AN 960 D8L 8PL
MS 21043-08 8PL

WAS
MS 20470 AD4 8PL

REF DR# 190

4.) SH3 ZONE 6B

(ADD)
REMOVE EXISTING RIVET
ADD NAS 1097 AD4
FLUSH BOTH SIDES



ON-3
ADD
PLUG EXISTING HOLES IN LDW340 60507 WITH NAS 1097 AD4 STOCK
FLUSH BOTH SIDES

ADD
PICK UP EXISTING RIVETS
MS20470AD4 4 PL REF

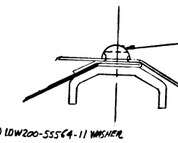
WAS
MS20470AD4 6 PL REF

5.) SH3 ZONE 7B ADD GB511J06-18 2 PL WAS GB511J06-20 2PL
ON-3

6.) IN B/M, M/B & FLD ADD -3 INST'L SAME AS -1 INST'L EXCEPT REF DR# 201
LDW340 60787-5-1 & -29-1 REPLACES LDW340-60787-5 & -29. REMOVE -1

7.) IN FLD & B/M ADD LDW340-60787-5-1 & -29-1. REMOVE -5 & -29 EFF
LM 11(41) ON-3 REF DR# 201

SH3 ZONE 2C REF DR# 201



ON-3 ADD
MS27983-6N N.S 2
LDW200-35564-11 2
MS27983-7N F.S 2
LOC ON LDW340-60787-29-1
SEE NOTE 1 & **

IN FLD & B/M ADD LDW200-35564-11 WASHER
MADE FROM ACLAR .62 DIA. 2 REQ'D

** INDICATES NEXT AVAILABLE NOTE

** ACLAR 33C PURCHASED IN ACCORDANCE WITH LSM 14-4055 TYPE II, 7.5 MIL

WAS MS 27983-6N N.S
MS 27983-7N F.S
LOC ON LDW340-60787-29
SEE NOTE 1

DESCRIPTION OF E.O.

IN M/B, B/M & FLD ADDED -3 INST'L & REMOVED -1 EFF LM 11 (41) ONLY

IN FLD & B/M ON -3 ADDED LDW340-60787-5-1 & -29-1

IN FLD & B/M ON -3 ZONE 7B REVISED CALLOUT GB511J06-18 2PL
WAS GB511J06-20 2PL

IN FLD & B/M ZONE 4D REVISED CALLOUT GB510F-08-3 6PL WAS 1 PL

IN FLD & B/M ZONE 3A ADDED GB511J08-1 7PL AN960 D8L 7P
MS21043-08 7PL WAS MS20470 AD4 7PL

IN FLD & B/M ZONE 2B ADDED GB511J08-2 8PL, AN960D8L 8PL
MS21043-08 8PL WAS MS20470 AD4 8 PL

IN FLD & B/M ZONE 6B REVISED CALLOUT MS 20470 AD4 4 PL
WAS MS 20470AD4 6PL

IN FLD & B/M ADDED LDW200-55564-11 Aclar WASHER 2 PL
ADDED NOTE **

DETAIL SPEC REV. | CL. II CHANGE ONE | CL. I CHANGE ONE | LV CD 5913 PVC 1

REASON FOR ED: FACILITATE MAKE INST'L
REF DR# 188, MO Jul. 1969

DESCRIPTION OF ED: SEE ABOVE

EFFECTIVITY: LM1

DOCUMENTS AFFECTED: LFM 7818
BASIC UNIT NO.: LM 11 (41)
SUB ASSYS UNIT NO.:

DISPOSITION CHANGE ITEMS: PARTS ON HAND
DISPOSITION OF PARTS: REWORK, SCRAP

APPROVED BY: DATE: PROJECT ENGR., SUPPORT, TOOLING DESIGN, LOGIC LEADER, STRESS LEADER, LOGISTICS ENGR., PROJ. ENGR.

PRIORITY: C

DRAWING TITLE: LUMAR MAKE INST'L C.P.-0.5

DRAWING NO.: LDW200-55564

ED NO.: 15

ISSUED BY: Bernie Savoie EXT 1618 SECTION: CREW PROV GROUP NO: 6343 PAGE

NAS 9-1100

ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 340 | EO NO. 854
CONTROL INFO NO. LDW340-10015

IN MOD BLK FOR PARTS * ADD LM-12(42) EFF

PART NO *	TITLE	QTY	NEXT ASSY	EO NO.
LDW200-55564-3	LUNAR RAKE INSTL	1	LDW340-60769	A6
LDW340-11999-65 LDW340-11999-67	PIN PIN	1 2		E5
LDW340-15934-11 LDW340-15934-13 LDW340-15934-15	PLATE FITTING BRACKET	1 1 1		A3
LDW340-60787-5-1 LDW340-60787-29-1	STRAP ASSY STRAP ASSY	1 1		A6
LDW340M15972-11 LDW340M15972-13	FITTING PIN	2 2		A5
LDW340M15973-11	FITTING	1		A3
LDW340M15974-11	FITTING	1		A3
LDW340P15935-11	FITTING	1	LDW340-60769	A8

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DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD5966 PKG 1

REASON FOR EO: ADDED LUNAR RAKE STOWAGE PROVISIONS TO LM-12 MESA.

DESCRIPTION OF EO: IN MOD BLK FOR PARTS * ADDED LM-12 (42) EFF

GAEC EO RELEASE: NH 2-28-72 | 2-29-72

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY / DATE: SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GAC EO NO.
LM	LFM762	LM-12 (42)		✓		NOT REQD				MF 2/10/72	JPD 2/17/72		NH 2-28-72	854

PRIORITY: C | DRAWING TITLE: SEE ABOVE | DRAWING NO.: LEO 340

ISSUED BY A. VARVARO SECTION CREW PROVISIONS GROUP NO. 0356 PL 025

GRUMMAN AEROSPACE CORPORATION

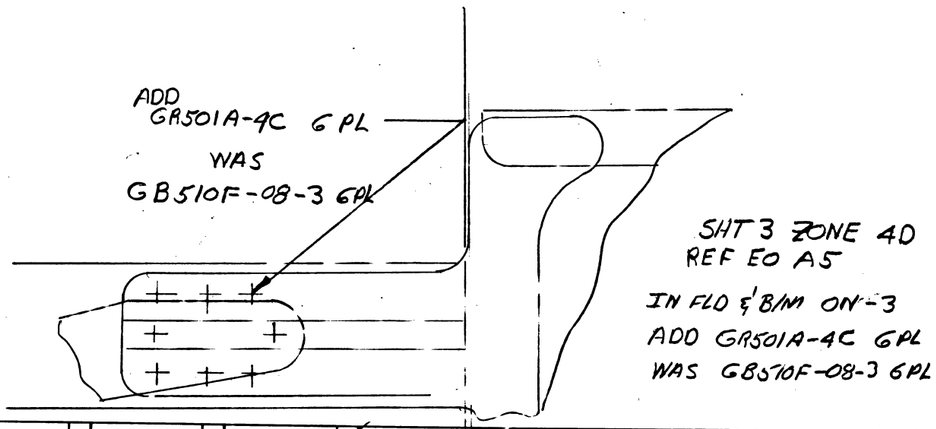
CODE IDENT NO. 26512

ENG 32.1 REV 3-68

ENGINEERING ORDER

DWG. NO. 10W200-55564 | EO NO. A7

CONTROL INFO NO. LDW340-10144



DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCO 5966 PKG 2

REASON FOR EO: FACILITATE INST'L — REF DR# 213

DESCRIPTION OF EO: IN FLO & B/M ON -3 ADDED GR501A-4C 6PL WAS GB510F-08-3 6PL

GAEC EO RELEASE (E)

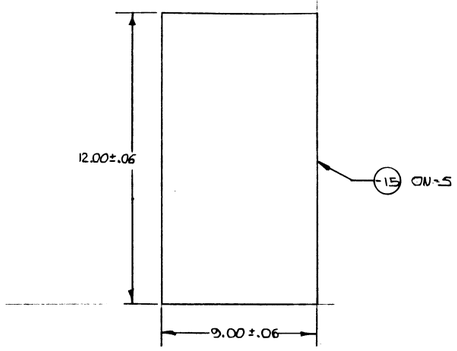
EFFECTIVITY				DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY										
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	REVISE DWG	RECORD EO	REWORK	SCRAP	DATE				SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GAC
LM	LEM 762	LM12(42)		✓		✓								5/30/72	6/1/72		5/30/72	6-1-72

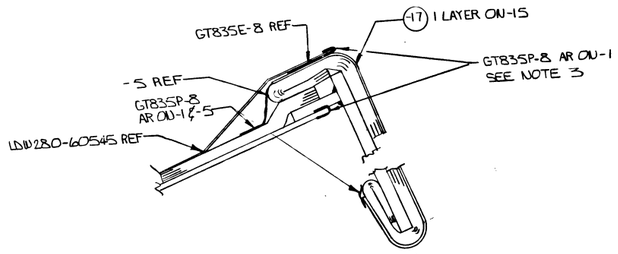
PRIORITY: 2 — DRAWING TITLE: LUNAR RAKE INST'L C.P.~05 — DRAWING NO.: 10W200-55564 — EO NO.: A7

ISSUED BY Bernie Savoie EXT 9491 SECTION CREW PROV GROUP NO 0356 PL 085

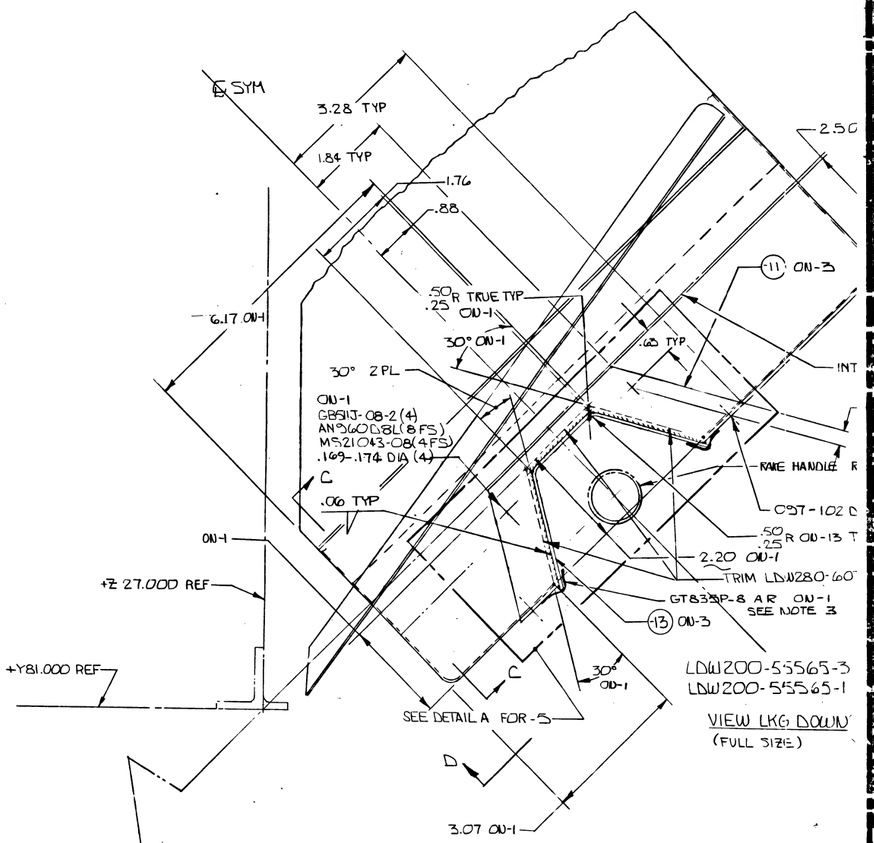
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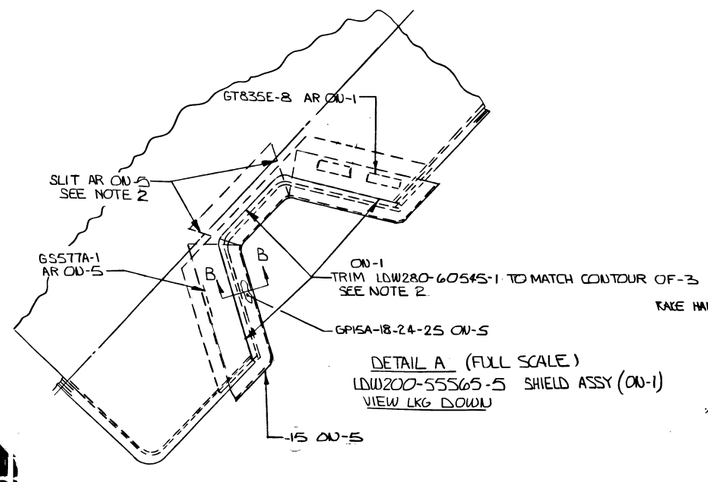
NAS 9-1100



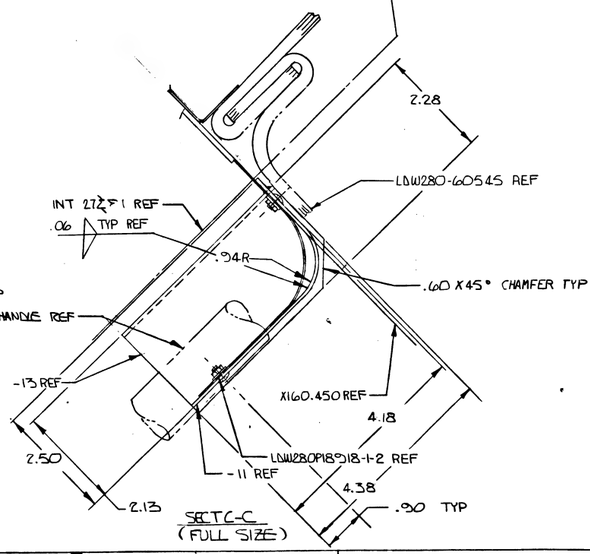


SECT B-B (NO SCALE)





DETAIL A (FULL SCALE)
LDW200-55565-5 SHIELD ASSY (ON-1)
VIEW LKG DOWN



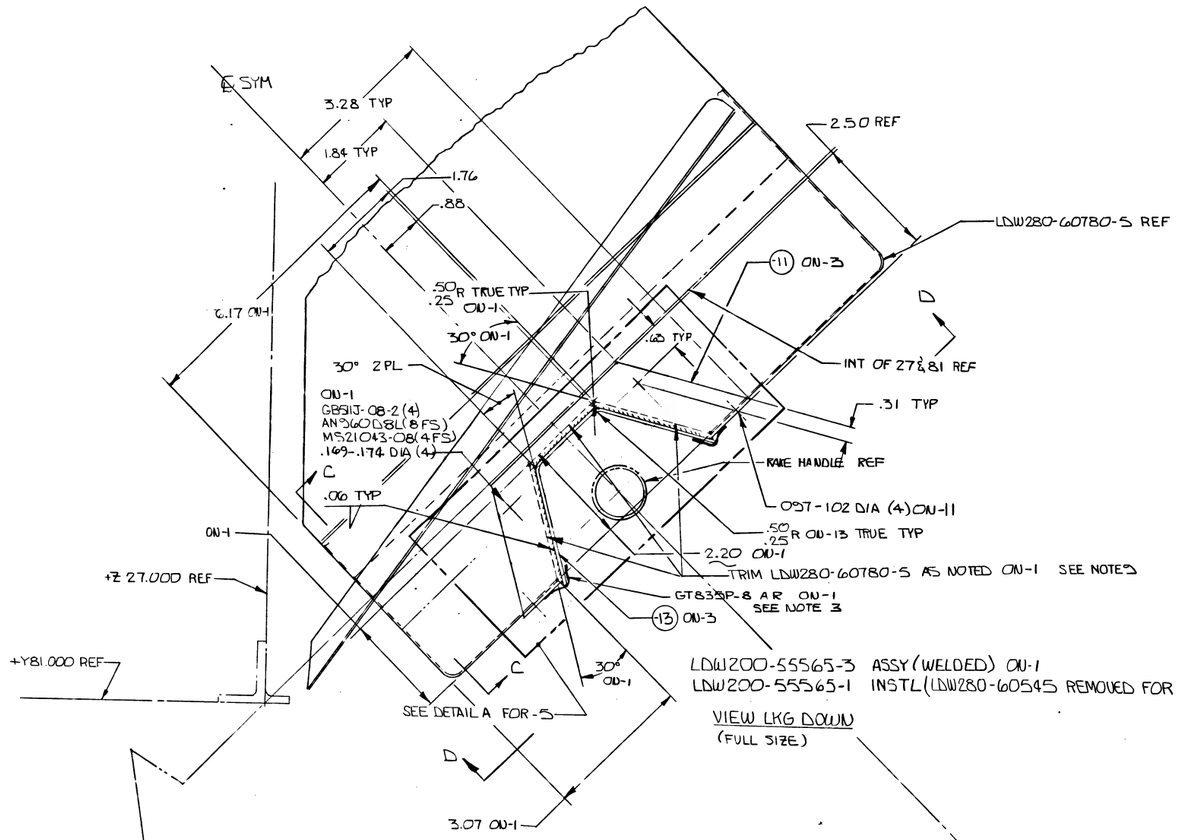
SECT C-C
(FULL SIZE)

-3 REF- POSITIO
CUTOUT (ON-1

LDW280-60780 REF-

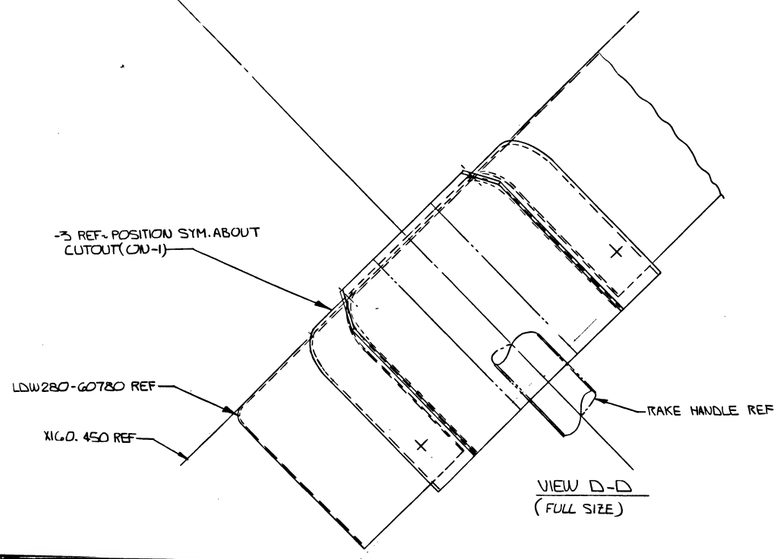
X1G0. 450 REF

01702 NAS 9-1100

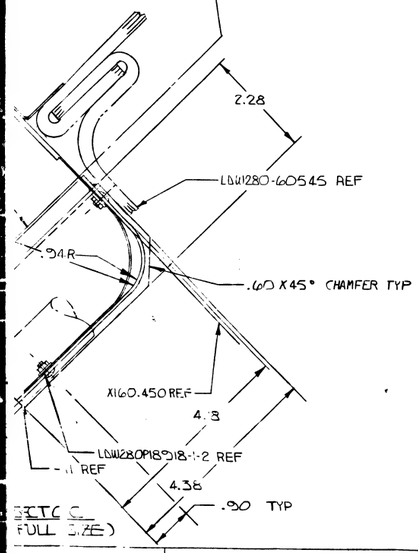


LDW200-55565-3 ASSY (WELDED) ON-1
LDW200-55565-1 INSTL (LDW280-60545 REMOVED FOR CLARITY)

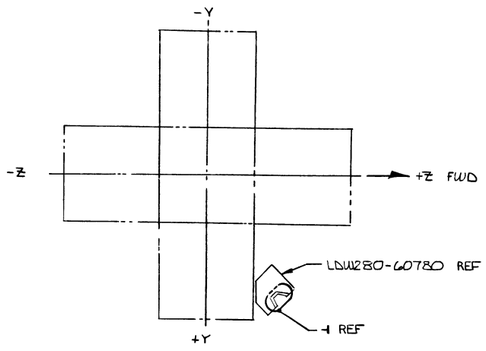
VIEW LKG DOWN
(FULL SIZE)



VIEW D-D
(FULL SIZE)



SECTION C
(FULL SIZE)



VIEW LKG DOWN
ENGR REF ONLY

NOTES:

1. NO TOOLING HOLES PERMITTED IN PARTS.
2. APPLICABLE PROCEDURES:
   LPC280-1 (FABRICATION)
   LPC280-3 (SEAMS & FOLDS)
   LPC280-6 (CUTTING & PATCHING)
3. WRAP ALL SHARP EDGES USING GT835P-8 TAPE AS REQD.
4. -17: ALUMINIZED POLYIMIDE (.002) PER LSM 14-6304 TYPE IIA, CL 2
5. FINISH ON REWORKED SURFACES NOT REQUIRED.
6. ANNEALED AREAS ADJACENT TO WELDS PERMISSIBLE.
7. WELDING STANDARD NO. 3 PER LSP 14-6201 EXCEPT WIRE BRUSHING MAY REPLACE SCRAPING. DYE PENETRANT CHECK ONLY - NO RADIOGRAPHIC INSPECTION REQUIRED. FLOWING INERT GAS SHIELD REQUIRED FOR ALL WELDING.
8. APPLY "CAT-A-LAC" SERIES 600 PER LSP 14-4606 TO ALL SURFACES; RATIO $\frac{\alpha_s}{\varepsilon_{hn}}$ SHALL BE ≤ 1.0
9. CARE SHALL BE TAKEN TO MINIMIZE CHIPPING, CRACKING, ETC. OF THERMAL COATING IN REWORKED AREAS.

02102

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
SIZE	CODE IDENT NO.	LDW200-55565	
J	26512		
SCALE NOTED		SHEET 3.00	

PRINTING INFO ONLY
PRINT TRIM LINE
FULL SIZE SHEET AREA (36 X 87) = 21.7 SQ FT
½ SIZE SHEET AREA (½ OF FULL) = 5.43 SQ FT

LDW200-55565

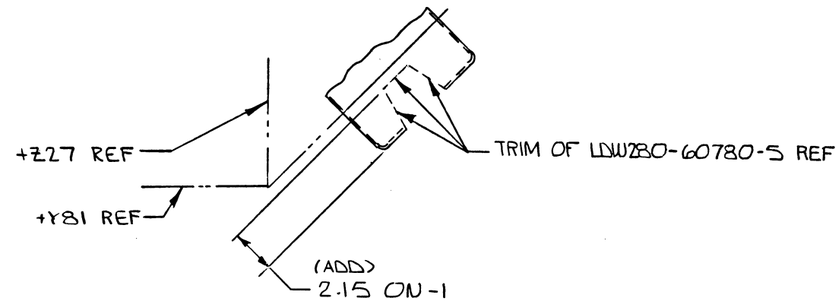
FORM 32-0537/1

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 22.1 REV 3-65

DWG NO. LDW200-55565	EO NO. A1
CONTROL INFO NO. LDW280C1365	

IN F/D ADD 2.15 DIM AS NOTED



DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	V	LCD 57756 PK 50

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
ADD MISSING DIMENSION	ADDED 2.15 DIM	

MODEL	EFFECTIVITY			DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
	~~PRODUCTION ADMIN NO~~ EI	GAEC UNIT NO.	SUB CONTR UNIT NO.	REVISE DWG	RECORD EO	NOT REWORK	REQD SCRAP	DATE	3-25-71			NM				
									VDI	SUPPORT	RELIAB GROUP	3/25/71	3-26-71		3/26/71	3-26-71
												GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	~~CONT~~
LM	LFM 654	LM-10(40)		PRIORITY C		DRAWING TITLE VENT INSTL~DNS~ OF LDW280-60508 ~ LFM 654 QD II ~ REWORK						DRAWING NO LDW200-55565				EO NO. A1

3-26-71 ISSUED BY G.BELEV ~G.HAUSMANN X87222 SECTION VEH DES INT GROUP NO. 0335 PL 025

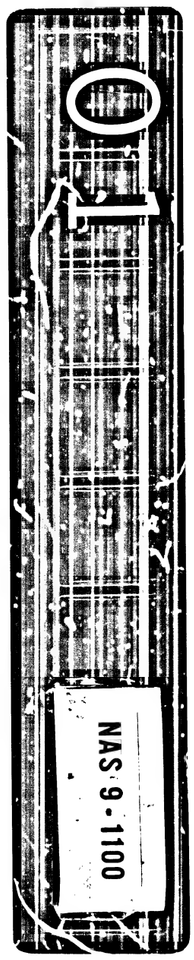
01
NAS 9-1100

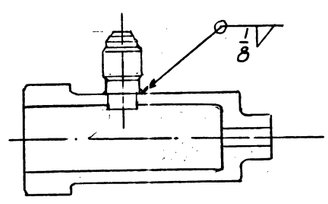
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

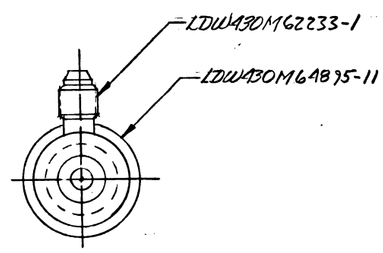
ENG 32.2 REV 3-65

DWG. NO. LDW430-64894		EO NO. A1
CONTROL INFO NO. LM430-3874		

IN B/M F/O & M/B CREATE LDW430-64894-1 AS FOLLOWS:







LDW430-64894-1 (PROCESS & FINISH NONE)

WELD PER LSP-14-6202.

NOTES 1. HYDROSTATIC PROOF PRESSURE TEST @ 20 PSIG FOR 5 MIN. NO VISIBLE LEAKAGE PERMITTED.

MODEL BLOCK
N/A LDW430M 64893
E/I LDW430-64900
REQD PER E/I 2 SER 1

TOLERANCE
XX= ±.03
XXX= ±.010
ANGLES ± 1°0'
125 √ = FINISH.
SCALE FULL SIZE
* DRAWING NOT MADE

LFM

WORK PACKAGE FUNCTION No. 140
CONTRACT No. NAS9-1100 DOCUMENTATION TYPE II
INTERFACE NOT AFFECTED-NO LDD CHANGE REQUIRED.

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	X LCD 5626

REASON FOR EO	DESCRIPTION OF EO	C GAEC EO RELEASE
TO INSURE PROPER SEALING.	E.O. A1 INITIAL DRAWING RELEASE PART MADE TO E.O.	

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	DATE	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	QUAL
LFM	E/I	STERNO						E.K.	4/5/71			K.L.			4/6/71	
033	LDW430-64900	1						[illegible]	3/24/71			[illegible]			4/4/71	4/15/71
								COG ENGR								

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	ADAPTER WELDED FLUID DIST SYSTEM EC39	LDW430-64894	A1

ISSUED BY P. ELSDON X1874 3-24-71 SECTION FLUID SYSTEMS GROUP NO. 0251 PG 025

GRUMMAN AEROSPACE CORPORATION

ENG 32.1 REV 3-65

CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LDW200 -55565		EO NO. A3
CONTROL INFO NO. LDW280C 1445		

IN MOD BLK FOR -1 ADD EFF:

LFM 729 N/A LDW280-60508 LM11(41) 1REQD/MOD

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓ LCD 5913 PKG 50

REASON FOR EO: LUNAR RAKE REQD ON LM11

DESCRIPTION OF EO: IN MOD BLK FOR-1 ADDED LFM 729 N/A LDW280-60508 LM11(41) REQ'TS

GAEC EO RELEASE

MODEL	EFFECTIVITY: ~~PROCURING ACTIVITY NO.~~	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 729A	LM11(41)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		/	

APPROVED BY								
DATE	10-15-71			10/15/71	10/15/71		10-15-71	10-15-71
	VD1	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	EO NO. A3

PRIORITY: C

VENT INSTL REWORK OF LDW280-60508 -LFM 729

DRAWING TITLE: D/S-QUAD IV

DRAWING NO.: LDW200-55565

ISSUED BY DON RAGAS X6107 SECTION VD1 GROUP NO. 0335 PL 025

01

NAS 9-1100

GRUMMAN AEROSPACE CORPORATION

CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO.	LDW200-55565		EO NO.	A4
CONTROL INFO NO.	LDW280C 1479			

IN MOD BLK FOR -1 ADD EFF.

LFM 762 N/A LDW280-60508 LM12(42) 1 REQD/MOD

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD 5966 PK50											
REASON FOR EO: LUNAR RAKE REQD ON LM12					DESCRIPTION OF EO: IN MOD BLK FOR -1 ADDED LFM 762 N/A LDW280-60508 LM12(42) REQM'TS, 1 REQD											GAEC EO RELEASE	
MODEL	EI	EFFECTIVITY			DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY				PGT	NM			
	~~PRODUCTIVE ACTIVITY~~ NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.		REVISE DWG	RECORD EO	REWORK	SCRAP	DATE				3-15-72	3-16-72		3/16/72	3-16-72
LM	LFM 762	LM12(42)									SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ. ENGRG	GAC
					PRIORITY C	VENT INSTL DRAWING TITLE D/S-QUAD IV - RWK OF LDW280-60508 LFM 762							DRAWING NO. LDW200-55565				EO NO. A4

ISSUED BY DON RAGAS Z2410 SECTION VD1 GROUP NO. 0335 PL 025

01

NAS 9-1100

LDW200-55566

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
3		MS21043-08	E	NUT	GOVT STD						
4		AN960D8		WASHER	GOVT STD						
3		GB511J-08-2		SCREW	GRUMMAN STD						
AR		GT835P-8		TAPE	GRUMMAN STD						
1		LDW200-55566-15		PLATE	AL ALY SHT	QQ-A-250/11	6061-T6	.040x1Xx4 1/2	NONE	NONE	2C
1		-13		COVER	AL ALY SHT	QQ-A-250/11	6061-T6	.040x3 1/2x7	NONE	NONE	3C
1		-11		ANGLE	AL ALY SHT	QQ-A-250/11	6061-T6	.040x3 1/2x4 1/2	NONE	NONE	1B
1		-3		CLOSURE ASSY (WELDED)					SEE NOTE 5	SEE NOTE 6	3B
-3	-1	LDW200-55566-1	E	CLOSURE INSTL					NONE	NONE	3B

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
AW	FUSION WELD	LSP14-6201

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55566

SCALE NONE SHEET 2.00

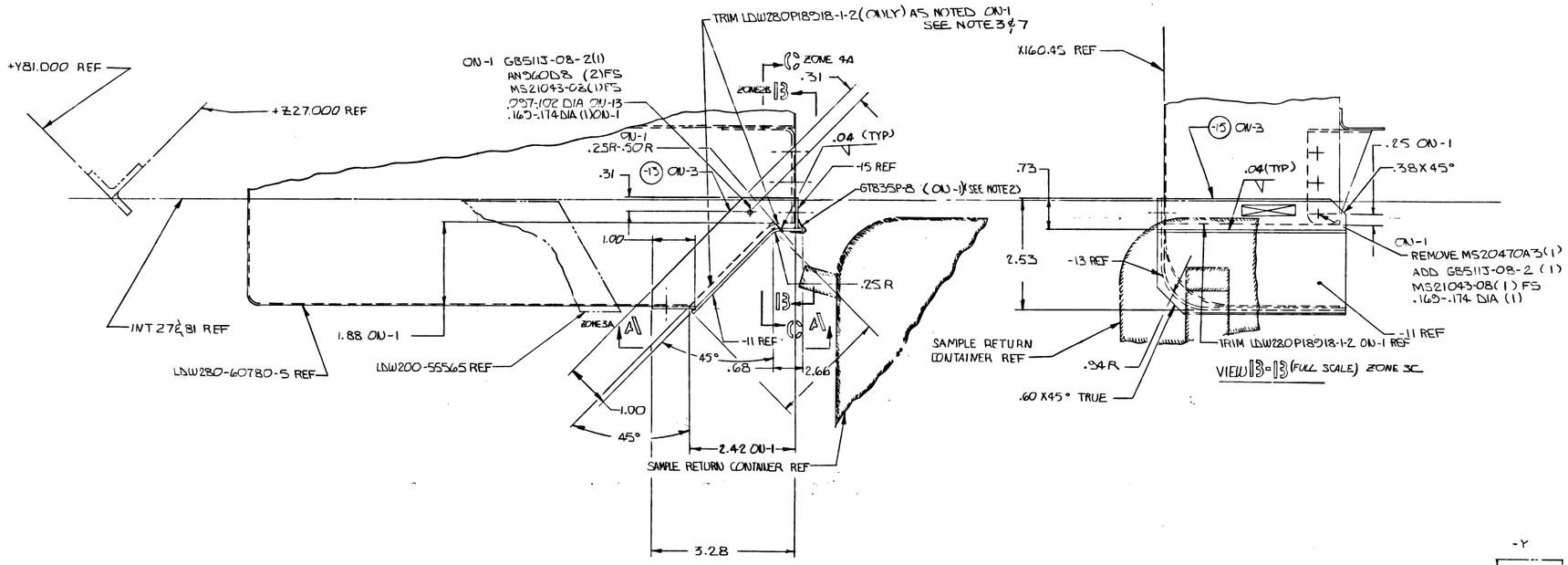
ENG 77.2 7-65

01

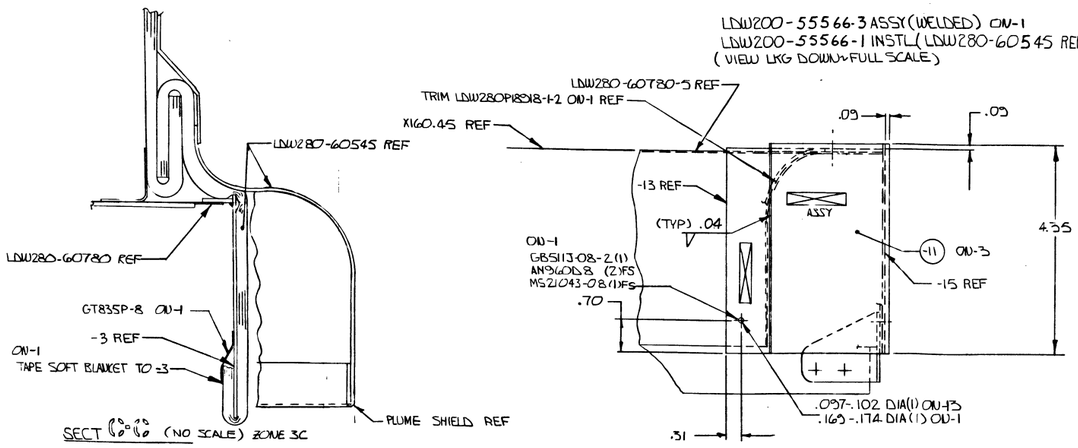
NAS 9-1100

NOTES:

1. NO TOOLING HOLES PERMITTED IN PARTS.
2. WRAP ALL SHARP EDGES USING GT835P-8 TAPE AS REQUIRED, PER LPC280-27 (ABRASION PROTECTION)
3. FINISH ON TRIMMED AREAS NOT REQUIRED
4. ANNEALED AREAS ADJACENT TO WELDS PERMISSIBLE.
5. WELDING STANDARD NO.3 PER LSP 14-6201 EXCEPT WIRE BRUSHING MAY REPLACING SCRAPING. DYE PENETRANT CHECK ONLY - NO RADIOGRAPHIC INSPECTION REQUIRED. FLOWING INERT GAS SHIELD REQUIRED FOR ALL WELDING.
6. APPLY "CAT-A-LAC" SERIES 600 PER LSP 14-4606 TO ALL SURFACES; RATIO $\frac{\text{Cr}}{\text{Fin}}$ SHALL BE ≤ 1.0. SURFACE PREPARATION TO BE ALODINE (FIN #7L) PER LSP 14-3010.
7. CARE SHALL BE TAKEN TO MINIMIZE CHIPPING, CRACKING, PEELING, ETC. OF THERMAL COATING IN REWORKED AREAS.
8. BREAK ALL EDGES .015-.030
9. RUBBER STAMP PART NUMBER IN AREAS MARKED

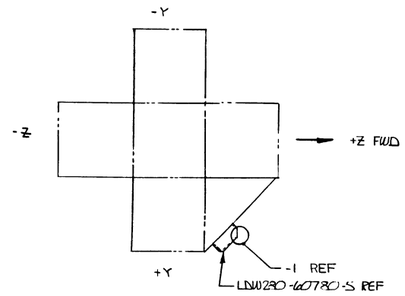


LDW200-55566-3 ASSY (WELDED) ON-1
LDW200-55566-1 INSTL (LDW280-60545 REMOVED FOR CLARITY)
(VIEW LKG DOWN - FULL SCALE)



SECT C-C (NO SCALE) ZONE 3C

VIEW A-A (FULL SCALE) ZONE 3C



VIEW LOOKING DOWN NO SCALE
ENGR REF ONLY

NAS-9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK			
SIZE	CODE IDENT NO.	LDW200-55566	
E	26512		
SCALE NOTED		SHEET 3.00	

LDW200-55566

TM 4753-22-22

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LDW200-55565 | EO NO. A2
CONTROL INFO NO. LDW280C 1386

IN F/D:
DELETE NOTE 8

IN B/M IN FINISH COLUMN OF -3:
NOW: 76
WAS: SEE NOTE 8
IN PROCESS BLOCK:
ADD: 76 ALODINE LSP14-3010

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LGD 5756 PKG 50

REASON FOR EO: PAINT NOT REQUIRED

DESCRIPTION OF EO: DELETED NOTE 8; ADDED 76 FINISH TO -3

GAEC EO RELEASE

MODEL	EFFECTIVITY: ~~PRODUCING ASSEMBLY NO.~~ E1	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 654	LM-10 (40)	

DRAWING CHANGE REQD: ✓ REVISE DWG | RECORD EO
DISPOSITION OF PARTS: ✓ REWORK | SCRAP

APPROVED BY									
DATE	4-14-71	4/14/71	4-14-71		4-14-71				
	VDI	~~PROPULSION~~ THERMO	~~MECHAN. GROUP~~ MAT	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG		

PRIORITY: C

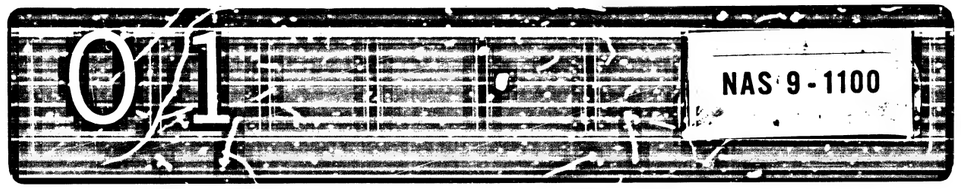
DRAWING TITLE: VENT IUSTL-D/S-QUAD IV REWORK OF LDW280-60508 LFM654

DRAWING NO.: LDW200-55565

EO NO.: A2

4-14-71 ISSUED BY J. VALENTINE 4-14-71 X6107

SECTION VEH DES & INTEG GROUP NO 0335 PG 025



LDW200-55568

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW200-55568-1	LFM 734 LDW280-60001	LM12(42)	1
	LFM 734 LDW280-60001	LM11(41)	1

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET									
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	A	GRUMMAN REL INFO	
LAST DASH NO. USED	-11	PRIM NO.	215

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
.XX±.03 .XXX±.010 ±0°30'

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 5926 PKG 50	

CONTRACT NO. NAS9-1100 LINE ITEM N/M DOCUMENTATION TYPE II

WORK PACKAGE FUNCTION NO. 110

DRAWN BY	D. RAGAS	THERMO	W. Lawson 10/13/71
LAYOUT BY	D. RAGAS		
CHECKED BY	CNB		
G.P. LEADER	R.L. 10/13/71		
VEH. DES INT	R. Thorpe 10-13-71		
STRUCTURES		PROJ ENGR	10/14/71
STRUCTURES	C.W. 10-13-71	REL GROUP	10-14-71

© GRUMMAN AEROSPACE CORPORATION
BETHPAGE, L. I., NEW YORK

UPPER HATCH DEFLECTOR INSTL
A/S - THERMAL SHIELD
(REWORK OF LDW280-60001)

SIZE	CODE IDENT NO.	
B	26512	LDW200-55568

SCALE NONE SHEET 1 OF 3

ENG 77.1 12-65

NAS 9-1100

QTY PER ASSEMBLY		CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
AR	AR		GT835P-8	E	TAPE	GRUMMAN STD						
	AR		GT835E-8	E	↑	↑						
AR			GT15C-2	E	TAPE	GRUMMAN STD						
	6		AN960-D10L	E	WASHER	STAND. PART						
	1		LDW280-19042-11	E	DEFLECTOR	SEE DWG						
	1		LDW200-55568-11	E	BLANKET ASSY	(REWORK OF LDW280-59984-3)						
-11	-1		LDW200-55568-1	E	DEFLECTOR INSTL	(REWORK OF LDW280-59282-1)						

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55568

SCALE NONE SHEET 2

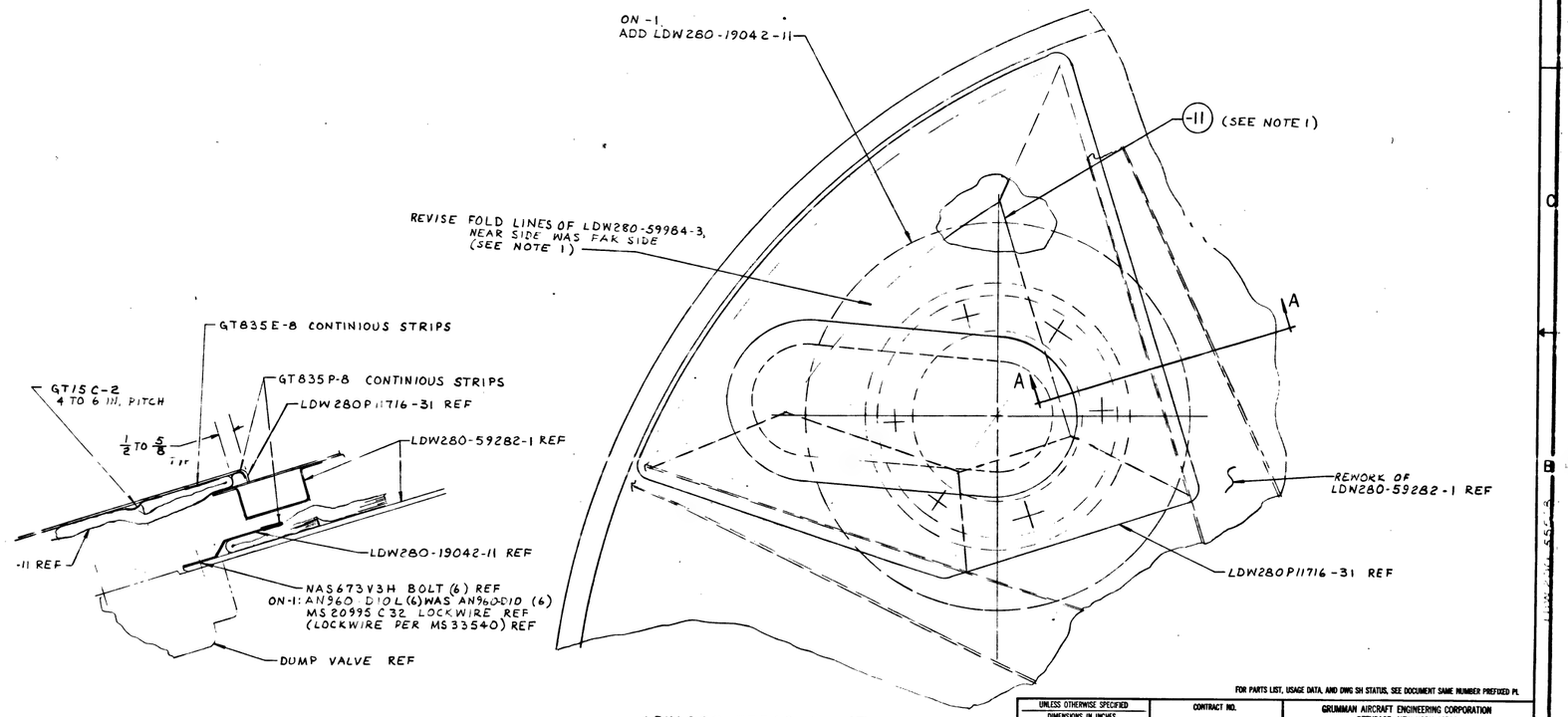
ENG 77.2 7-65

NAS 9-1100

LDW200-55568

REVISIONS						
ZONE	LTR	DESCRIPTION	EFF CODE	MODEL	DATE	APPROVED

NOTES
1- -11 IS MADE BY REWORKING LDW280-59984-3.



SECTION A-A

LDW200-55568-1 INSTL

NAS 9-1100

FOR PARTS LIST, USAGE DATA, AND DWG SH STATUS, SEE DOCUMENT SAME NUMBER PREFIXED PL

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES			CONTRACT NO.	GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714		
LINEAR TOL	XX	± .03	DRAWN BY			
	.XXX	± .010	LAYOUT BY			
ANGULAR TOL		± 0°30'	CHECKED BY			
TOL ON LOFTED DELINEATIONS IS			GP LEADER			
			REL GROUP			
			PROJ ENGR			
			GOVT APPD	SIZE D	CODE IDENT NO. 26512	LDW200-55568
				SCALE	SHEET 3 OF	

DISTR LIST #

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200 55568 | EO NO. A1

CONTROL INFO NO. LDW280C1452

ON-1
LDW280-19042-13 WAS LDW280-19042-11

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCD5926 PKG 50

REASON FOR EO: REVISED HOLE PATTERN IN DETAIL PART

DESCRIPTION OF EO: ON-1 LDW280-19042-13 WAS LDW280-19042-11

GAEC EO RELEASE

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM734	LM-1141	
	LFM734	LM-1242	

EFFECTIVITY H

DRAWING CHANGE REQD: ✓ REVISE DWG; RECORD EO

DISPOSITION OF PARTS: ✓ REWORK; SCRAP

APPROVED BY / DATE

VDI	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
			Rlc. 10/19/71	ew 10/21/71		10-15-71

PRIORITY: C

DRAWING TITLE: UPPER HATCH DEFLECTOR INSTL A/S THERMAL SHIELD (REWORK OF LDW280-60001)

DRAWING NO.: LDW200-55568

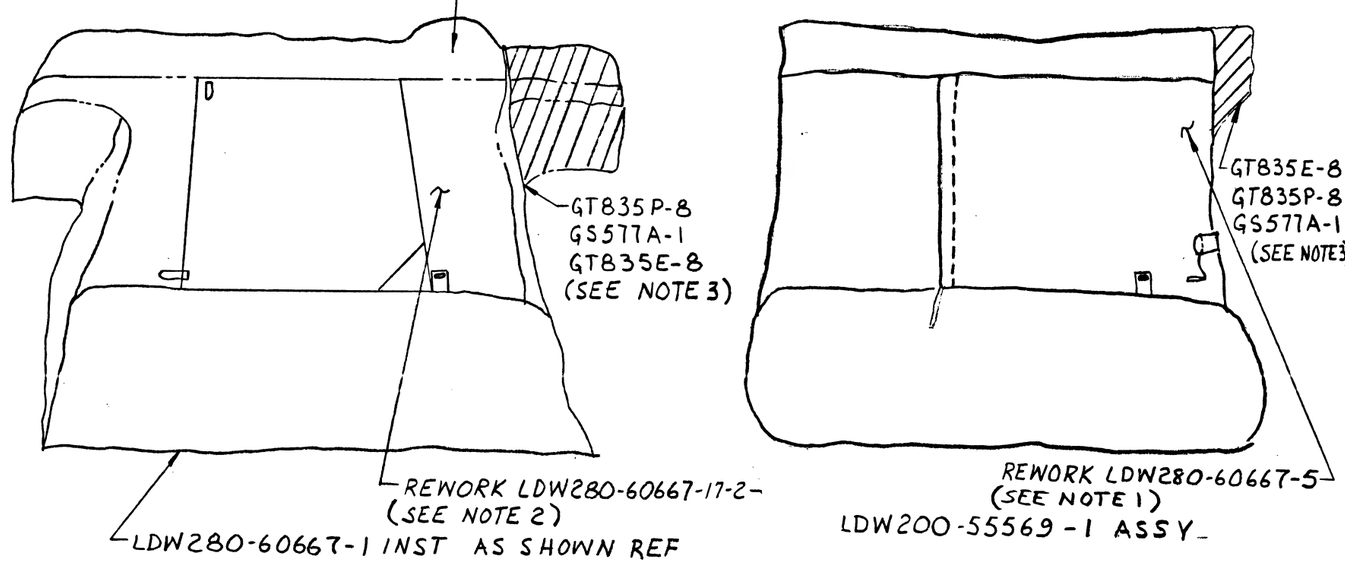
EO NO.: A1

ISSUED BY R. CLARK X1443 SECTION VDI GROUP NO. 0335 PL 025

01

NAS 9-1100

NOTES
1-LDW280-60667-5 ASSY MAY BE FOLDED OR TRIMMED AS REQD UNDER DIRECTION OF COG. ENGR TO CREATE -1 ASSY.
2-LDW280-60667-1 INSTL MAY BE FOLDED OR TRIMMED AS REQD UNDER DIRECTION OF COG. ENGR. TO CREATE -3 INSTL.
3-APPLICABLE PROCEDURES: LPC280-1 FABRICATION



GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW200-55569	
SCALE		SHEET 3.00	

ENG 73.1 6-64

NAS 9-1100

LDW200-55569

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM 725	LDW280-60508	LM12(42)	1
LFM 725A	LDW280-60508	LM11(41)	1
PART NO. LDW200-55569-15-3		GAEC SCH NO.	

WORK PACKAGE FUNCTION #110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00		2.00		3.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO	
LAST DASH NO. USED	-3	PRIM NO.	207

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES
NONE

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 5907 PKG.50	

CONTRACT NO. NAS9-1100 LINE ITEM DOCUMENTATION TYPE II

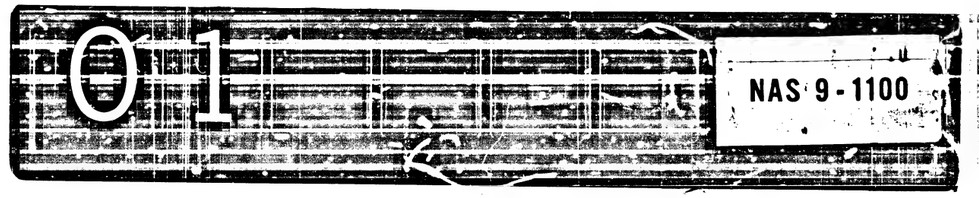
DRAWN BY	RAGAS	Tech Dir	L Marino 10-1-71
LAYOUT BY	RAGAS	THERMO	J Pizzuto 10/1/71
CHECKED BY			
GR LEADER	R Flo 10/1/71		
VEH. DES. INT	R Thorjusen 10-1-71		
STRUCTURES		PROJ ENGR	J Clay 10/1/71
STRUCTURES	N.M 10-1-71	REL GROUP	J Marsh 10-1-71

GRUMMAN AEROSPACE CORPORATION
BETHPAGE, L. I., NEW YORK

SHIELD INSTALLATION
DESCENT STAGE - MESA PALLET
(REWORK OF LDW280-60508)

SIZE	CODE IDENT NO.		
B	26512	LDW200-55569	
SCALE NONE		SHEET 1 OF 3	

ENG 77.1 12-65



ENG 32.1 REV 3-65

GRUMMAN AEROSPACE CORPORATION
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO LDW200-55569 | EO NO. A1
CONTROL INFO NO. LDW280C.1449

REVISE NOTE 1:
LDW280-60667-5, -9, -31 & -33 MAY BE FOLDED OR TRIMMED AS REQD. UNDER DIRECTION OF COG. ENGR. TO CREATE -1 ASSY

WAS
LDW280-60667-5 ASSY MAY BE FOLDED ---- ETC.

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	1 LCD 5607 DRG 50

REASON FOR EO: MISSING ADJACENT PART CALLOUTS EFF.

DESCRIPTION OF EO: REVISED NOTE 1 LDW280-60667-5,-9,-31,-33 MAY BE FOLDED ---- ETC. WAS LDW280-60667-5 ASSY MAY BE FOLDED ---- ETC.

GAEC ST RELEASE (a)

MODEL	EFFECTIVITY ACTIVITY NO. E1	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 725B	LM11(41)	
	LFM 725	LM12(42	

DRAWING CHANGE REQD: ✓ REVISE DWG; RECORD EO; ✓ REWORK; SCRAP
DISPOSITION OF PARTS

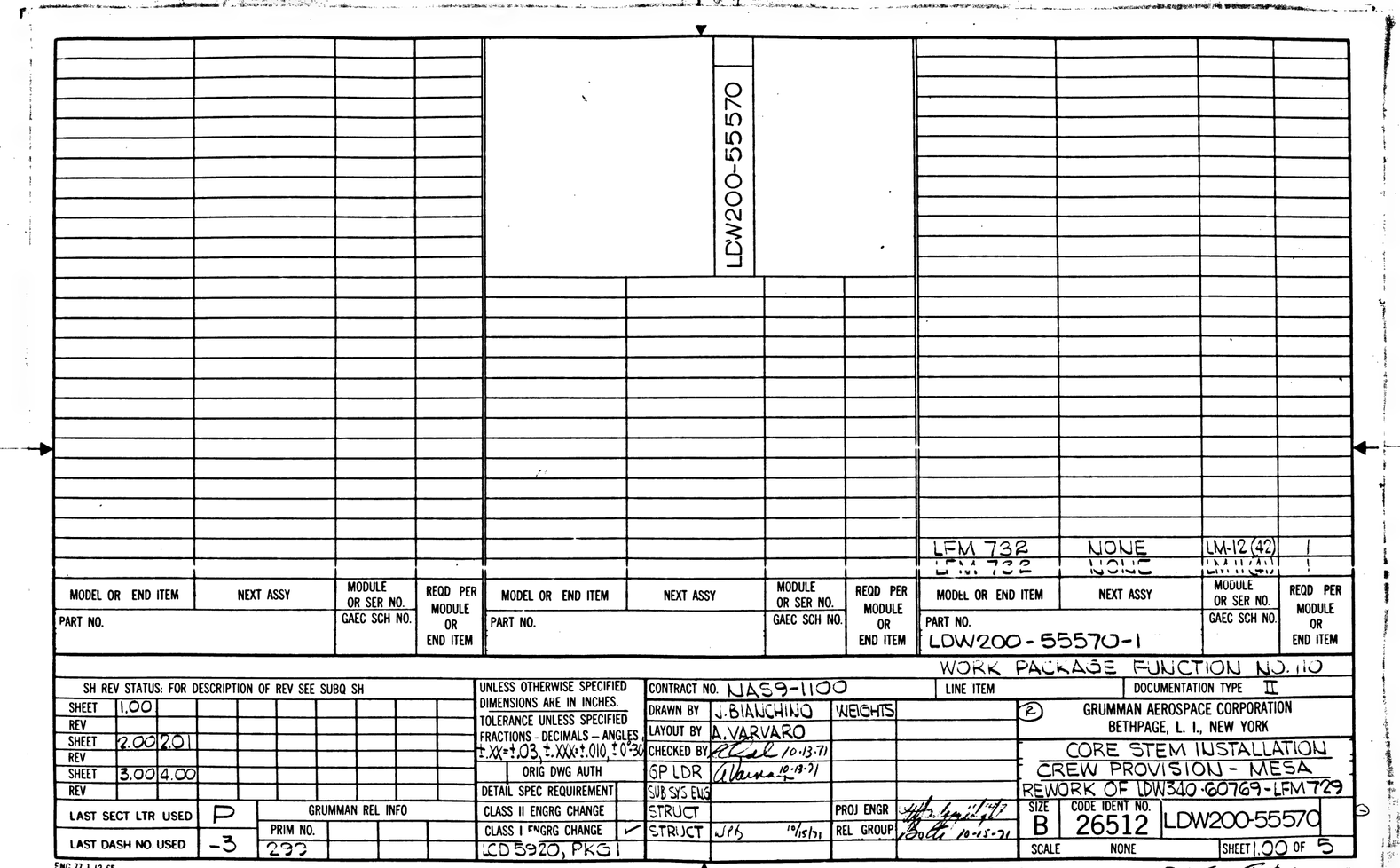
APPROVED BY									
DATE	10-21-71	10/21/71			10/21/71				10-21-71
	VD1		RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG		

PRIORITY: C
DRAWING TITLE: SHIELD INSTL - MESA D/S (REWORK OF LDW280-60508-1)
DRAWING NO.: LDW200-55569
EO NO.: A1

ISSUED BY DON RAGAS 6107 SECTION VD1 GROUP NO. 0335 PL 025

01

NAS 9-1100



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LEM 732	NONE	LM-12 (42)	1
								LEM 732	NONE	LM-11 (41)	1
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW200-55570-1		GAEC SCH NO.	

WORK PACKAGE FUNCTION NO. 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH											
SHEET	1.00										
REV											
SHEET	2.00	2.01									
REV											
SHEET	3.00	4.00									
REV											

LAST SECT LTR USED	P	GRUMMAN REL INFO	
LAST DASH NO. USED	-3	PRIM NO.	233

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
±.XX=±.03, ±.XXX=±.010, ±0°30'

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD5920, PKG1	

CONTRACT NO. NAS9-1100 | LINE ITEM | DOCUMENTATION TYPE II

DRAWN BY	J. BIANCHINO	WEIGHTS	
LAYOUT BY	A. VARVARO		
CHECKED BY	R Gal 10-13-71		
GP LDR	Varvaro 10-13-71		
SUB SYS ENG			
STRUCT		PROJ ENGR	10-15-71
STRUCT	JPB 10/15/71	REL GROUP	10-15-71

(2) GRUMMAN AEROSPACE CORPORATION
BETHPAGE, L. I., NEW YORK

CORE STEM INSTALLATION
CREW PROVISION - MESA
REWORK OF LDW340-60769-LFM729

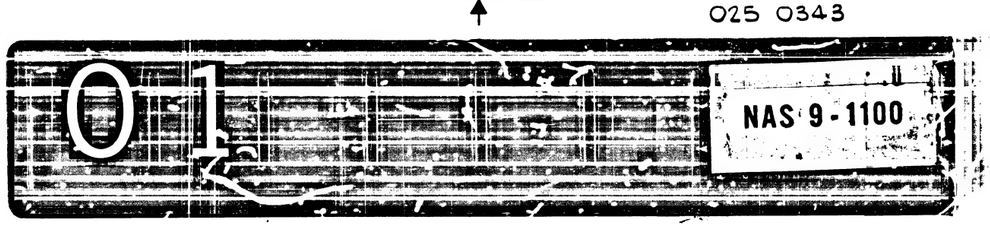
SIZE	CODE IDENT NO.	
B	26512	LDW200-55570

SCALE NONE | SHEET 1.00 OF 5

ENG 77.1 12-65

025 0343

Distr List #1



QTY PER ASSEMBLY								CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
						4			LDW340-60791-13	E	ACLAR							14A
						1			LDW340-60791-3	E	STRAP ASSY							11D
						1			LDW340-60665-7	E	BAG ASSY							11D
						1			LDW340-60664-5	E	STRAP ASSY							6A
						1			LDW340-60664-3		STRAP ASSY							6B
						1			LDW340-60664-1		STRAP ASSY							6B
						1			LDW340-55274-7		HANDLE ASSY							16D
						1			LDW340-15676-29		BLOCK							17B
						2			-27		BLOCK							17B
						2			-25		BLOCK							17D
						1			-23		TEE							16C
					1				-21		ANGLE							18D
					1				-19		ANGLE							18C
						1			-17		TEE							15D
						1			-15		PLATE							18D
						1			-13		PLATE							17A
						1			LDW340-15676-11		PLATE							17A
						1			LDW340-15675-15		RETAINER							14B
					1				LDW340-15676-13		CUP							17D
						1			LDW340-15675-11		RETAINER							16D
						1			LDW200-55570-3		CUP ASSY					NONE	NONE	18C
					-3	-1			LDW200-55570-1	E	CORE STEM INSTL					NONE	NONE	5A

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

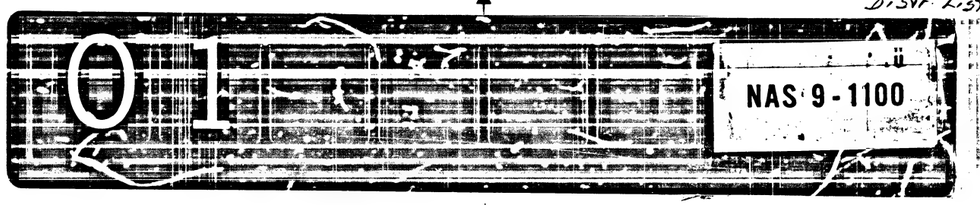
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55570

SCALE NONE SHEET 2.00

ENG 77.2 7-65

DISTR. LIST NO. 1



QTY PER ASSEMBLY					CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
			-3	-1											
						NAS1097AD4	E	RIVET	IND STD						
				4		NAS1097AD3		RIVET	IND STD						
				2		NAS697C08		PLATE NUT	IND STD						
				2		MS90354-0508		BOLT	GOVT STD						
				3		MS90354-0507		BOLT							
				1		MS90354-0506		BOLT							
				5		MS90354-0505		BOLT							
				1		MS27983-8N		STUD							
				3		MS27983-7N		SOCKET							
				3		MS27983-6N		BUTTON							
				2		MS20230B20		GROMMET							
				AR		MS20470AD5		RIVET							
				AR		MS20470AD4		RIVET							
				AR		MS20426AD5		RIVET							
				AR		MS20426AD4		RIVET							
				2		AN960D8L		WASHER	GOVT STD						
				1		GR501A5J		RIVET	GRUMMAN STD						
				1		GR500A5E		RIVET							
				1		GN512H0X		NUT							
				1		GN510C832		NUT							
				1		GB510F08-10		BOLT							
				1		GB511K08-5		BOLT							
				1		GB511J08-2	E	BOLT	GRUMMAN STD						

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

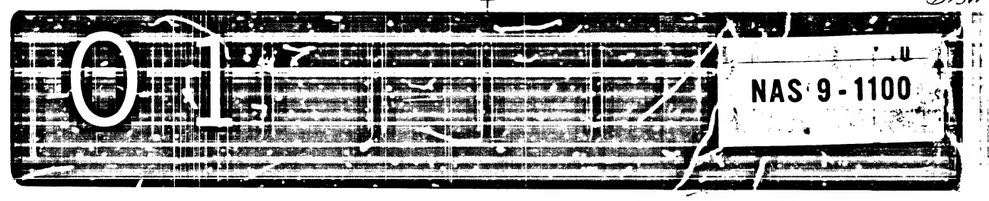
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

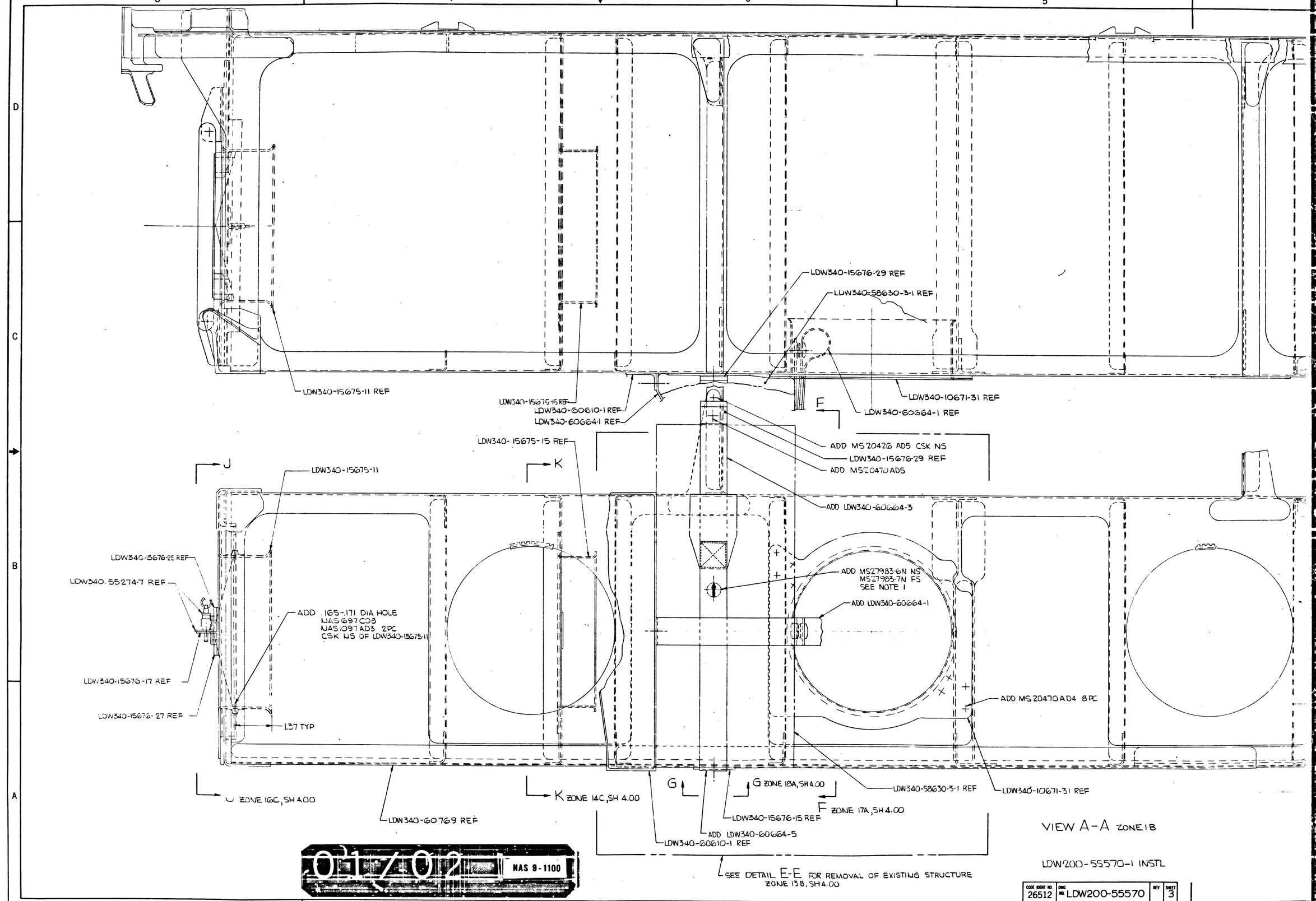
SIZE	CODE IDENT NO.	
B	26512	LDW200-55570

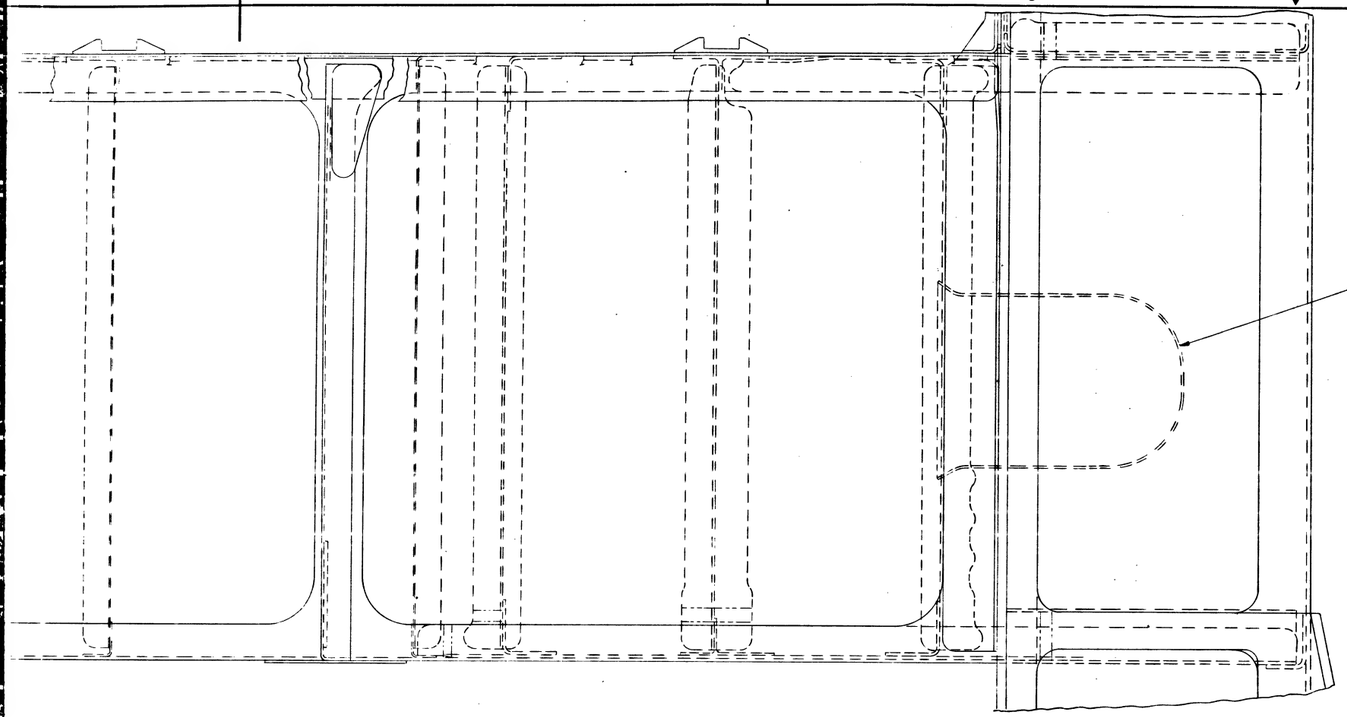
SCALE NONE SHEET 2.01

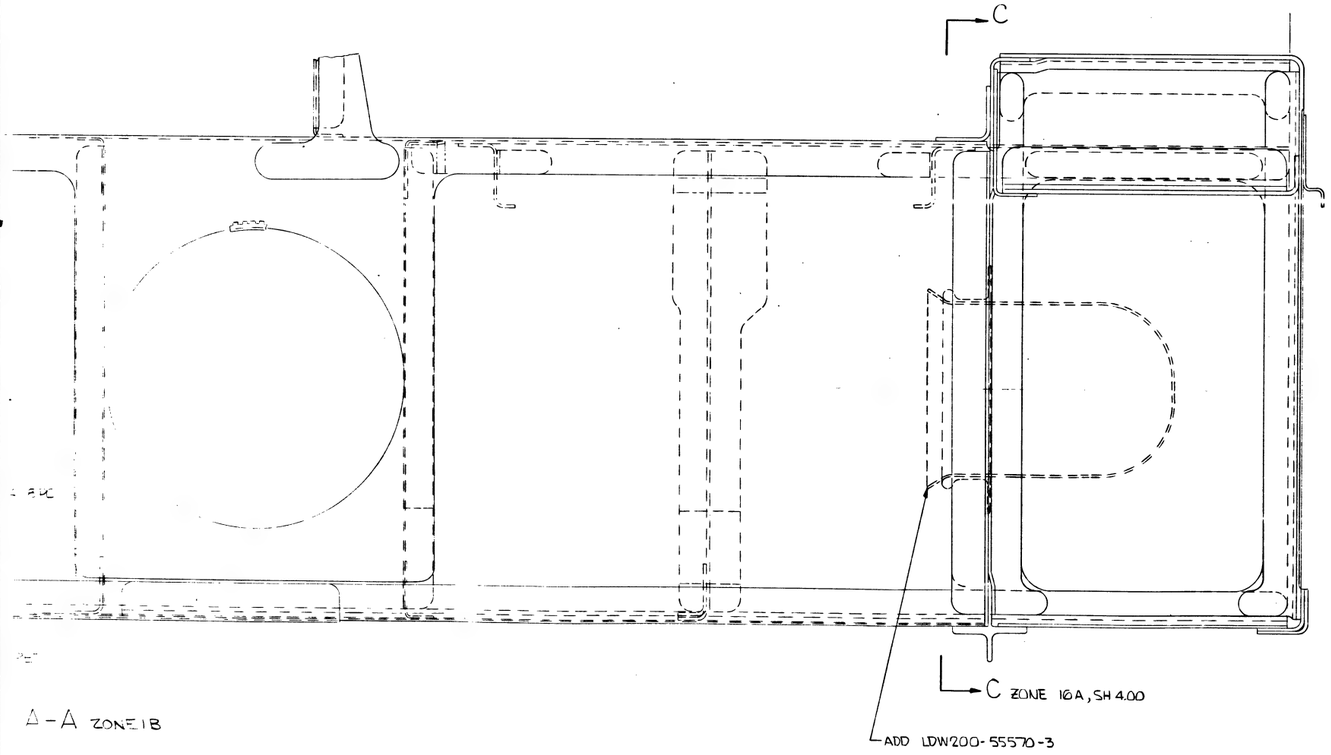
ENG 77.2 7-65

DIST LIST NO 1




LDW340-15676-29 REF
LDW340-58630-3-1 REF
LDW340-15675-11 REF
LDW340-15675-15 REF
LDW340-60610-1 REF
LDW340-60664-1 REF
LDW340-10671-31 REF
LDW340-60664-1 REF
F
LDW340-15675-15 REF
ADD MS20426 AD5 CSK NS
LDW340-15676-29 REF
ADD MS20470 AD5
J
LDW340-15675-11
K
ADD LDW340-60664-3
LDW340-15676-25 REF
LDW340-55274-7 REF
ADD MS27983-6N NS
MS27983-7N FS
SEE NOTE 1
ADD .165-.171 DIA HOLE
NAS697C03
NAS1097AD3 2PC
CSK NS OF LDW340-15675-11
ADD LDW340-60664-1
LDW340-15676-17 REF
LDW340-15676-27 REF
1.37 TYP
ADD MS20470AD4 8PC
U ZONE 16C, SH 4.00
K ZONE 14C, SH 4.00
G
G ZONE 18A, SH 4.00
LDW340-58630-3-1 REF
LDW340-10671-31 REF
F ZONE 17A, SH 4.00
LDW340-60769 REF
LDW340-15676-15 REF
ADD LDW340-60664-5
LDW340-60610-1 REF
SEE DETAIL E-E FOR REMOVAL OF EXISTING STRUCTURE
ZONE 13B, SH 4.00
VIEW A-A ZONE 1B
LDW200-55570-1 INSTL
NAS 9-1100
CODE IDENT NO 26512
DWG NO. LDW200-55570
REV
SHEET 3
FRAME 1
FRAME 2



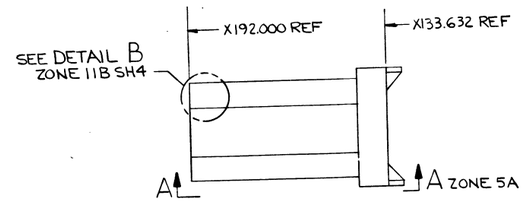


A-A ZONE 18

REVISIONS						
ZONE	LTR	DESCRIPTION	CHG CODE	MODEL	DATE	APPROVED

NOTES

1. PULL STRAPS TAUT AGAINST SAMPLE BAG CONTAINER OR ITS MASS REPRESENTATION BEFORE INSTALLING SNAPS IN LDW340-60664-3 & LDW340-60664-5 TO INSURE SNUG FIT
2. PULL STRAP TAUT AGAINST SAMPLE BAG CONTAINER OR ITS MASS REPRESENTATION BEFORE INSTALLING SNAPS IN LDW340-60664-1 TO INSURE SNUG FIT
3. PRIOR TO REMOVING LDW340-15185-11 CUT 6.25 DIA HOLE IN LDW340-15185-15 (WEB) 2PL & LDW340-15185-19 (DOUBLER) USING LDW340-15185-11 AS A TEMPLATE
4. SHIM PER LPC280-53
5. INSTALL FASTENERS PER LSP14-15302, LSP14-15303 & LSP14-15306
6. FINAL HOLE SIZE FOR GB5111OB = .1390-.1740
7. PULL LDW340-60791-3 STRAP ASSY TAUT AGAINST LDW340-60665-7 CORE SAMPLE RETURN BAG, LDW340-60791-1 CONTAINER ASSY (6) AND 10543-RM--011-00 SOLAR WIND CONTAINER, BEFORE INSTALLING MS27983-8N & MS27983-9N FASTENER, TO INSURE SNUG FIT.
8. INSTALL MS20230B20 & LDW340-60791-131N LDW340-60791-3 USING POINTS A & B AS TEMPLATE.



FOR ENGINEERING REF ONLY
SCALE NONE
VIEW LOOKING DOWN IN DEPLOYED POSITION

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES		CONTRACT NO.	GRUMMAN AEROSPACE CORPORATION BETHPAGE, NEW YORK 11714
LINEAR TOL	XX ± .03 XXX ± .010	DRAWN BY	
ANGULAR TOL	± 0°30'	LAYOUT BY	
TOL ON LOFTED DELINEATIONS IS		CHECKED BY	
		SR-LEADER	
		REL GR/SPR	
		PROJ ENGR	
		GOVT APPD	
SIZE J	CODE IDENT NO 26512	LDW200-55570	
SCALE FULL		SHEET 3.00	

FOR PARTS LIST, USAGE DATA, AND DWG SH STATUS, SEE DOCUMENT SAME NUMBER PREFIXED BY

NAS 9-1100

LDW200-55570 REV SHEET 3

FRAME 1 FRAME 2

DISTR LIST =

B LDW200-55570

A LDW200-55570

PRINTING INFO ONLY
DRG SIZE 24 X 36
FULL SIZE SHEET AREA ON 1 SH = 24.5 SQ FT
36 SIZE SHEET AREA ON 1 SP TOTAL = 49.5 SQ FT

LDW340-15675-13 REF

1.31

6.320

NAS1097AD4 6PC
CSK FS OF LDW340-15675-13

SHIM AS REQD TYP 2 PL
SEE NOTE 4

LDW340-15676-21

LDW340-15675-13

.1480

.0935

LDW340-15676-19

LDW200-55570-3 ASSY

ADD LDW340-15676-25

ADD LDW340-55274-7

ADD LDW340-15[illegible]-11

ADD MS20470AD4 25PC

LDW340-60769 REF

REMOVE MS20470AD4 2PC
ADD MS20470AD4 2PC

ADD MS90354-0507 2PC

REMOVE MS90354-0506
ADD MS20426AD5
CSK NS OF LDW340-15675-11

LDW340M15186-11 REF

ADD LDW340-15676-17

REMOVE MS90354-0506 2PC
ADD MS90354-0507 2PC

REMOVE MS27983-8N
ADD GB510F08-10
LM-11 ONLY
REMOVE MS20470AD4
ADD MS90354-0507
LM-12 ONLY

LDW340-15185-19 REF

ADD LDW340-15676-25

.12

.25

ADD LDW340-15676-27
ADD MS90354-0507

REMOVE MS20470AD4
ADD MS20426AD4 CSK NS
OF LDW340-15675-11

REMOVE MS90354-0506
ADD MS20426AD5 CSK NS
OF LDW340-15675-11

REMOVE MS20470AD4
ADD MS20426AD4 CSK NS
OF LDW340-15675-11

ADD MS20426AD4 CSK NS
OF LDW340-15675-11

REMOVE MS20470AD4
ADD MS20470AD4

REMOVE MS90354-0506
ADD MS90354-0506

REMOVE GB511K08-5
GN512H08
ADD GB511K08-5
GN512H08

ADD LDW340-15676-23

REMOVE MS90354-0505 5PC
ADD MS90354-0505 5PC

ADD LDW340-15676-27

REMOVE LDW340-15133-25

REMOVE GB511K08-5
GN512H08
ADD MS20426AD5 CSK NS
OF LDW340M15186-11

REMOVE MS90354-0506 2PC
ADD MS90354-0508 2PC

VIEW J-J ZONE 8A, SH 3.00

LDW340-15185-13 REF

6.25 DIA REF SEE NOTE

SECTION K-K ZONE 7A, SH 3.00
SEE DETAIL D-D FOR REWORK

LDW340-15185-13 REF

LDW340-15676-11 REF

LDW340-10671-31 REF

LDW340-60604-1 REF

ADD MS27983-6N OR
MS27983-7N PER
SEE NOTE 2

DETAIL H ZONE 17A SH 4.00

ADD
LDW340-15676-29
MS20470AD5

LDW340-60769 REF

LDW340-10671-31 REF

SEE DETAIL H
ZONE 18B, SH 4.00

LDW340-60604-3 REF

LDW340-60604-1 REF

LDW340-60604-5 REF

.87

ADD LDW340-15676-11

ADD LDW340-15676-13

ADD .155-.161 DIA HOLE
LOCATE FROM
LDW340-15676-11
MS27983-8N
GR501ASJ

LDW340-60604-5 REF

ADD GB511J03-2
AN960D8L 2PC
GN510C832

ADD LDW340-15676-15

LDW340-60769 REF

.25

REMOVE MS20470AD4 2PC
ADD MS20470AD5 2PC

ADD MS20470AD5

LDW340-15676-15 REF

VIEW G-G ZONE 6A, SH 3.00

SECTION F-F ZONE 6A, SH 3.00

LDW340-60769 REF

LDW340-15185-19 REF

LDW200-55570-3 REF

REMOVE MS20470AD4 2PC
ADD MS20470AD4 2PC

ADD MS20470AD4 16PC

REMOVE MS20470AD4 2PC
ADD MS20470AD4 2PC

SECTION C-C ZONE 3A, SH 3.00

LDW340-15185-13 REF

LDW340-15185-19 REF

SEE SECT B-B FOR D

LDW340-15185-13 REF

DETAIL D-D ZONE 14[illegible]

NAS 9-1100

CODE IDENT NO.	DWG NO.	REV	SHEET
26512	LDW200-55570		4

FRAME 1 FRAME 2

LDW340-15185-13 REF

REMOVE LDW340-15185-11 SEE NOTE 3
REMOVE MS20470AD4 14 PC

6.25 DIA REF SEE NOTE 3

SECTION K-K ZONE 7A, SH 3.00
SEE DETAIL D-D FOR REWORK ZONE 14A, SH 4.00

LDW340-15185-13 REF

ADD LDW340-15075-15

ADD MS20470AD4 14PC

LDW340-15185-13 REF

LDW340-15185-19 REF

SEE SECT B-B FOR CUTOUT

LDW340-15185-13 REF

DETAIL D-D ZONE 14C, SH 4.00

1.50 MAX

10543-RM-011-00 REF

LDW340-60791-1 REF

LDW340-60665-7 REF

VIEW L-L ZONE 11D, SH 4.00

REMOVE MS27983-8N
GR501A5E

REMOVE MS20470AD4

REMOVE LDW340-11260-49

REMOVE LDW340-11260-47

REMOVE MS20470AD4 8 PC

LDW340-10671-31 REF

REMOVE LDW340-60627-31

LDW340-60610-1 REF

LDW340-60769 REF

DETAIL E-E ZONE 6A, SH 3.00

REMOVE LDW340-55274-7 AND
RELOCATE SEE VIEW A-A ZONE 16C, SH 4.00

ZONE 13D, SH 4.00

REMOVE MS27983-6N 2PC
MS27983-7N 2PC
ADD MS27983-6N 2PC
MS27983-7N 2PC
SEE NOTE 7

ADD LDW340-60665-7

REMOVE LDW340-60791-3
ADD LDW340-60791-3

M

N

M ZONE 11A, SH 4.00

N ZONE 13A, SH 4.00

P

P ZONE 12A, SH 4.00

DETAIL B ZONE 1A, SH 3.00

POINT B REF

6.68

REMOVE MS20470AD5
MS20230B20
LDW340-60791-13 NS&FS
ADD MS20470AD5
MS20230B20
LDW340-60791-13 NS&FS
SEE NOTE 8

LDW340-60781-3 REF

.25

CHEM-MILL LINE REF

SECTION N-N ZONE 11C, SH 4.00

REMOVE MS20470AD5
ADD MS20470AD5
LOCATE FROM LDW340-60620

LDW340-60791-3 REF

X187.500 REF

.50

SECTION P-P ZONE 11C, SH 4.00

LDW340-60620 REF

.38

POINT A REF

.47

SECTION M-M
ZONE 12C, SH 4.00

LDW340-60791-3 REF

REMOVE GR500A-5E
MS20230B20
LDW340-60791-13 NS&FS
ADD GR500A-5E
MS20230B20
LDW340-60791-13 NS&FS
SEE NOTE 8

027-02

NAS 9-1100

ZONE	LTR	REVISIONS: DESCRIPTION	CFF CODE	MODEL	DATE	APPROVED

FOR PARTS LIST, USAGE DATA, AND ENG. SW STATUS: SEE DOCUMENT SAME NUMBER, PREFIXED PL

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES		
LINEAR TOL	XX	± .03
	XXX	± .010
ANGULAR TOL		± 0°30'
TOL ON LOFTED DELINEATIONS IS		

CONTRACT NO.

DRAWN BY
LAYOUT BY
CHECKED BY
CH. LEADER
REL. GROUP
PROJ. ENGR.
GOVT APPD

GRUMMAN AEROSPACE CORPORATION
BETHPAGE, NEW YORK 11714

SIZE J | CODE IDENT NO. 26512 | LDW200-55570

SCALE FULL | SHEET 4.00

LDW200-55570 REV 4 SHEET FRAME 1 FRAME 2

DISTR LIST =

PRINTING INFO ONLY
DWG SIZE 34 X 44
DETAIL SHEET: MIN OK IF MIN = 24.5 SQ FT
½ SIZE SHEET: ADD½ OK IF ½ MIN = 49 SQ FT

B LDW200-55570

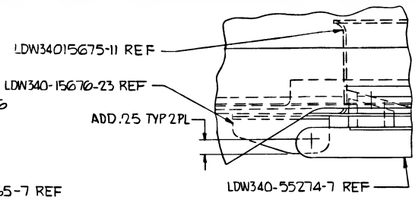
A LDW200-55570

GRUMMAN AEROSPACE CORPORATION
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LDW200-55570 | ED NO. A1
CONTROL DFO NO. LDW 343-9917

IN FLD/DWG ZONE 18D SH 4.00 ON-3 ASSY LDW340-15076 -21 SHOULD BE -19 & -19 SHOULD BE -21

IN FLD/DWG LDW340-60665-7 SHOULD BE LDW340-60665-7 REF REMOVE FROM B/M

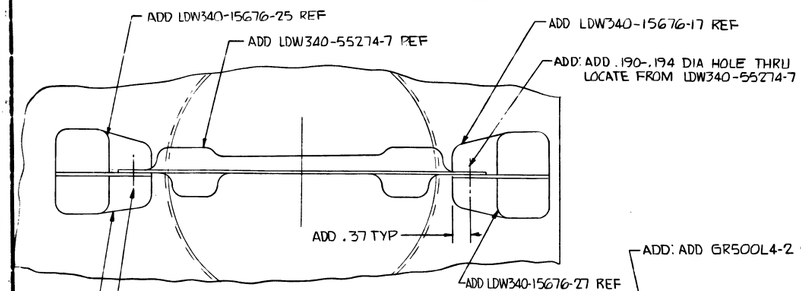


ZONE 8D SH 3.00

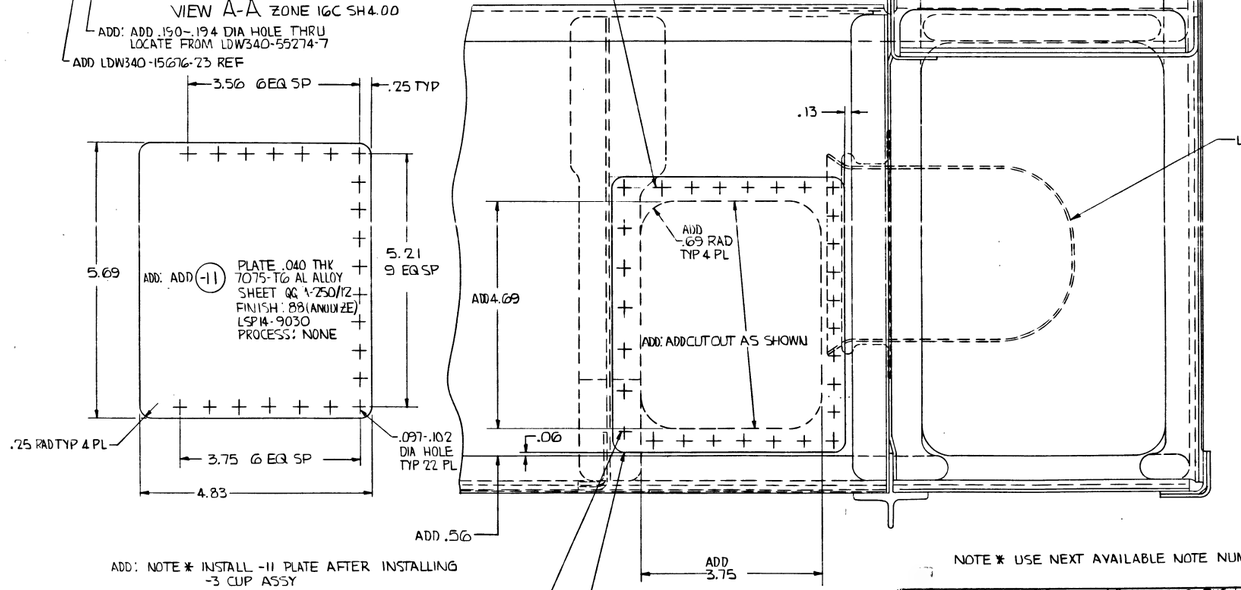
DESCRIPTION OF E.O.

ON-1 IN FLD & B/M REMOVED LDW340-60665-7 & MS20470AD4 7PC
ADDED LDW200-55570-11, GR500L4-2 22 PC, 3.75 x 4.69 CUTOUT .190-.194 DIA HOLE TYP 2PL & NOTE *, 1.30 DIM WAS 1.37 DIM
ON-3 IN FLD LDW340-15676-19 WAS -21 & -21 WAS -19 (ZONE 18D SH 4.00)
ON-1 IN FLD & B/M ADDED GR500L4-3 7PC

IN FLD/DWG ZONE 8A SH 3.00 1.37 TYP DIM SHOULD BE 1.30 TYP



VIEW A-A ZONE 16C SH 4.00



ADD: NOTE * INSTALL -11 PLATE AFTER INSTALLING -3 CUP ASSY

ADD: ADD LDW200-55570-11 SEE NOTE *
ADD: REMOVE MS20470AD4 7PC
ADD GR500L4-3 7PC

NOTE * USE NEXT AVAILABLE NOTE NUMBER

FULL SIZE SHEET AREA (27 x 30) = 5.6 SQ FT
1/2 SIZE SHEET AREA (1/4 FULL) = 1.9 SQ FT

MCD5820.PRET

FOR EASE OF MANUFACT. | "SEE ABOVE"

MODEL	EFFECTIVITY			DISPOSITION OF PARTS	APPROVED BY								
	EFFECTIVE AIRCRAFT	EFFECT UNIT NO.	FOR COMPL UNIT NO.	REQUIRED CHANGE KIT NO.	SCRAP	DATE							
LM	LEM 732	LM-11 (4)			10-25-71								
LM	LEM 732	LM-12 (4)											

PROJECT C | CORE STEM INSTALLATION | DRAWING NO. LDW200-55570 | A1

ISSUED BY A. VARVARO X7277 | SECTION CREW PROVISIONS | GROUP NO. 0343 | PG. 02

NAS 9-1100

GRUMMAN AEROSPACE CORPORATION

CODE IDENT NO. 26512

ENG 32.1 REV 3-65 **ENGINEERING ORDER**

DWG. NO. LDW200-55570 | EO NO. A2

CONTROL INFO NO. LDW 340 - 9924

IN FLD ZONE C6. SHT 3, ON-1

ADD

.167-.174 HOLE THRU LDW340-60610-1

GBS11J08-2 (HD FAR SIDE)

AN960D8L (2)

GNS10C832

LDW340-58630-31 REF

LDW340-60610-1 REF

LDW340-60661-1 REF

IN FLD SHT 3 REVISE FLD NOTE 3 TO READ

3. PRIOR TO... LDW340-15185-13 (WEB)...

WAS PRIOR TO... LDW340-15185-15 (WEB)...

IN FLD SHT 4.00, ZONE B14

DETAIL D-D

ADD MS20470AD4 4 PC

S/B

ADD MS20470AD4 18 PC

IN FLD SHT 4.00 ZONE A13 SECT N-N

LDW340-60781-3 REF S/B LDW340-60791-3 REF

ZONE A12

SEE VIEW A-A S/B SEE VIEW J-J

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD 5920 PKG 1

REASON FOR EO

CORRECT F/D CALLOUT & ADD HARDWARE CALL OUT

DESCRIPTION OF EO

ON-1 ADDED 167-174 HOLE, GBS11J08-2, AN960D8L GNS10C832 IN NOTE 3 LDW340-15185-15 WAS LDW340-15185-13 IN SECT N-N LDW340-60791-3 REF WAS LDW340-60781-3 REF IN DET D-D MS20470A04 (18) WAS (4)

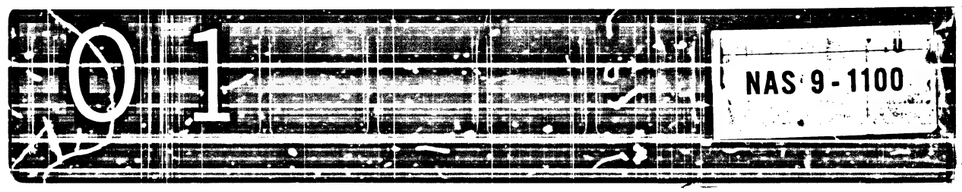
(R) GAEC EO RELEASE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM	LFM 732	LM 11 (41)	
LM	LFM 732	LM 12 (42)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY					DATE							
							SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG				
									11-1-71	11/1x		11-1-71	11-1-71			

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	C/P - MESA REWORK OF LDW340-60769 CORE STEM INSTL	LDW200-55570	A2

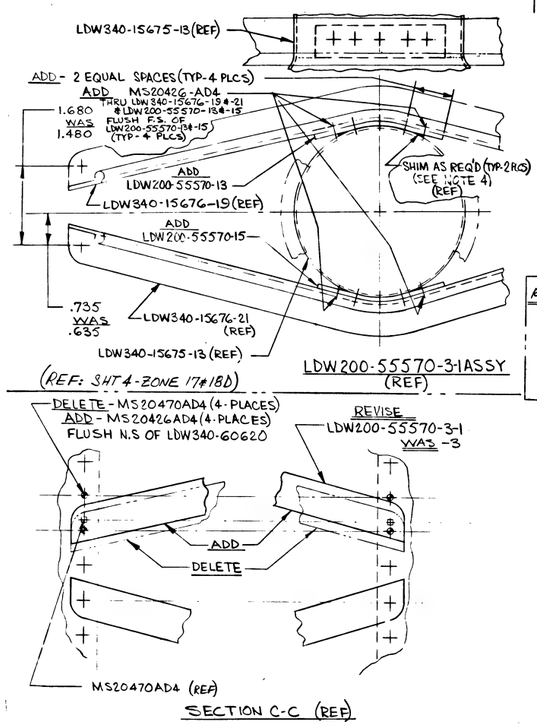
ISSUED BY T. DEW X1618 SECTION CREW PROV GROUP NO. 0343 PL 025



NAS 9-1100

IN S/O # 8/M : ADD -13 & -15 TO -3-1. ON-1: ADD -3-1, DELETE -3. -3-1 SAME AS -3 EXCEPT ON -3-1 ADD -13 & -15, MS20426AD4 (4 PLCS) & REVISED DIMENSIONS AS SHOWN. (NOTE: -3-1 MAY BE MADE BY REWORKING -3).

ON-1 REVISE:
CALLOUT (SHEET 4, ZONE 17A): GR501A5J 3/8 MS20426AD5
CALLOUT (SHEET 4, ZONE 18A) -VIEW G-G: MS20470AD5 (2 PL) 3/8 MS20470AD4 (3 PL)
CALLOUT (SHEETS, ZONE 5A) - MS20470AD4 (3 PC) 3/8 MS20470AD4 (9 PC) & ADD RIVET LOCATION
CALLOUT (SHEET 4, ZONE 17A) -SECT. C-C: MS20470AD4 (4) 3/8 MS20426AD4 (4), LDW200-55570-3 3/8-37
CALLOUTS (SHEET 4, ZONE 16D) -VIEW J-J: MS90354-0507 (3) 3/8-0511 (3), MS90354-0507 (2) 3/8 (1),
" MS90354-0508 (2) 3/8-0511 (3), " REMOVE MS27983-8N, ADD GB510F08-14",
" MS27983-8N (REF), ADD GB510F08-14",
ADD C'BORE 0.850 DIA CALLOUT
ADD MS90354-0509 (1)



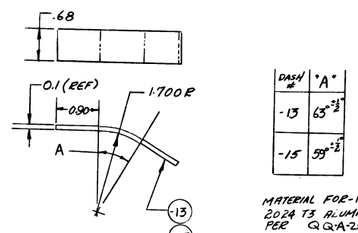
REF: SH 4 ZONE 17A

REVISE:
ADD: .155-.161 DIA HOLE
LOCATE FROM
LDW340-15676-11
MS27983-8N
MS20426AD5
WAS GR501A5J

REF: SH 4 ZONE 18A

REVISE:
ADD: MS20470AD4-3PL WAS MS20470AD5-2PL

VIEW G-G (REF)



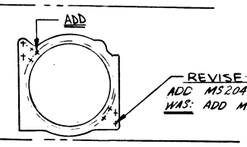
DASH #	"A"
-13	65° ±½°
-15	59° ±½°

MATERIAL FOR -13 & -15:
2024 T3 ALUMINUM
PER QQ-A-250/4
STOCK SIZE: 2.19 A. .68 X 0.10

SECTION C-C (REF)

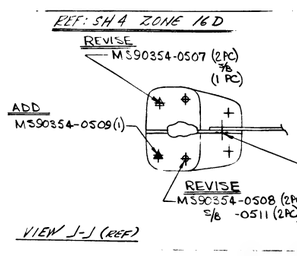
(REF: SH 4 ZONE 17A)

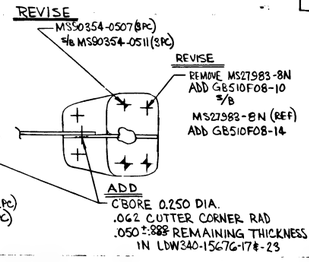
REF SH. 3 ZONE 5A



DESCRIPTION OF EO (CONT'D)
ADDED C'BORE 0.850 DIA; (ZONE 5A) -
REVISED: MS20470AD4 (9PC) WAS (8PC);
IN S/O # 8/M: DELETED -3, ADDED -3-1
IN S/O # 8/M ON -3-1: ADDED -13 & -15.

REF: SH 4 ZONE 16D





VIEW J-J (REF)

DETAIL SPEC REQD	CLASS II ENGRG CHG	CLASS I ENGRG CHG	✓	LCD 5920 PAG 1	CONTROL INFO NO. LDW340-9940

REASON FOR EO: TO PROVIDE FOR FINAL ASSY & INSTL OF SECONDARY SUPPORT STRUCTURE FOR CORE 1 BOBE STEM (DR 257,185)

DESCRIPTION OF EO: ON-1 IN S/O & 8/M (ZONE 17A) REVISED CALLOUT: MS20426AD5 WAS GR501A5J; (ZONE 18A) REVISED CALLOUT IN VIEWS G-G MS20470AD4 (5PL) WAS MS20470AD5 (2PL); REVISED CALLOUTS ON SECTION C-C: DELETE MS20470AD4 (4), ADD MS20470AD4 (4) ADD MS20426AD4 (4); ADDITIONAL ADD'N (ZONE 16D) REVISED CALLOUTS MS90354-0507 (10) WAS (5), MS90354-0511 (8) WAS -0507 (5), MS90354-0511 (5) WAS -0508 (2), ADDED: MS90354-0509 (1), MS27983-8N; REVISED GB510F08-14 WAS -10, (CONT'D)

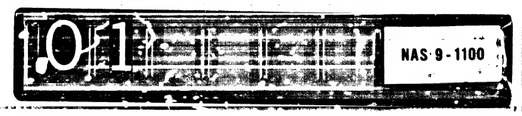
GRUMMAN EO RELEASE

MODEL No.	EFFECTIVITY: PROCURING ACT. NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM	LFM 732 &	LM-11 (41)	
	LFM 732	LM-12 (42)	

DRAWING REVISION REQD: REVISE DWG ✓; RECORD EO; REWORK; SCRAP
DISPOSITION OF PARTS: DATE BY 11-16-71; SUPPORT; RELIAB GROUP
GROUP LEADER: 11.17.71 dkv; STRESS GROUP: 11-17-71 JCH; LIAISON ENGRG: NH 11-18-71; GAC 11-22-71

PRIORITY: C
DRAWING TITLE: CORE STEM INSTALLATION
ENGINEERING ORDER
DRAWING NO.: LDW200-55570
EO NO.: A3

ISSUED BY: P. NOERMAN x1618, SECTION CREW PROVISIONS, GROUP NO. 0343, PL 025
CODE IDENT NO.: 26512
GRUMMAN AIRCRAFT ENGINEERING CORP, BETHPAGE, L. I., N. Y.



GRUMMAN AEROSPACE CORPORATION

CODE IDENT NO. 26512

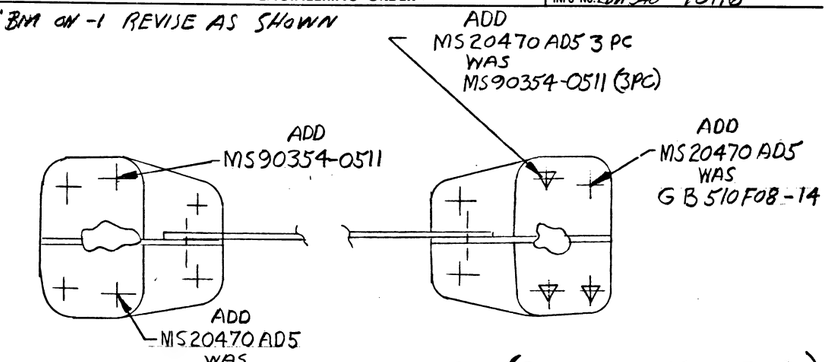
ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200-55570 | EO NO. AA

CONTROL INFO NO. LDW340-10116

IN FLD & BM ON -1 REVISE AS SHOWN



REF (SH.4 ZONE 16D EO A3)

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCO 5760 PROG I

REASON FOR EO: FACILITATE INST'L (REF DR-108)

DESCRIPTION OF EO: IN FLD & BM ON -1 ADDED MS90354-0511 & MS20470 AD5 WAS MS90354-0511 2 PC — MS20470 AD5 3PC WAS MS90354-0511(3PC) — MS20470 AD5 WAS GB510F08-14

GAEC EO RELEASE: 5-17-72

EFFECTIVITY			DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY										
PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	REVISE DWG	RECORD EO	REWORK	SCRAP	DATE			SUPPORT	RELIAB. GROUP	AV 5/17/72	NM 5-16-72	GROUP LEADER	STRESS GROUP	LIAISON ENGR	PROJ ENGRG 5-17-72
LM	LFM 732 A	LM-12(92)	✓		✓												GAC

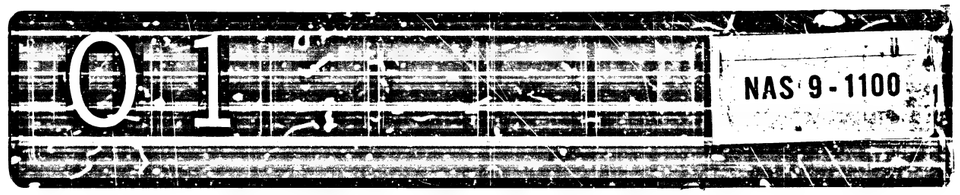
PRIORITY: C

DRAWING TITLE: CORE STEM INSTALLATION

DRAWING NO.: LDW200-55570

EO NO.: AA

ISSUED BY Bernie Savoie 9491 SECTION CREW PROV GROUP NO. 356 PL 025



LDW200-55571 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM603B	LDW340-60786	LM-12 (42)	1
PART NO. LDW200-55571-3		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM603D	LDW340-60781	LM-11 (41)	1
PART NO. LDW200-55571-1		GAEC SCH NO.	

WORK PKG FUNCTION NO. 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH											
SHEET	1.00	1.10									
REV	A	A									
SHEET	2.00										
REV	A										
SHEET	3.00										
REV	A										

LAST SECT LTR USED	A-A
LAST DASH NO. USED	-13

GRUMMAN REL INFO: PRIM NO. 299

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
~~FRACTIONS~~ DECIMALS – ANGLES
.XX=±.03, .XXX=.010 ±0°30'

ORIG DWG AUTH			
DETAIL SPEC REQUIREMENT		SUB SYS ENG	
CLASS II ENGRG CHANGE		STRUCTURES	
CLASS I ENGRG CHANGE	✓	STRUCTURES WRB 11/12/71	
LCD 5551 PKG 1		WEIGHTS	

CONTRACT NO. NAS9-1100 | LINE ITEM | DOCUMENTATION TYPE II

DRAWN BY	P. CARSTENSEN	MATERIALS TECH. DIR.	10-12-71
LAYOUT BY	A. VARVARO		
CHECKED BY	10-11-71		
GR LEADER	10-12-71		
PROJ ENGR	10-12-71		
REL GROUP	10-12-71		

GRUMMAN AEROSPACE CORPORATION
BETHPAGE, L. I., NEW YORK

PALLET ASSEMBLY
CREW PROVISIONS LUNAR ROVER AFT
REWORK OF LDW340-60781 & LDW340-60782 LFM603

SIZE	CODE IDENT NO.		
B	26512	LDW200-55571	A

SCALE NONE | SHEET 1.00 OF 4

ENG 77.1 12-65

025 0343

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	SHEET APPD
A	1	1.00, 1.10 2.00 3.00		LFM 603B LFM 603D		✓		LCD5551 PKG 20	ON-1 & -3 LDW340-60643-15 REF WAS LDW340-60643-21. REMOVED GT535AJ1H-0026, ADDED GT535GHCS-0026. GT535AJ-1L-0010 WAS GT535AJ-1L-0020. ADDED NOTE 7 & SH 1.10	LM-11(41) LM-12(42)	✓		ROARSTENSEN 10-14-71		
	2	2.00 3.00		LFM 603D		✓		LCD5551 PKG 20	ON-1 REMOVED GT535AJ1L-0020 & GT535AJ1H-0026 AND ADDED GT535GLCS-0020 & GT535GHCS-0026 RESP.	LM-11(41)		✓			

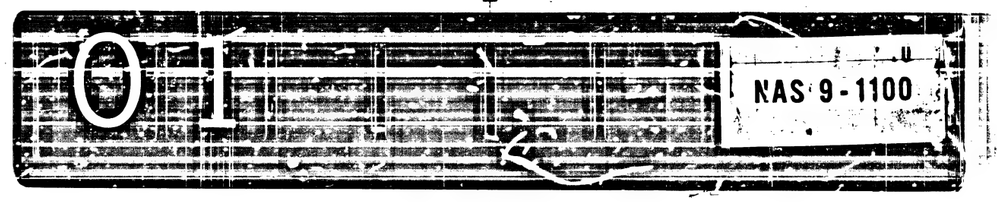
CHG APPROVED	LTR	GROUP LDR	SUB SYS MGR	STRUCTURES	TECH DIR.	PROJ ENGR
	A	10-13-71		10/13/71	10-15-71	10/15/71

ENG 77.16 3-66

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW200-55571	A

SCALE NONE SHEET 1.10



QTY PER ASSEMBLY -3	QTY PER ASSEMBLY -1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
AR			MS20426AD4	E	RIVET	GOVT STD						
3			AN960D10	E	WASHER	GOVT STD						
2			GT535G LCS-0020		TAPE	GRUMMAN STD						
2			GT535GHCS-0026		TAPE							
4			GS830G-25C3		SLEEVE							
AR			GS830CF-5-4		SLEEVE							
4			GS531B-2		SLEEVE							
2			GL10B2-21		LANYARD	GRUMMAN STD						
	1		LDW200-55571-13		GUIDE	PLASTIC, PCTFE	AMS 3650	SEE NOTE 5	.125 × 2.50 × 3.25	NONE	NONE	
	2		-11		GUIDE	PLASTIC, PCTFE	AMS 3650	SEE NOTE 5	.125 × 1.25 × 4	NONE	NONE	
			-3		PALLET ASSY					NONE	NONE	
			LDW200-55571-1	E	PALLET ASSY					NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

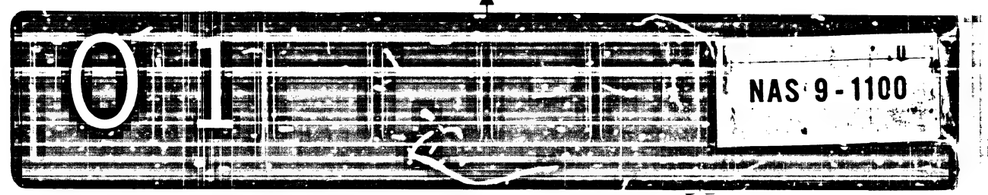
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW200-55571	A

SCALE NONE SHEET 2.00

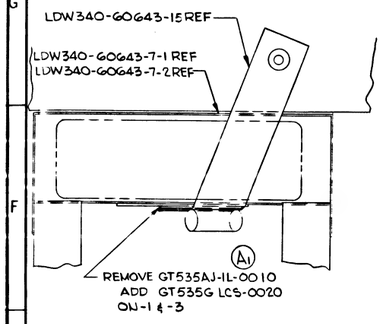
ENG 77.2 7-64

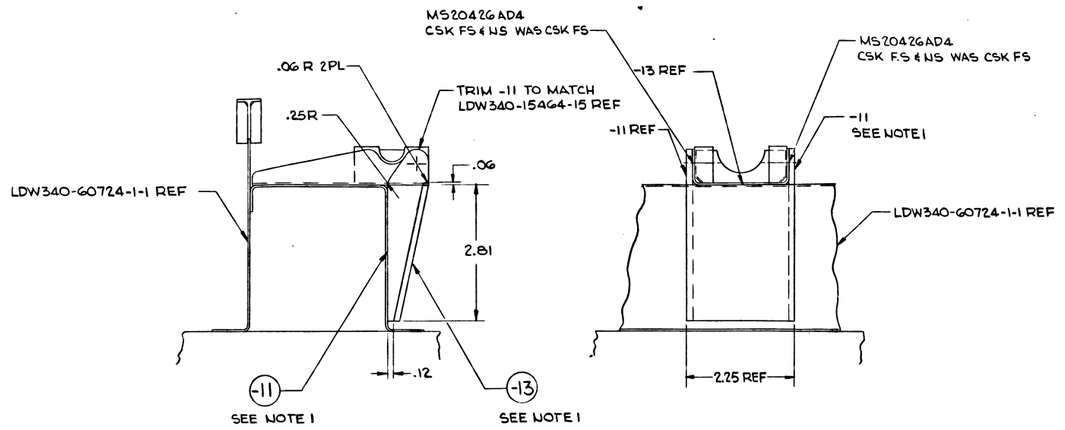


SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH MIL STD-130	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☐ USE BOTH SIDES IF NECESSARY	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL RIVETS IN ACCORDANCE WITH	

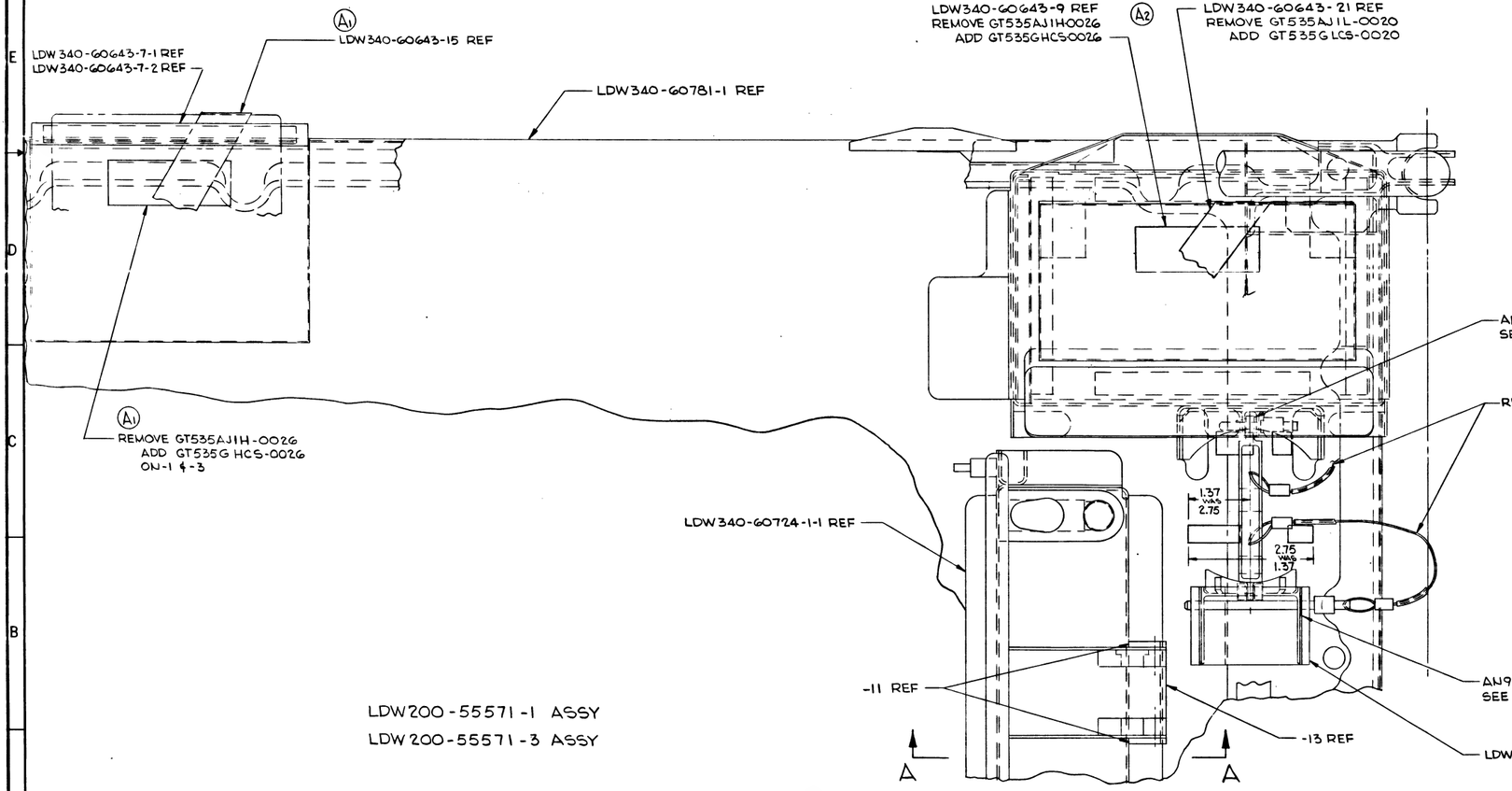
NOTES:

1. BOND IN PLACE USING EPON 934 PER LSP14-22500, CURE RANGE I ROOM TEMP. CURE PERMISSIBLE.
2. CUT .38 ± .12 PROTRUDING END OF LANYARD FLUSH WITH SLEEVE.
3. INSTALL GS531B2 PER GL10J3.
4. INSTALL GS830G PER LSP14-13319.
5. KEL-F-81 PER LSM14-4044.
6. THESE CHANGES COMPLY WITH DR 26, DR 28 & DR 30.
7. CREW HAZARD - PARTS REQUIRE SPECIAL HANDLING TO INSURE REMOVAL OF ALL SHARP EDGES & BURRS.





SECTION A-A



LDW200-55571-1 ASSY
LDW200-55571-3 ASSY

NAS·9·1100

GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714			
SIZE E	CODE IDENT NO. 26512	LDW200-55571	A
SCALE FULL		SHEET 3.00	

ENG 73 4 REV 547

LDW200-55571 A

LDW200-55572

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LFM 732	LDW280-60508	LM12(42)	1
								LFM 732	LDW280-60508	LM11(41)	1
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW200-55572-1		GAEC SCH NO.	

WORK PACKAGE FUNCTION NO. 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00		3.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	✓
LAST DASH NO. USED	-1

GRUMMAN REL INFO

PRIM NO. 207

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 5920 PK50	

CONTRACT NO. NAS9-1100 LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	RAGAS	THERM	P. Gordon 10-21-71 (2)
LAYOUT BY	RAGAS	Tech Evaluation	J. Marino
CHECKED BY	Marth 10-21-71		
GRP LDR	10/22/71		
VEH DES INT	10-21-71		
STRUCTURE	N.M 10/21/71	PROJ ENGR	10/21/71
		REL GROUP	10-21-71

GRUMMAN AEROSPACE CORPORATION
BETHPAGE, L. I., NEW YORK

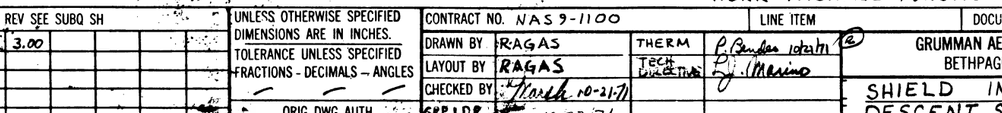
SHIELD INSTALLATION
DESCENT STAGE - MESA
REWORK OF LDW280-60508

SIZE	CODE IDENT NO.	
B	26512	LDW200-55572

SCALE NONE SHEET 1.00 OF 3.00

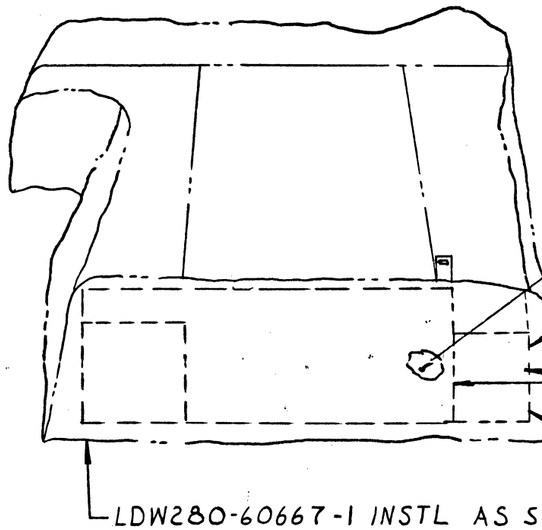
ENG 77.1 12-65

Distr. List # 1



| | | |

NOTES:
1- LDW280-60667-165 MAY BE FOLDED OR TRIMMED AS REQD UNDER DIRECTION OF COG. ENGR. TO CREATE -1 ASSY.
2- APPLICABLE PROCEDURES:
LPC280-1 FABRICATION
3- GT835P8 TAPE MAY BE USED IN PLACE OF GT100AF.



LDW200-55572-1 ASSY

GRUMMAN AEROSPACE CORPORATION BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW200-55572	
SCALE NONE		SHEET 3.00	

ENG 73.1 6-64

NAS 9-1100

QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
				A/R				MS20470AD4	E	RIVET	GOVT STD						
					4			GR500A5E		RIVET	GRUMMAN STD						
					3			GR500A5C		RIVET	GRUMMAN STD						
				1				LDW280-122626-13		BRACKET							
				1				LDW280-122626-12		BRACKET							
				1				LDW280-122626-11		BRACKET							
					1			LDW200-55574-3		BRACKET ASSY					NONE	NONE	
								LDW200-55574-1	E	BRACKET INSTL					NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

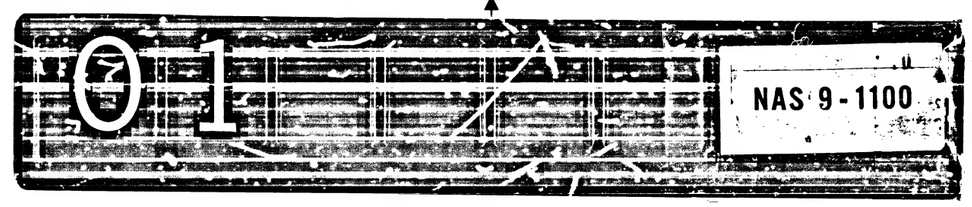
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

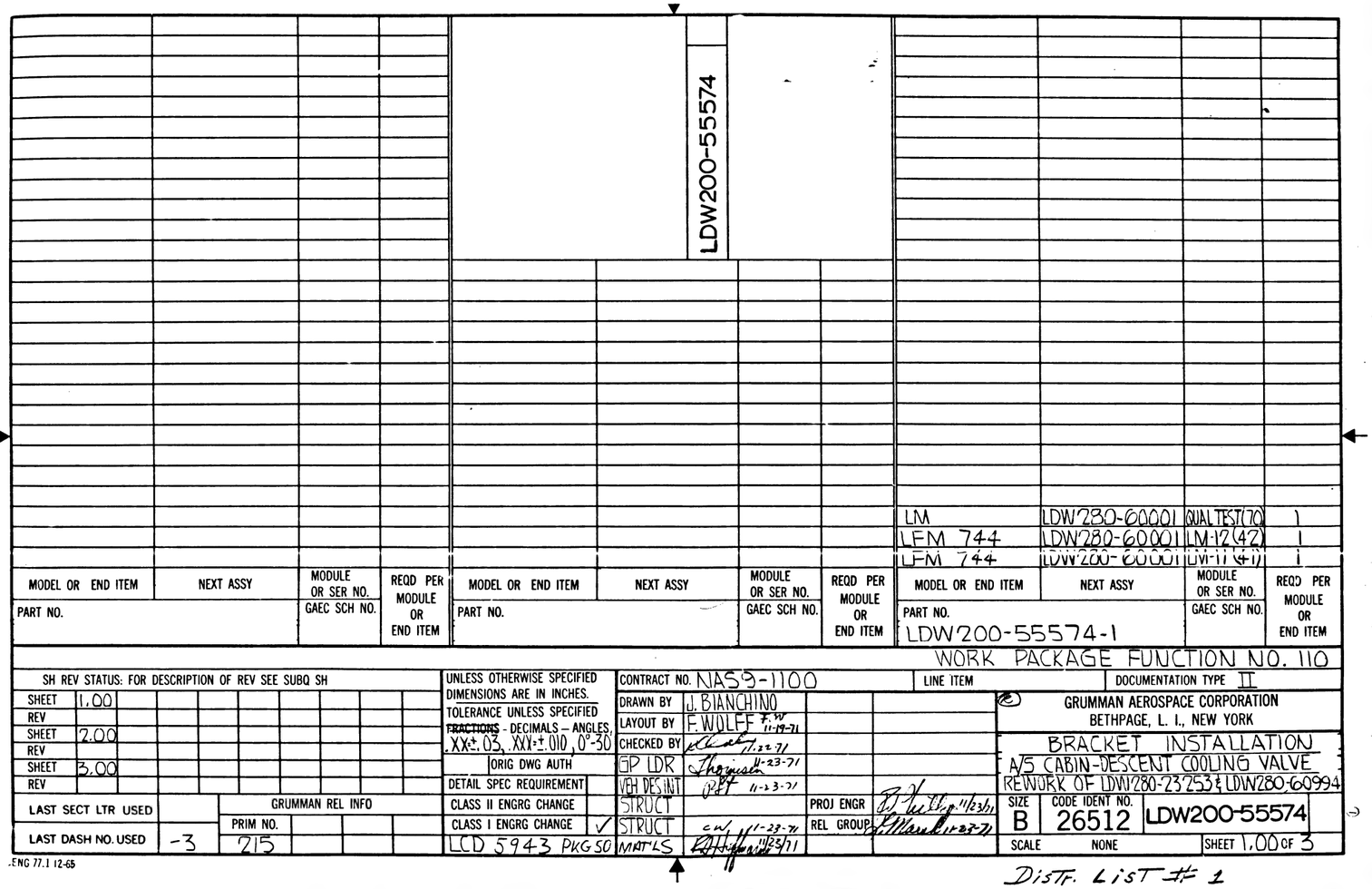
GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55574

SCALE NONE SHEET 2.00

ENG 77.2 7-64





MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW200-55574-1		GAEC SCH NO.	
								LM	LDW280-60001	QUAL TEST (70)	1
								LEM 744	LDW280-60001	LM-12 (42)	1
								LEM 744	LDW200-60001	LM-11 (41)	1

WORK PACKAGE FUNCTION NO. 110

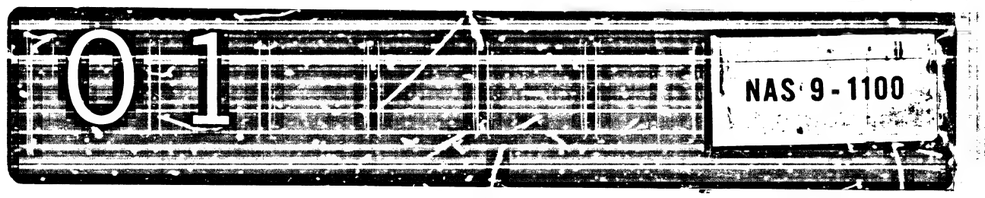
SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH											
SHEET	1.00										
REV											
SHEET	2.00										
REV											
SHEET	3.00										
REV											

LAST SECT LTR USED		GRUMMAN REL INFO
LAST DASH NO. USED	-3	PRIM NO. 715

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES .XX±.03, .XXX±.010, 0°-30				
ORIG DWG AUTH		CONTRACT NO. NAS9-1100	LINE ITEM	DOCUMENTATION TYPE II
DETAIL SPEC REQUIREMENT		DRAWN BY J. BIANCHINO		GRUMMAN AEROSPACE CORPORATION BETHPAGE, L. I., NEW YORK
CLASS II ENGRG CHANGE		LAYOUT BY F. WOLFF 11-19-71		BRACKET INSTALLATION A/S CABIN-DESCENT COOLING VALVE REWORK OF LDW280-23253 & LDW280-60994
CLASS I ENGRG CHANGE	✓	CHECKED BY 11-22-71		
LCD 5943 PKG 50		GP LDR 11-23-71		
		VEH DES INT 11-23-71		
		STRUCT	PROJ ENGR 11/23/71	SIZE B / CODE IDENT NO. 26512 / LDW200-55574
		STRUCT 11-23-71	REL GROUP 11-23-71	SCALE NONE / SHEET 1.00 OF 3
		MAT'LS 11/23/71		

ENG 77.1 12-65

DISTR. LIST # 1



SUPPLEMENTARY DATA
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS

MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130.

ENGRAVE CAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ENGR USE WHITE SIDES IF NECESSARY.

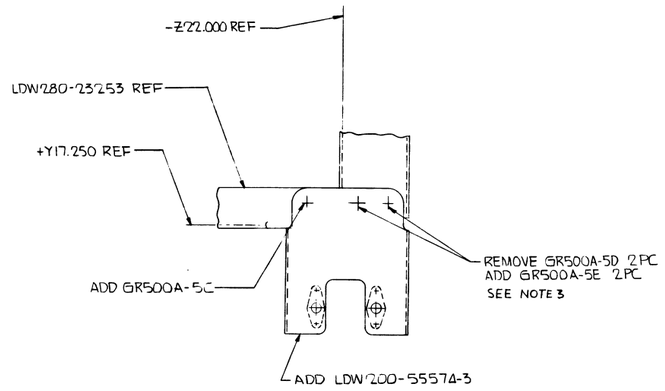
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.

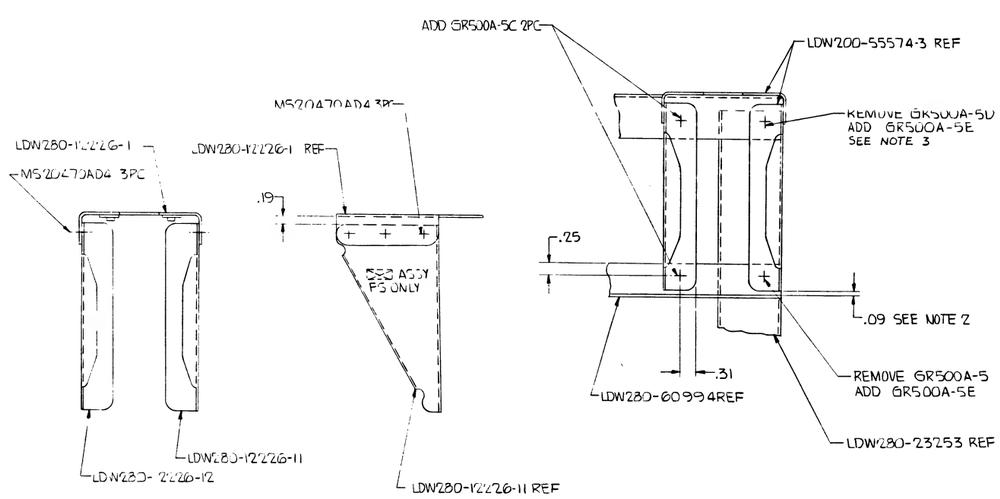
INSTALL RIVETS IN ACCORDANCE WITH LSP4-15501 & LSP-...-155...

REVISIONS						
ZONE	LTR	DESCRIPTION	EFF-CODE	MODEL	DATE	APPROVED

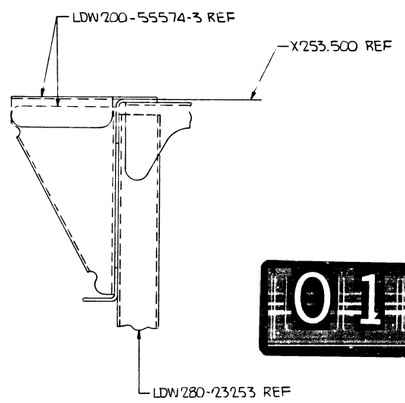
NOTES:

1. NEXT LARGER SIZE RIVET MAY BE USED IF HOLE DIAMETER HAS BEEN ENLARGED DURING RIVET REMOVAL
2. -3 ASSY MAY BE TRIMMED TO SUIT, ON INSTL
3. CAPTURED RIVET TAILS MAY BE LEFT IN ENCLOSED AREA





LDW200-55574-3 ASSY



LDW200-55574-1 INSTL

01

NAS 9-1100

LDW200-55574 REV

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES			CONTRACT NO.	GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714	
LINEAR TOL	XX	± .03	DRAWN BY		
	.XXX	± .010	LAYOUT BY		
ANGULAR TOL		± 1° 30'	CHECKED BY		
TOL ON LOFTED DELINEATIONS IS			SE LEADER		
			REL ENGR		
			PROJ ENGR		
			GOVT APPD	SIZE F	CODE IDENT NO. 26512 LDW200-55574
				SCALE FULL	SHEET 3 OF 3

DISTR LIST # 1

NAS 9-1100

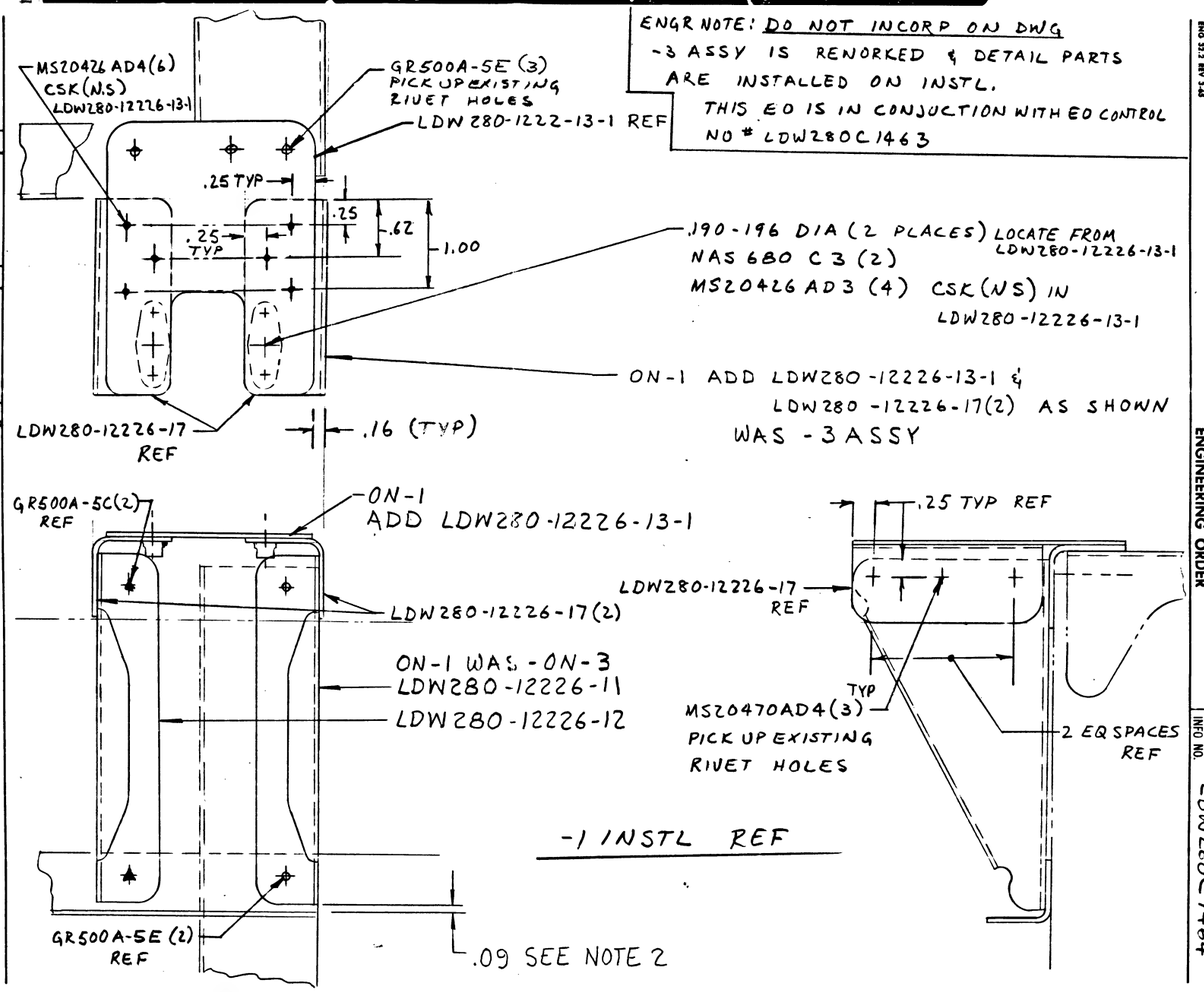
EO

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO.	LDW200-55574		EO NO. A1
CONTROL INFO NO.	LDW280C1464		

DWG 32.2 REV 3-68

ENGR NOTE: DO NOT INCORP ON DWG
-3 ASSY IS REWORKED & DETAIL PARTS ARE INSTALLED ON INSTL.
THIS EO IS IN CONJUCTION WITH EO CONTROL NO # LDW280C1463



-1 INSTL REF

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG		LCD 5943 PK50	
REASON FOR EO						DESCRIPTION OF EO	EO RELEASE
TO MAINTAIN ALLOWABLE EDGE DISTANCE FOR FASTENERS						ON-1: REMOVED -3 ASSY ADDED (LDW280-12226-11, -12, -13-1, -17(2) NAS680C3(2), MS20426AD4(6), MS20426AD3(4), MS20470 AD4(6).	
EFFECTIVITY							
MODEL	ENGINEERING ASSEMBLY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	REVISE DWG	DRAWING CHANGE REQD		
LM	EI						
LM	749A	LM 11 (41)		PRIORITY	DISPOSITION OF PARTS	APPROVED BY	DATE
LM	744	LM 12 (42)		C	RECORD TO		
LM		QUAL TEST (10)			REWORK		
					SCRAP		
					DRAWING TITLE		
					A/S (REWORK OF LDW280-6008-1) BRACKET INSTL		
					SUPPORT		
					REL'AB GRP		
					GROUP LEADER		
					STRESS GP'OUP		
					DRAWING NO.	LDW200-55574	
					LIAISON ENGRG		
					PROJ ENGRG		
					EO NO.	A1	

ISSUED BY Don Ragas

SECTION VD1 GROUP NO. 235 PL 25

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
A/R		MS20470AD4		(SEE NOTE 1)							
					(REWORK OF LDW280-54626, LDW280-54633, LDW280-54602				NONE	NONE	
-1		LDW200-55575	E	REWORK INST.)	LDW280-54679, LDW280-50665 & LDW280-55796)						

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

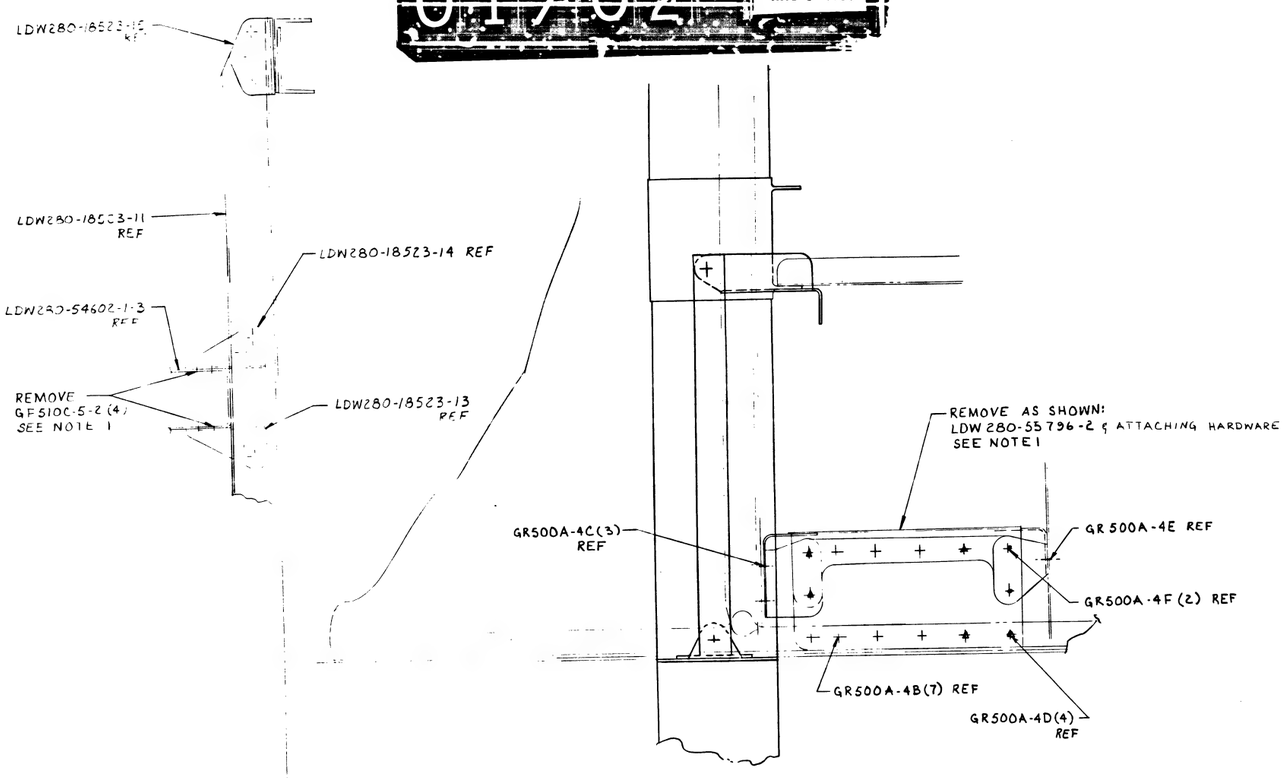
SIZE	CODE IDENT NO.	
B	26512	LDW200-55575

SCALE NONE SHEET 2.00

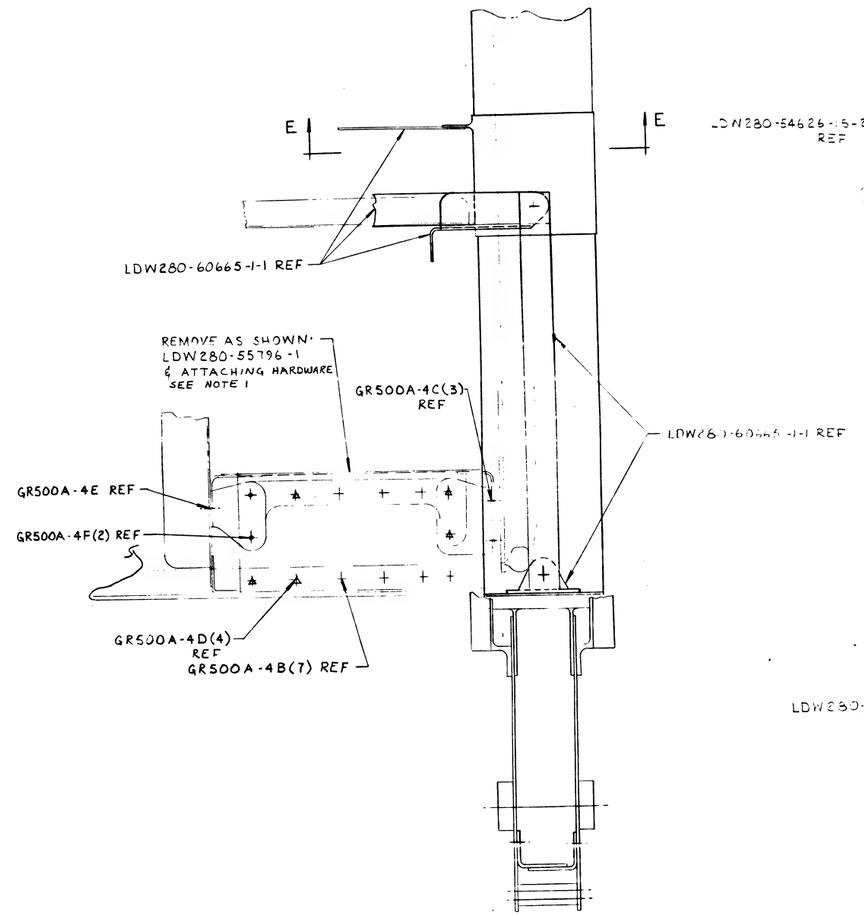
LIST # 1

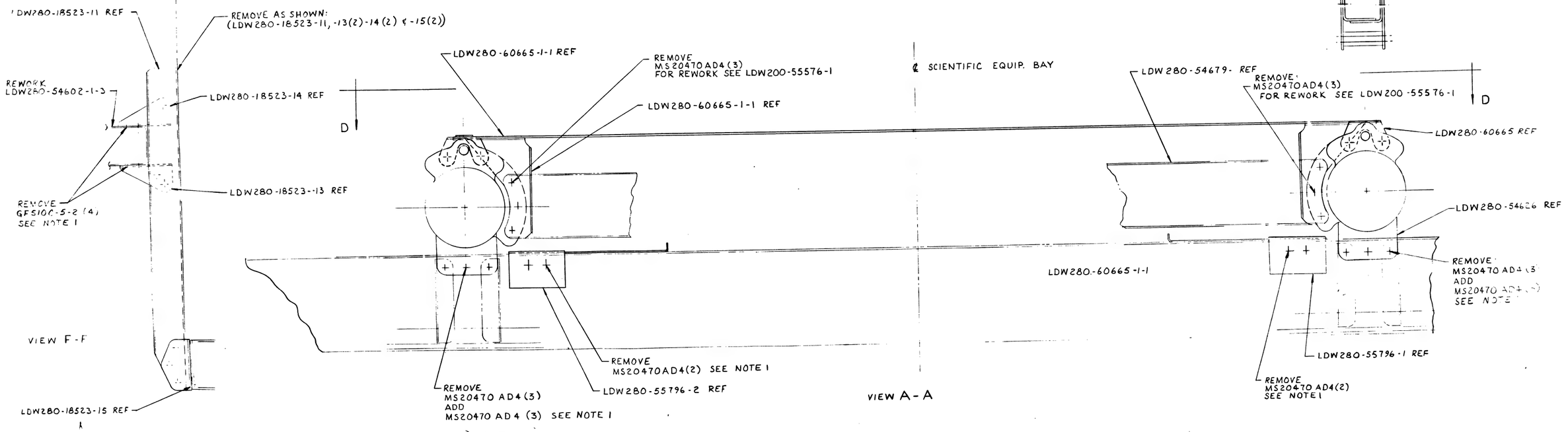
ENG 77.2 7-65

01
NAS 9-1100



VIEW D-D





CODE IDENT NO.	DWG NO.	SHEET
26512	LDW200-55575	3

FRAME FRAME

LDW200-55575

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM 742	LDW280-60508	LM12(42)	1
LFM 743	LDW280-60508	LM11(41)	1
PART NO. LDW200-55575 -1		GAEC SCH NO.	

WORK PACKAGE FUNCTION NO 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00		2.00		3.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	F
LAST DASH NO. USED	-1

GRUMMAN REL INFO: PRIM NO. 207

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
.XX=±.03 .XXX=±.010 ±0°30

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 5942 PK50	

CONTRACT NO. NAS 9-1100 LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	D. RAGAS	Tech Dir.	Pisano 12-3-71
LAYOUT BY	D. RAGAS		
CHECKED BY	F. March 12-3-71		
GP LDR	Thojsum 12-3-71		
STRUCTURES	NM 12-3-71	PROJ ENGR	R.V. PHILLIPS for RVP 12-3-71
		REL GROUP	Batt 12-3-71

GRUMMAN AEROSPACE CORPORATION
BETHPAGE, L. I., NEW YORK

REWORK BOOM INSTALLATION
QUAD II ALSAP COMPARMENT
(REWORK OF LDW280-60508)

SIZE	CODE IDENT NO.	
B	26512	LDW200-55575

SCALE NONE SHEET 1.00 OF 3

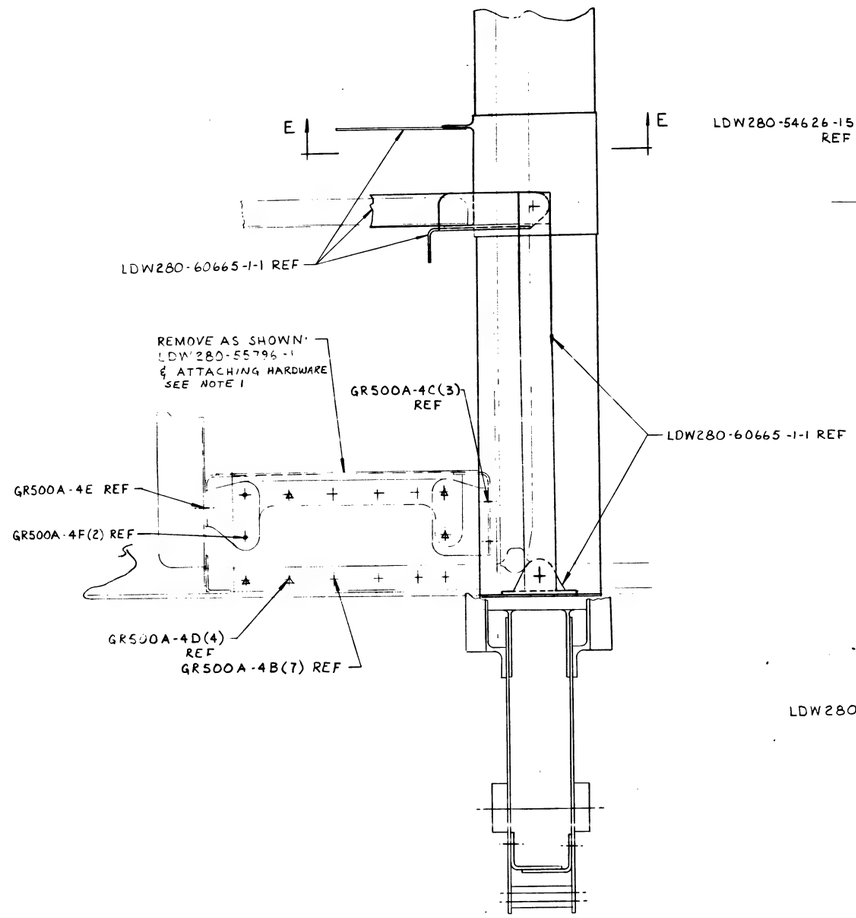
ENG 77.1 12-65

025-0343

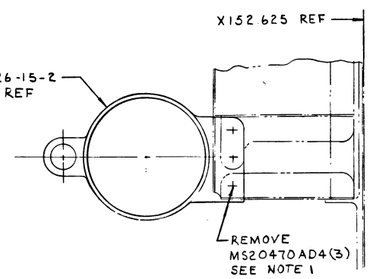
DIST LIST #1

01
NAS 9-1100

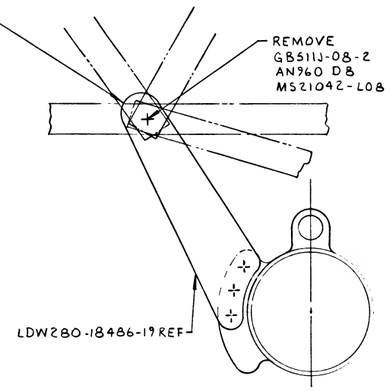
NOTES
1- EXTRANEOUS HOLES TO BE PLUGGED USING "AD" MATERIAL. NEXT LARGER SIZE RIVET MAY BE USED IF HOLE DIAMETER HAS BEEN ENLARGED DURING RIVET REMOVAL CAPTURED RIVET TAILS MAY REMAIN.
2- -1 INSTALLATION MAY BE ACCOMPLISHED WITH: LDW200-55576 BRACKET INSTL.
LDW200-55577 LANYARD INSTL.
LDW200-55578 BLANKET INSTL.



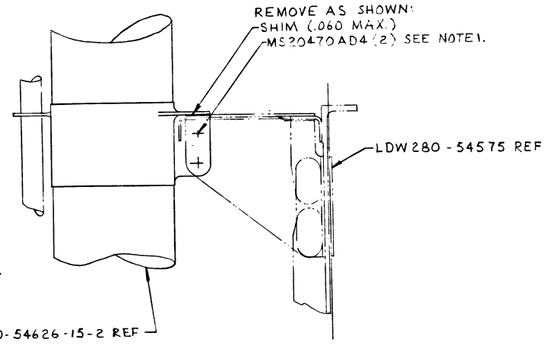
VIEW D-D



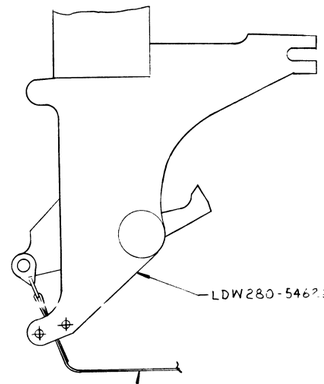
FOR REWORK SEE LDW200-55578-1



SECTION E-E

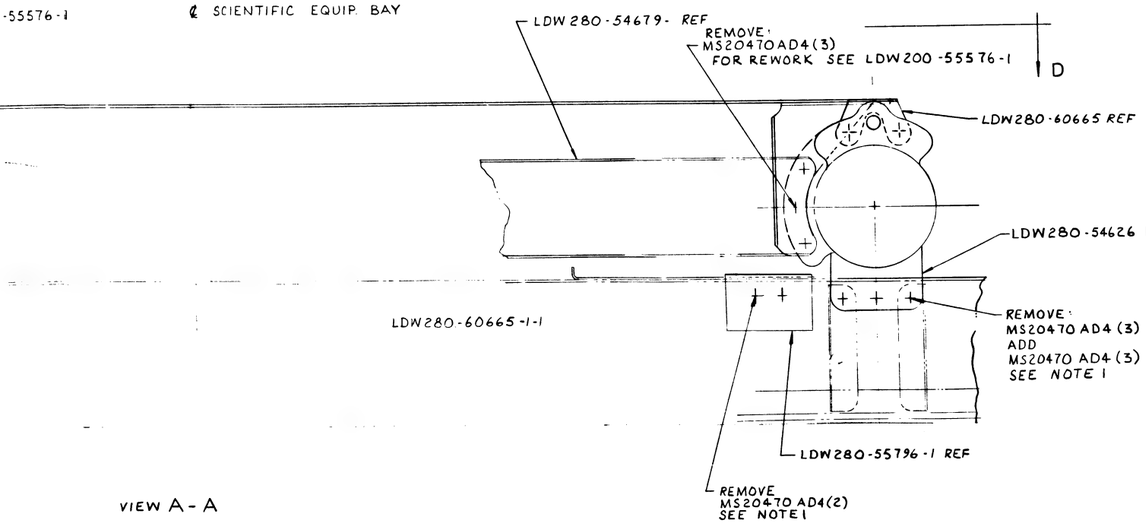


SECTION B-B SHOWN ROTATED 90° CCW.
SECTION C-C OPP

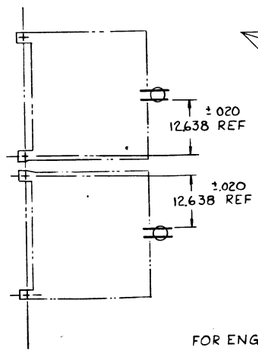


FOR REWORK LDW280-54633-1-1 SEE LDW200-55577-1

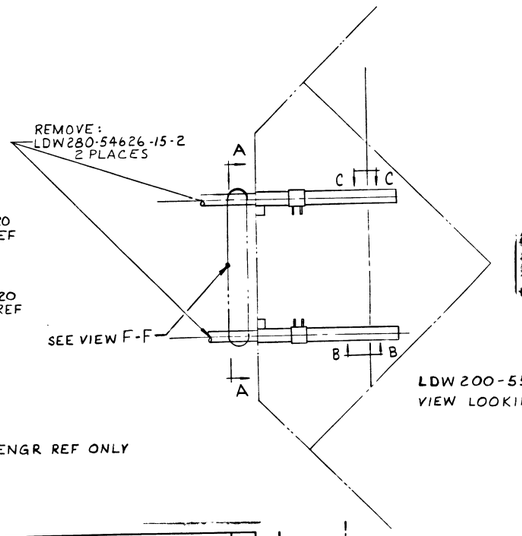
-55576-1 ℄ SCIENTIFIC EQUIP BAY



VIEW A-A



FOR ENGR REF ONLY



LDW200-55575-1 INSTL
VIEW LOOKING DOWN ~ QUAD II

027/02 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK
SIZE | CODE IDENT NO. 26512 | LDW200-55575
SCALE | SHEET 3.00

CODE IDENT NO. 26512 | DWG NO. LDW 200-55575 | SHEET 3
FRAME FRAME

LIST #1

GRUMMAN AEROSPACE CORPORATION

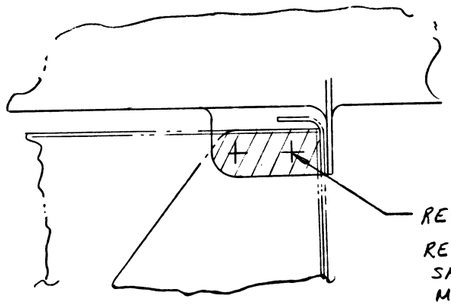
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200 -55575 | EO NO. A1

CONTROL INFO NO. LDW180L 1474



REVISE CALLOUT:
REMOVE AS SHOWN
SHIM (.060 MAX)
MS20470AD4(2) SEE NOTE 1
(ADD) SHIM AS REQD (.140 MAX)
SEE NOTE *

SECT B-B

SECT C-C

NOTE *: USE NEXT AVAIL NO.

SHIM AS REQD - USING CUTTER ASSY PART NO 204-750-14 FIN 74.

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	LCD 5462 PKG 50
		✓	

REASON FOR EO: TO ADD SHIM FOR REINST'L OF ANGLE.

DESCRIPTION OF EO: IN SECT B-B & C-C ADDED CALLOUT: SHIM AS REQD (.140 MAX) ADDED NOTE * SEE NOTE *.

GAEC EO RELEASE: 1/7/72

MODEL	E.I. EFFECTIVITY - PRODUCTION ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM743A	LM11(41)(42)	(92)

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		✓	

APPROVED BY / DATE							
				SUPPORT	RELI/B GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
						PBT 1-7-72	NM 1-7-72		1/7/72	1-7-72

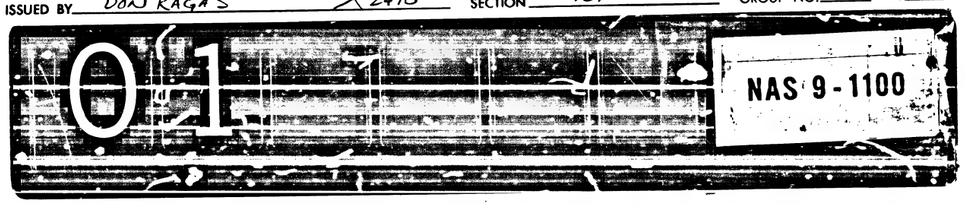
PRIORITY: C

DRAWING TITLE: RENK BOOM INST'L D/S - QUAD II (RENK DF LDW200-60508)

DRAWING NO.: LDW200-55575

EO NO.: A1

ISSUED BY DON RAGAS X2410 SECTION VD1 GROUP NO. 0335 PL CR5



GRUMMAN AEROSPACE CORPORATION
CODE IDENT NO. 26512
ENG 32.1 REV 3-65 **ENGINEERING ORDER**

DWG. NO. LDW340-15917 | EO NO. A1
CONTROL INFO NO. LDW340 - 9989

IN FLD, B/M & MOD BLK ADD -25 & -26 IDENTICAL TO -17 & -18 EXCEPT 29° SHOULD BE 32°-30', 12°45' SHOULD BE 17° & 1.66 SHOULD BE 1.80
REMOVE -17 & -18

IN FLD, B/M & MOD BLK ADD -23 & -24 IDENTICAL TO -21 & -22 EXCEPT 3.71 SHOULD BE 3.81
REMOVE -21 & -22

IN FLD REWORK -11 AS FOLLOWS: 16.75, 8.38 & 7.69 (2PL) SHOULD BE 15.82, 7.91 & 7.51 (2PL) RESPECT.

IN FLD REWORK -19 AS FOLLOWS: 16.62, 8.31 & 7.25 (2PL) SHOULD BE 15.50, 7.75 & 6.97 (2PL) RESPECT.

LFM

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCD5-753 PKG 1
REASON FOR EO: ACCOMODATE NEW HARD COVER REDESIGN			DESCRIPTION OF EO: IN FLD, B/M & MOD BLK ADDED -23, -24, -25 & -26 REMOVED -17, -18, -21 & -22, TRIMMED -11 & -19

EFFECTIVITY			DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								GAEC EO RELEASE
PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	REVISE DWG	RECORD EO	REWORK	SCRAP	DATE			SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ. ENGRG
LM	LFM753	LM-11 (41)	✓		✓	-17, -18, -21 & -22						PN 1/4/72	NM 1/4/72		1/6/72 GAC
			PRIORITY C		DRAWING TITLE: SPLICES C/P, D/S FAR ULTRA VIOLET CAMERA							DRAWING NO. LDW340-15917			EO NO. A1

ISSUED BY A. VARVARO SECTION CREW PROVISIONS GROUP NO. 0356 PL 025

01

NAS 9-1100

GRUMMAN AEROSPACE CORPORATION

CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG NO. LDW200-55575 | EO NO. A3

CONTROL INFO NO. LDW280C1488

REF E.O. A2
LDW280-18488-33(2) WAS -29(2)

NOTE: NO VEHICLE REWORK REQUIRED. WRONG DASH NUMBER USED ON E.O. A2

DETAIL SPEC REQ		CL II ENGRG CHG	✓	CL I ENGRG CHG	

REASON FOR EO: DWG ERROR CORRECTION

DESCRIPTION OF EO: REF E.O. A2 LDW280-18488-33(2) WAS -29(2)

GAC EO RELEASE (E)

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		NONE	

DRAWING CHANGE REQD: ✓ REVISE DWG; RECORD EO

DISPOSITION OF PARTS: NOT REQD REWORK; SCRAP

APPROVED BY: DATE 5-25-71; SUPPORT; RELIAB GROUP; GROUP LEADER PST; STRESS GROUP NM; LIAISON ENGRG; PROJ ENGRG 5/25/71 5-25-71; GAC

PRIORITY: E

DRAWING TITLE: REWORK BOOM INSTL DIS (REWORK OF LDW280-60508)

DRAWING NO.: LDW200-55575

EO NO. A3

ISSUED BY A. PRESTINARI X2410 SECTION VDI GROUP NO. 0332 PL 025

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
A/R		MS20470AD4	E	RIVET	GOVT STD				NONE	NONE	
1		LDW280-19043-21		PLATE							
1		-19		PLATE							
1		-17		PLATE							
1		-15		PLATE							
1		-13		STIFFENER							
1		LDW280-19048-11		STIFFENER							
-1		LDW200-55576-1	E	STIFFENER INSTL							

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

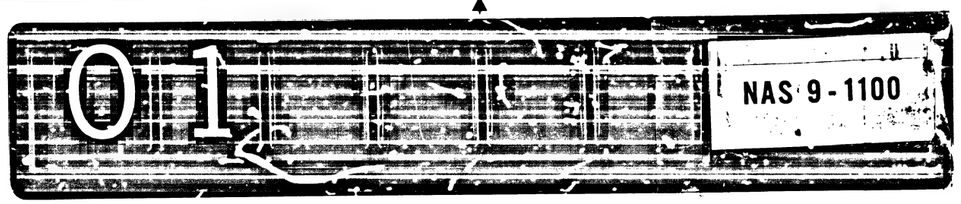
GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55576

SCALE NONE SHEET 2.00

LIST = 1

ENG 77.2 7-64



LDW200-55576

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM 743	LDW280-60508	LM-12(4.2)	1
LFM 743	LDW200-60503	LM-11(4.1)	1
PART NO. LDW200-55576-1		GAEC SCH NO.	

WORK PACKAGE FUNCTION NO. 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH											
SHEET	1.00										
REV											
SHEET	2.00										
REV											
SHEET	3.00										
REV											

LAST SECT LTR USED	D	GRUMMAN REL INFO	
LAST DASH NO. USED	-1	PRIM NO.	207

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
.XX±.03, .XXX±.010, ±0°-30

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
	LCD 5942

CONTRACT NO. NAS9-1100

DRAWN BY	J. BIANCHI 'VO	TECH. DIR.	Williams 12-3-71
LAYOUT BY	B CLARK		
CHECKED BY	C.N. Bott 11-24-71		
SP LDR			
VEH DES INT	Thorjussen 12-3-71		
STRUCT		PROJ ENGR	R.V. PHILLIPS 12-3-71
STRUCT	NM 12-3-71	REL GROUP	Bott 12-3-71

LINE ITEM | DOCUMENTATION TYPE II

GRUMMAN AEROSPACE CORPORATION
BETHPAGE, L. I., NEW YORK

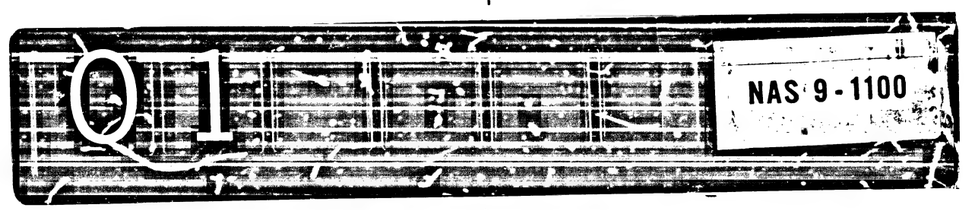
STIFFENER INSTL
DESCENT STAGE-ALSEP-BOOM REMOVAL-
REWORK OF LDW280-60503

SIZE	CODE IDENT NO.	
B	26512	LDW200-55576

SCALE NONE | SHEET 1.00 OF 3

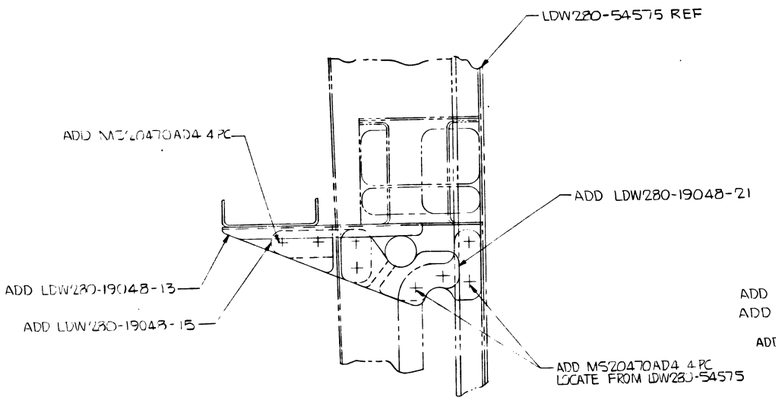
ENG 77.1 12-65

LIST #1

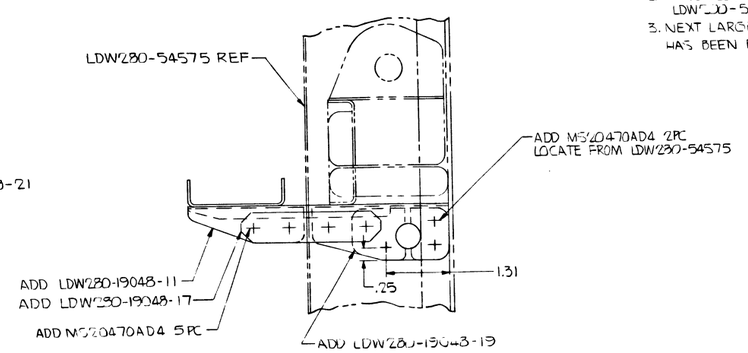


SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG	
MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	✓
INSTALL RIVETS IN ACCORDANCE WITH	

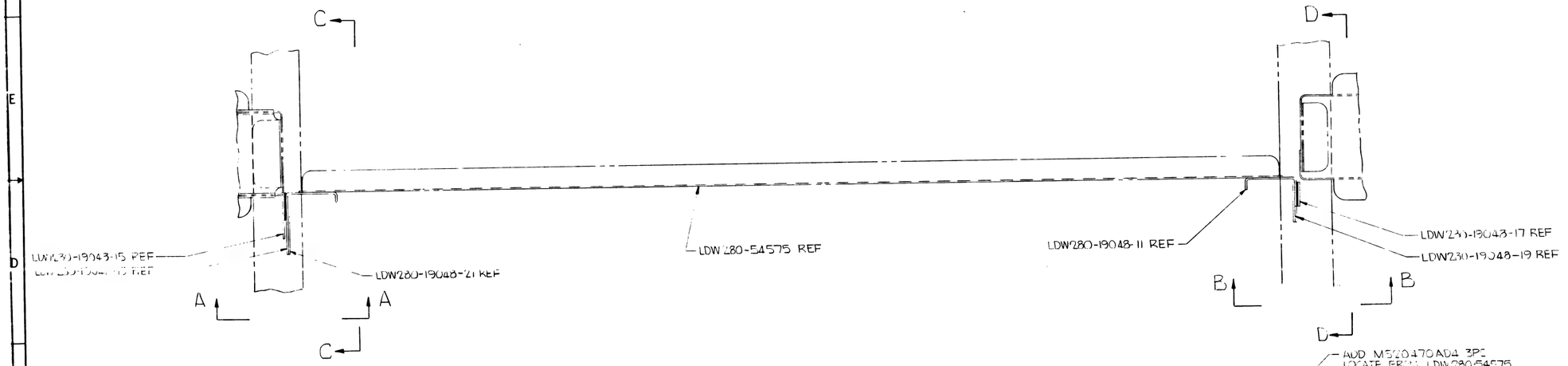
NOTES:
1. SHIM AS REQD PER MS AL ALLOY FH, 2024-T3, QQ-A-250/4 FINISH 7G, ALODINE 1SP14-9010
2. -1 INSTALLATION MAY BE ACCOMPLISHED IN CONJUCTION WITH LDW200-55575
3. NEXT LARGER SIZE RIVET MAY BE USED IF HOLE DIAMETER HAS BEEN ENLARGED DURING RIVET REMOVAL

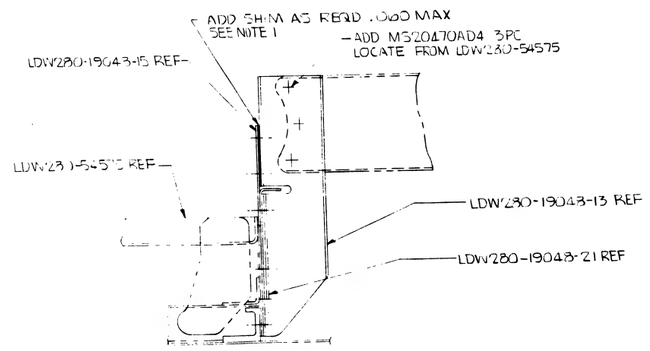


SECTION C-C



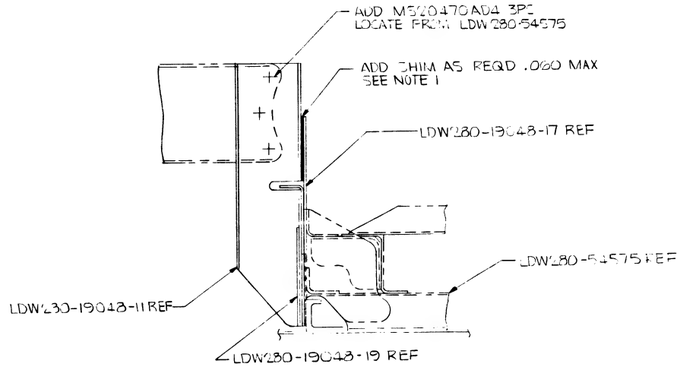
SECTION D-D





VIEW A-A

LDW200-55576-1 INSTL
SEE NOTE 2



VIEW B-B

NAS 9-1100

GRUMMAN AEROSPACE CORPORATION BETHPAGE, NEW YORK 11714		
SIZE E	CODE IDENT NO. 26512	LDW200-55576
SCALE FULL		SHEET 2 OF 2

LDW200-55576

QTY PER ASSEMBLY				CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
-11	-1				LDW200-55577-1	E	LANYARD INSTL	(REWORK OF LDW280-54633)				NONE	NONE	
	2				LDW200-55577-11	F	LANYARD	(SEE NOTE 16-2)						
A/R					GS577A-1	E	STAPLE	GRUMMAN STD						
A/R					GT535 P-8	E	TAPE	GRUMMAN STD						
A/R					GT534C-1	E	THREAD	GRUMMAN STD	(SEE NOTE 5)					

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55577

SCALE NONE SHEET 2.00

LIST #1

ENG 77.2 7-65

01 NAS 9-1100

LDW200-55577

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
	LFM 743	LDW280-60508	LM12 (#2) 1
	LFM 743	LDW280-60508	LM11 (#1) 1
PART NO. LDW200-55577-1		GAEC SCH NO.	

WORK PACKAGE FUNCTION NO. 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00		2.00		3.00					
REV										
SHEET										
REV										
SHEET										
REV										

LAST SHT LTR USED	D	GRUMMAN REL INFO	
LAST DASH NO. USED	-11	PRIM NO.	207

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
XX=±.03 XXX=±.010 ±0°30

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCC 5942 PK50	

CONTRACT NO. NAS9-1100 LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	D. RAGAS	Tech. Dir.	12-3-71
LAYOUT BY	D. RAGAS		
CHECKED BY	12-3-71		
GRP LDR	12-3-71		
STRUCTURES	NM 12-3-71	PROJ ENGR	R.V. PHILLIPS 12-3-71
		REL GROUP	12-3-71

GRUMMAN AEROSPACE CORPORATION
BETHPAGE, L. I., NEW YORK

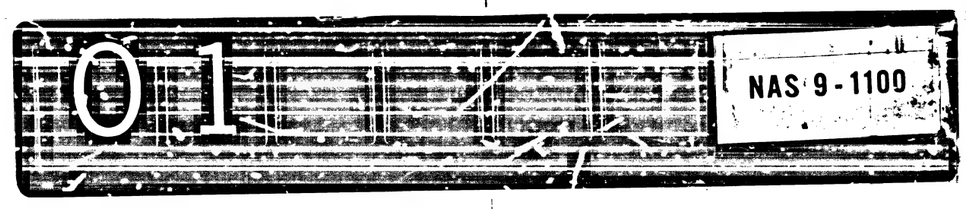
LANYARD INSTALLATION
DESCENT STAGE-QUADII-ALSAP
(REWORK OF LDW280-60508)

SIZE	CODE IDENT NO.	
B	26512	LDW200-55577

SCALE NONE SHEET 1 OF 3

LIST #1

ENG 77.1 12-65



LDW200-55577

REVISIONS						
ZONE	LTR	DESCRIPTION	EFF CODE	MODEL	DATE	APPROVED

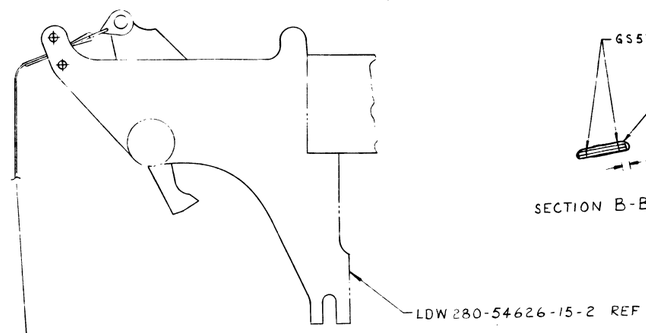
NOTES
1- ALL STITCHING TO BE INACCORDANCE TO MIL STD. 751 TYPE 301, 6-11 STITCHES PER INCH & TO BE BACK STITCH A MINIMUM OF 3/8 - 1/2 IN. 7% TO 15% NYLON (6'6) COATED BETA TH[illegible] SIZE CB OR E12 SHALL BE USED.

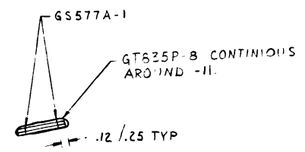
2- -11 IS MADE BY TRIMMING LDW280-54633-1-1 INSTL AS SHOWN IN 3 PLACES. TRIMMED AREAS WHICH CAN NOT BE SEEN SHALL BE TAPED & STAPLED AS SHOWN IN SECTION B-B.

3- LANYARD STOWAGE IS SIMILAR TO LDW280-54633-1-1 AS SHOWN IN DETAIL D.

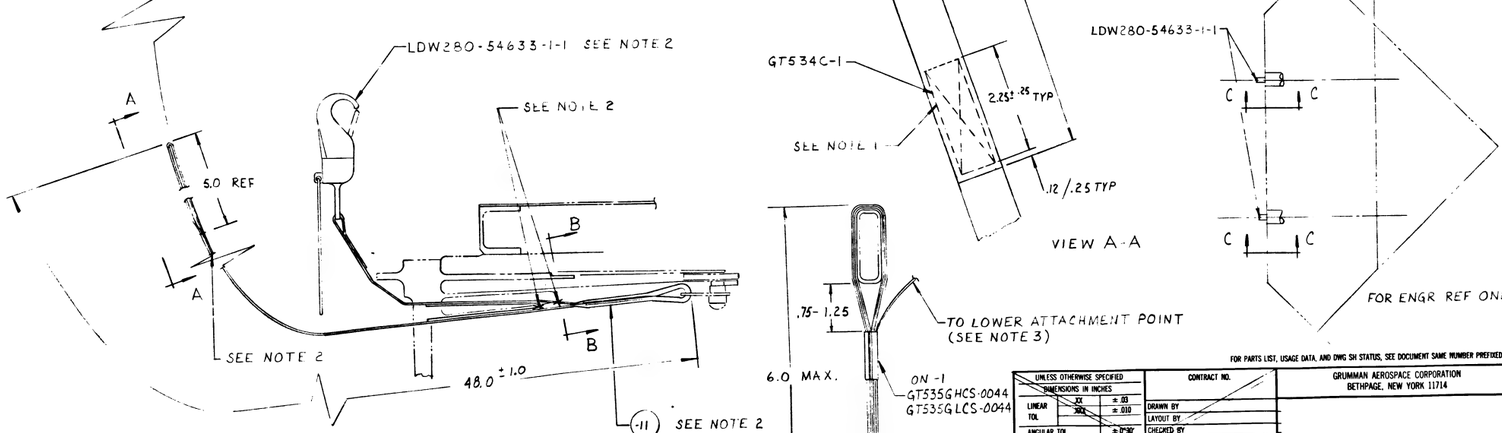
4- -1 INSTALLATION MAY BE ACCOMPLISHED WITH LDW200-55575 INSTL.

5- GT534D-1 MAY BE USED AS AN ALTERNATE FOR GT534C-1 THROUGH





SECTION B-B



LDW200-55577 -1 INSTL

VIEW C-C

VIEW A-A

DETAIL D

FOR ENGR REF ONLY

FOR PARTS LIST, USAGE DATA, AND DWG SH STATUS, SEE DOCUMENT SAME NUMBER PREFIXED PL

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES			CONTRACT NO.	GRUMMAN AEROSPACE CORPORATION BETHPAGE, NEW YORK 11714	
LINEAR TOL	XX ± .03 XXX ± .010		DRAWN BY		
ANGULAR TOL	± 0°30'		LAYOUT BY		
TOL ON LOFTED DELINEATIONS IS			CHECKED BY		
			SR LEADER		
			REL GROUP		
			PROJ ENGR	SIZE D	CODE IDENT NO 26512 LDW200-55577
			GOVT APPD	SCALE	SHEET 3 OF 3

DISTR LIST # 1

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
2		MS21042L03	E	SCREW		GOVT STD			NONE	NONE	
A/R		MS20470AD4		RIVET							
A/R		MS20470A3		RIVET							
2		AN960D8		WASHER		GOVT STD					
2		GW10P1		WASHER		GRUMMAN STD					
2		GW10H1		WASHER							
A R		GT835P3		TAPE							
2		GSC3E1		STAND OFF							
2		GSC20D06-8		SCREW							
1		GS11P-1-076		STRIP							
2		GP15B10-25		PATCH							
1		GB511J03-5		BOLT							
1		GB511J03-3		BOLT							
2		GB10J2		BUSHING		GRUMMAN STD					
1		LDW280-19043-3		TEE							
		LDW200-55578-1	E	BLANKET ASSY					NONE	NONE	
-1											

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

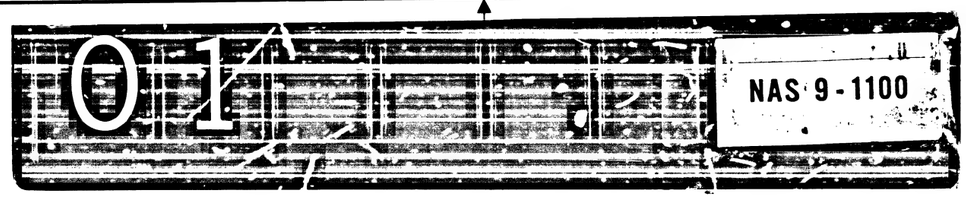
GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55578

SCALE NONE SHEET 2.00

LIST #1

ENG 77.2 7-64



LDW200-55578

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
	LEM 743	LDW230-60508	LM-12 (42) 1
	LEM 743	LDW230-60508	LM-11 (41) 1
PART NO. LDW200-55578-1		GAEC SCH NO.	

WORK PACKAGE FUNCTION NO.

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH												
SHEET	1.00											
REV												
SHEET	2.00											
REV												
SHEET	3.00											
REV												

		GRUMMAN REL INFO				
LAST SECT LTR USED	B	PRIM NO.				
LAST DASH NO. USED	-1	207				

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
~~FRACTIONS~~ - DECIMALS – ANGLES
.XX=±.03, .XXX=±.010, ±0°30'

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 5942 PKG50	

CONTRACT NO. NAS9-1100 LINE ITEM DOCUMENTATION TYPE

DRAWN BY	J. BIANCHINO	THERMO	Jeff 12-3-71	GRUMMAN AEROSPACE CORPORATION BETHPAGE, L. I., NEW YORK
LAYOUT BY	D. KAGAS DK	TECH DIR.	R. Marino 12-3-71	BLANKET ASSEMBLY DESCENT STAGE-BOOM REMOVAL REWORK OF LDW230-60508
CHECKED BY	R. March 12-3-71			
GP LDR				
VEH DESIN	Thorjussen 12-3-71			
STRUCT		PROJ ENGR	R.V. PHILLIPS 12-3-71	SIZE B CODE IDENT NO. 26512 LDW200-55578
STRUCT	NM 12-3-71	REL GROUP	R. March 12-3-71	SCALE NONE SHEET 1.00 OF 2

ENG 77.1 12-65

025 0335

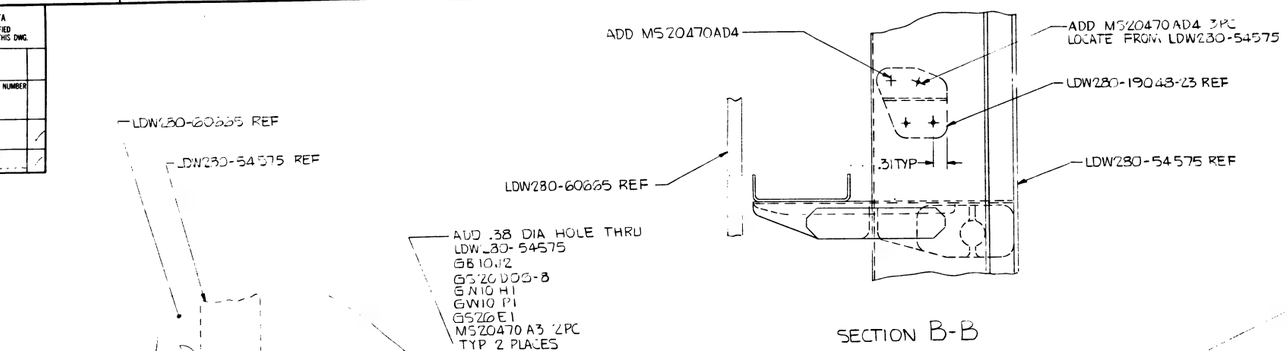
LIST #1

01

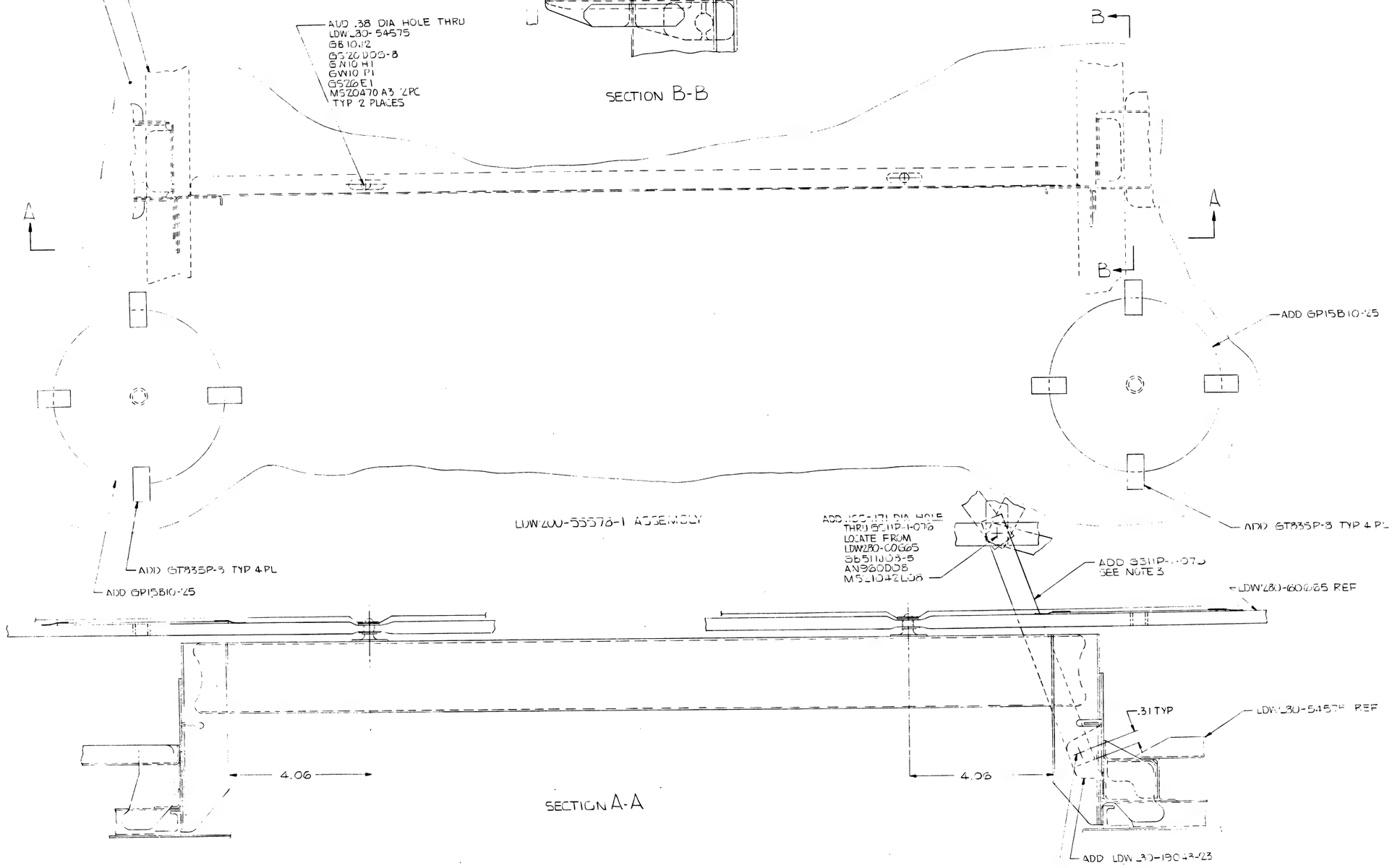
NAS 9-1100

SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH MIL STD 130	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☐ USE BOTH SIDES IF NECESSARY	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	✓
INSTALL RIVETS IN ACCORDANCE WITH	✓

NOTES:
1. ASSY MAY BE ACCOMPLISHED IN CONJUCTION WITH LDW200-55575
2. NEXT LARGER SIZE RIVET MAY BE USED IF HOLE DIAMETER HAS BEEN ENLARGED DURING RIVET REMOVAL
3. GS11P-1-076 MAY BE TRIMMED ON ASSY TO INSURE PROPER FIT



SECTION B-B



SECTION A-A

01

NAS 9-1100

GRUMMAN AEROSPACE CORPORATION BETHPAGE, NEW YORK 11714			
SIZE	CODE IDENT NO	LDW200-55578	
E	26512		
SCALE		SHEET 2	

LDW200-55578

LDW200-55578

GRUMMAN AEROSPACE CORPORATION

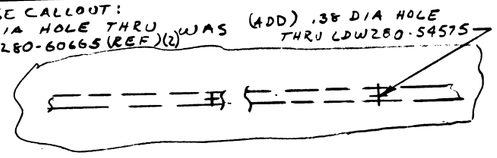
CODE IDENT NO. 26512

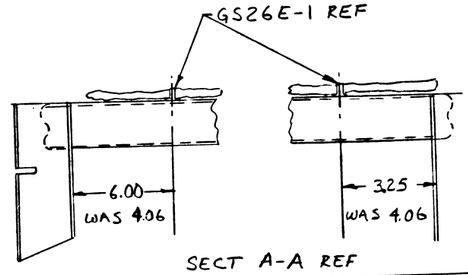
ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO.	LDW200 -55578		EO NO. A1
CONTROL INFO NO.	LDW280C 1475		

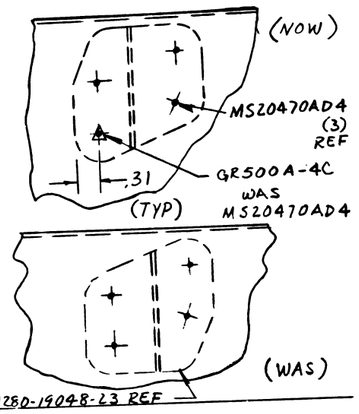
REVISE CALLOUT:
.38 DIA HOLE THRU
LDW280-60665 (REF)(2) WAS (ADD) .38 DIA HOLE THRU LDW280-54575





SECT A-A REF

REVISE SECT B-B: ROTATE LDW280-19048-23 180° AS SHN:



LDW280-19048-23 REF

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCD 5947 PG 30

REASON FOR EO: TO MATCH EXISTING STANDOFF HOLE IN BLANKET.

DESCRIPTION OF EO: PLAN VIEW: REVISED CALLOUT: .38 DIA HOLE THRU LDW280-60665 REF (WAS) ADD: .38 DIA HOLE THRU LDW280-54575. REVISED SECT B-B ROTATED LDW280-19048-23 (180°) GR500A-4C WAS MS20470AD4

MODEL	EFFECTIVITY	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 743A	LM11(4) LM12(42)	

DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY									
REVISE DWG	RECORD EO	REWORK	SCRAP	DATE			SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GAEC EO RELEASE
									RBT 1-7-72	NM 1-7-72		1/7/72	1-7-72

PRIORITY: C

DRAWING TITLE: BLANKET ASSY D/S-QUAD II (REWORK LDW280-60508)

DRAWING NO.: LDW200-55578

EO NO.: A1

GAC

ISSUED BY DON RAGAS X2410 SECTION VD1 GROUP NO. 0335 PL 025

01

NAS 9-11C3

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
1		GN11BF-481	E	NAME PLATE	GRUMMAN STD						
1		GN11BE-240	E	NAME PLATE	GRUMMAN STD						
1		GN11BE-239	E	NAME PLATE	GRUMMAN STD						
A/R		MS20426AD5	E	RIVET	GOVT STD						
A/R		MS20470AD4	E	RIVET	GOVT STD						
1		LDW200-55579-11	E	PLATE	AL ALLOY SH	QQ-A-250/12	7075-T6	.063 x 3 x 3	NONE	33	
		LDW200-55579-1	E	BRACKET INSTL					NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
3E	ANODIZE	LSPL-9030

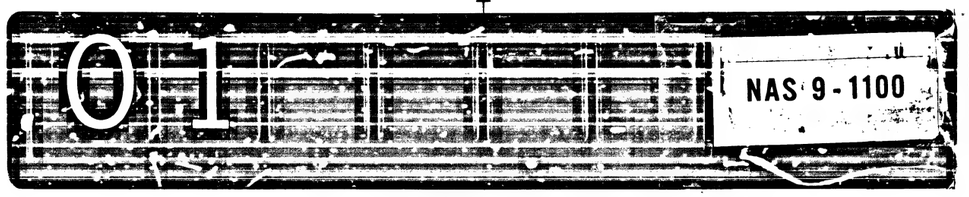
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

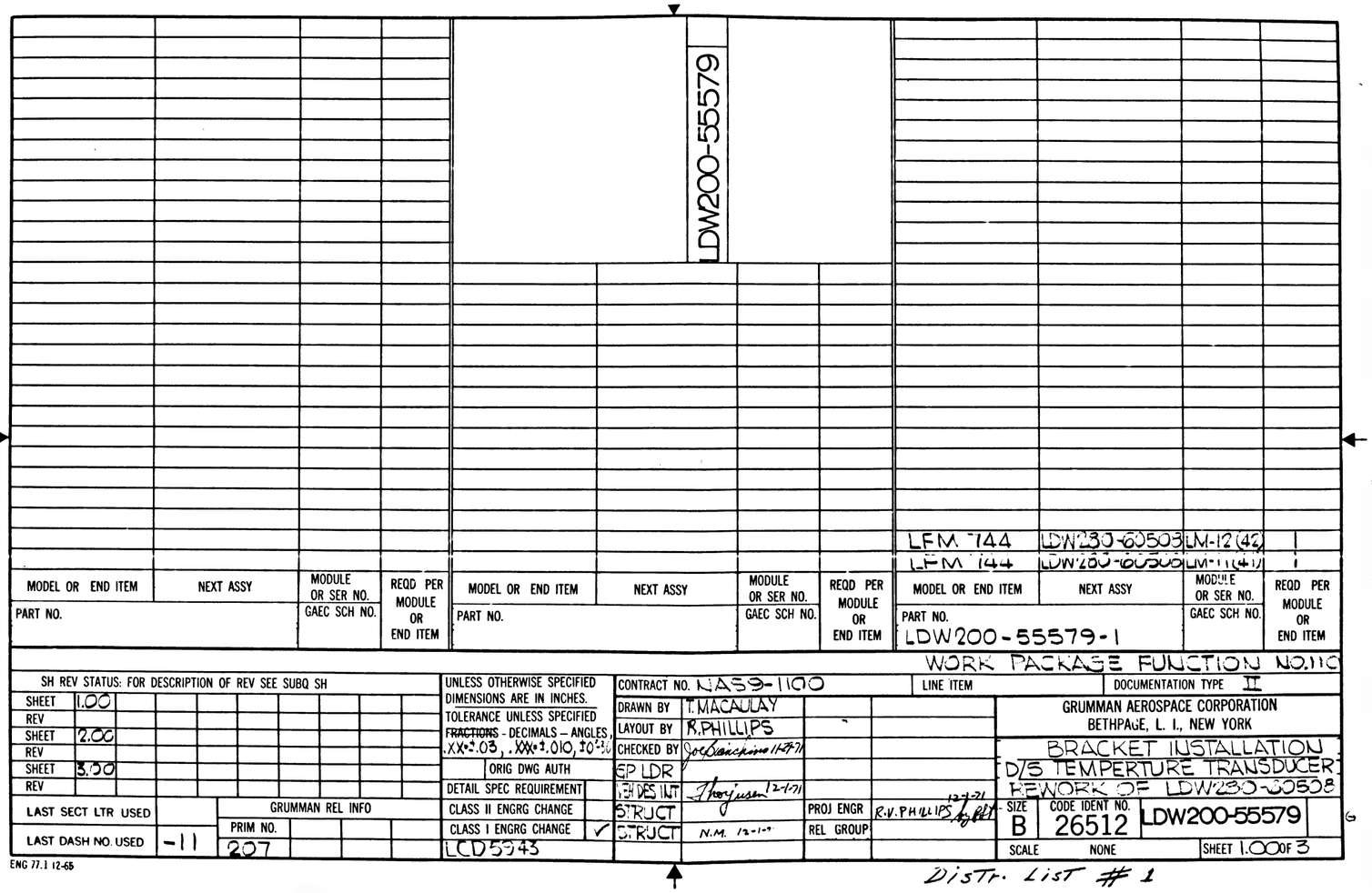
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55579

SCALE NONE SHEET 2.00

ENG 77.2 7-65





MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW200-55579-1		GAEC SCH NO.	
								LFM 144	LDW230-60503	LM-12 (42)	1
								LFM 144	LDW230-60503	LM-11 (41)	1

WORK PACKAGE FUNCTION NO. 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH											
SHEET	1.00										
REV											
SHEET	2.00										
REV											
SHEET	3.00										
REV											
LAST SECT LTR USED		GRUMMAN REL INFO									
LAST DASH NO. USED	-11	PRIM NO.	207								

ENG 77.1 12-65

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
~~FRACTIONS~~ - DECIMALS – ANGLES, .XX±.03, .XXX±.010, ±0°-30'

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
	LCD5943

CONTRACT NO. NAS9-1100 LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	T. MACAULAY				
LAYOUT BY	R. PHILLIPS				
CHECKED BY	Joe Bianchino 11-4-71				
EP LDR					
PROJ ENGR	R.V. PHILLIPS 12-7-71				
REL GROUP					
EP DES INT	Thorjusen 12-1-71				
STRUCT					
STRUCT	N.M. 12-1-71				

GRUMMAN AEROSPACE CORPORATION
BETHPAGE, L. I., NEW YORK

BRACKET INSTALLATION
D/S TEMPERTURE TRANSDUCER
REWORK OF LDW230-30508

SIZE	CODE IDENT NO.	
B	26512	LDW200-55579

SCALE NONE SHEET 1.00 OF 3

Distr. List # 1

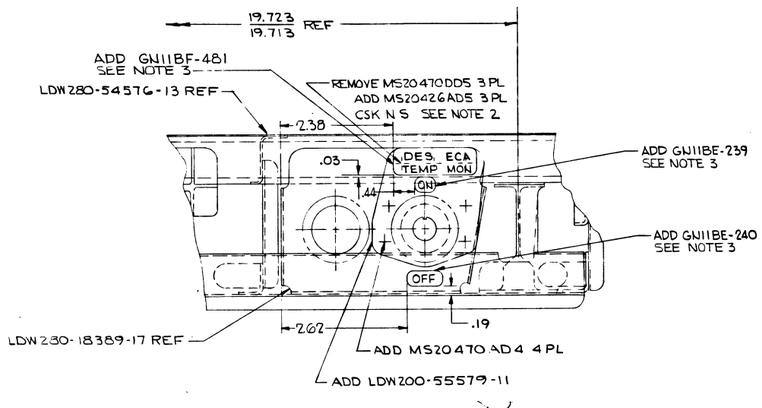
01
NAS 9-1100

SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ~~CEC USE BOTH SIDES IF NECESSARY~~	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	✓
INSTALL RIVETS IN ACCORDANCE WITH LSP14-15302	✓

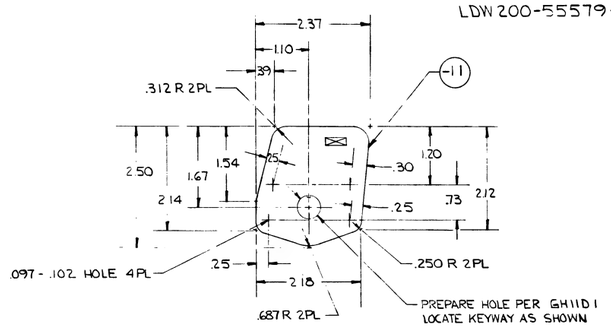
REVISIONS						
ZONE	LTR	DESCRIPTION	EFF CODE	MODEL	DATE	APPROVED

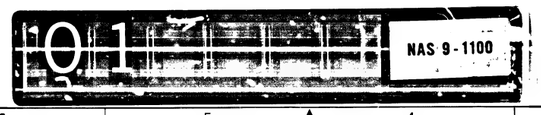
NOTES:

1. NO TOOLING HOLES PERMITTED IN PARTS.
2. NEXT LARGER SIZE RIVET MAY BE USED IF HOLE DIAMETER HAS BEEN ENLARGED DURING RIVET REMOVAL.
3. BOND NAME PLATES TO SURFACES SHOWN IN ACCORDANCE WITH LSP14-22602 USING NARMCO 7343/7139 PER LSM14-4352 CURE CYCLE 6HRS±10 MINS AT 155°F±5° FOR 14 DAYS AT ROOM TEMPERATURE. EPON 934 PER LSP14-22500 CURE RANGE 1 MAY BE USED AS AN ALTERNATE. LOCATE NAMEPLATES AS SHOWN, REMOVE EXCESS SQUEEZE OUT



LDW200-55579-1 INSTL





UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES		
LINEAR TOL	XX	± .03
	XXX	± .010
ANGULAR TOL		± 0°30'
TOL ON LOFTED DELINEATIONS IS		

CONTRACT NO.

DRAWN BY
LAYOUT BY
CHECKED BY
SR LEADER
REL GROUP
PROJ ENGR
GOVT APPD

GRUMMAN AEROSPACE CORPORATION
BETHPAGE, NEW YORK 11714

SIZE	CODE IDENT NO.	
D	26512	LDW200-55579

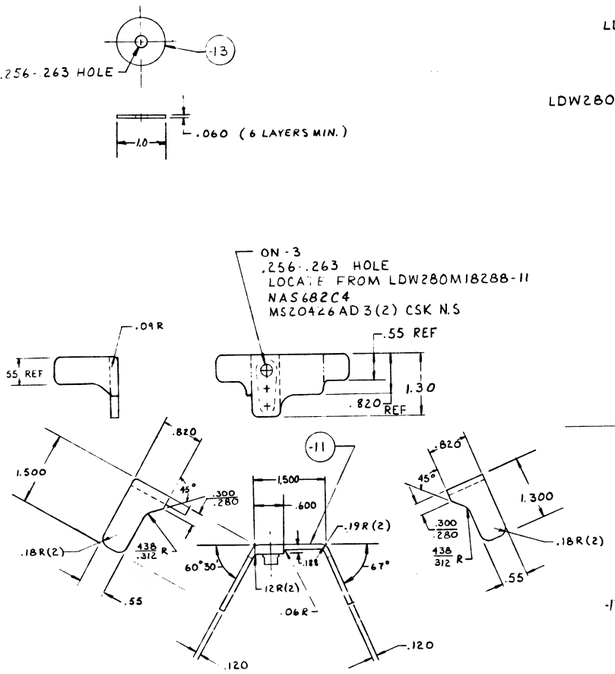
SCALE FULL SHEET 5 OF 6

FOR PARTS LIST, USAGE DATA, AND DWG SH STATUS, SEE DOCUMENT SAME NUMBER PREFIXED PL

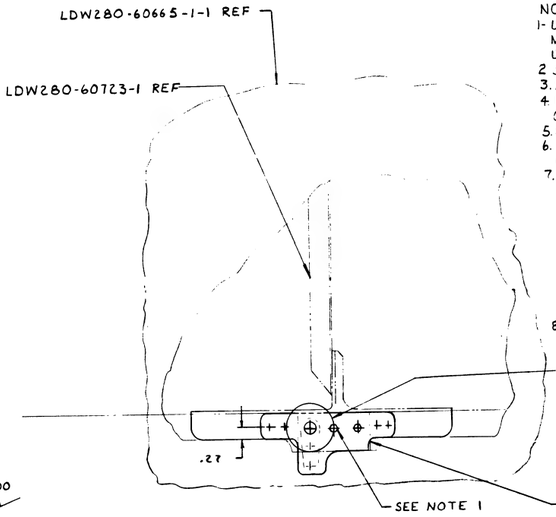
1 DISTR LIST # 1

LDW200-55579

REVISIONS						
ZONE	LTR	DESCRIPTION	EFF CODE	MODEL	DATE	APPROVED



LDW200-55580-3 ASSY



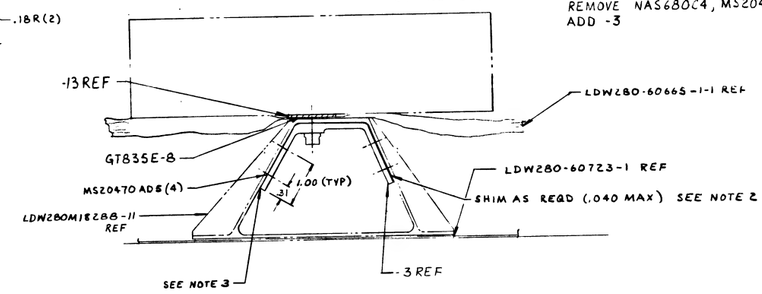
NOTES:
1. UPON REMOVAL OF NAS680C4, EXTRANEOUS HOLES MARKED ⊕ TO BE FLUSH PLUGGED ON BOTH SIDES USING "AD" MATERIAL RIVET.
2. SHIM AS REQD (.040 MAX) USING 2024-T3 MAT'L, FIN 76.
3. LIQUID SHIM -3 WITH LDW280M19288-11 PER LPC280-53
4. MATERIAL SHALL MEET THE ULTRASONIC REQUIREMENTS OF LSP-14-15100, TABLE II
5. SULPHURIC ACID ANODIZE PER MIL-A-8625, TYPE II
6. AFTER SULPHURIC ACID ANODIZE, PROTECTIVE COAT USING ONE COAT OF PRIMER MIL-P-23377 PER LSP-14-4305.
7. GLASS REINFORCED PLASTIC TO BE MANUFACTURE IN ACCORDANCE WITH LSP14-11101 USING POLYESTER RESIN LAMINAC 4146 "A" WITH 0.7% TO 1.0% LUCIDOL DDM AND 0.05% TO 0.1% COBOLT NAPTHANATE (6%) FIBERGLASS CLOTH TO BE STYLE 181 OR 181/150 GARAN OR VOLAN "A" FINISH OR CORDOREG FRC-72. FINAL MINIMUM CURE TEMP AND TIME FOR LAMINAC RESIN SYSTEM SHALL BE 180°F FOR 1 HR. FOLLOWED BY 250°F FOR 2 HRS. CURE SCHEDULE FOR FRC-72 SHALL BE IN ACCORDANCE WITH LSP14-11101.

8 EACH SUCCESSIVE PLY TO BE LAYED UP ALTERNATELY 90° TO EACH OTHER.

-ON-5
REMOVE LDW280P19021-11 & -13, & NAS43DD4-15
ADD -13 & GT835E-8

LDW200-55580-1 INSTL
-5 BLANKET ASSY

-ON-1
REMOVE NAS680C4, MS20426AD3(2)
ADD -3



FOR PARTS LIST, USAGE DATA, AND SWG ON STATUS, SEE DOCUMENT SAME NUMBER PREFIXED PL

01 NAS 9-1100

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES			CONTRACT NO.	GRUMMAN AEROSPACE CORPORATION BETHPAGE, NEW YORK 11714		
LINEAR TOL	XX / XXX	± .03 / ± .010	DRAWN BY			
ANGULAR TOL		± 0°30'	LAYOUT BY			
TOL ON LOFTED DELINEATIONS IS			CHECKED BY			
			SR LEADER			
			REL GROUP			
			PROJ ENGR	SIZE D	CODE IDENT NO. 26512	LDW200-5558
			GOVT APPD	SCALE		SHEET OF

DISTR LIST # 1

QTY PER ASSEMBLY			CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
	A/R			GT835E-8	E	TAPE	GRUMMAN STD						
	A/R			MS20426AD3	E	RIVET	STD PART						
	1			NAS482C4	E	NUTPLATE	STD. PART						
1				LDW200-55580-13	E	SPACER	GL.REINF.PLSTC			SEE NOTES 7	NONE	NONE	
	1			-11	C	FITTING	AL ALLOY SEE NOTE 4	QQ-A-225/9	7075-T7351	1 3/4 x 1 1/2 x 3.0	FP	SEE NOTES 5&6	
		1		-5	E	BLANKET ASSY	(REWORK OF LDW200-60465-1-1)				NONE	NONE	
		1		-3	E	NUTPLATE ASSY					NONE	NONE	
-5	-3	-1		LDW200-55580-1	E	SUPPORT INSTL	(REWORK OF LDW200-60723-1)				NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
FP	ZYGLO	MIL-I-6866

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55580

SCALE NONE SHEET

ENG 77.2 7-64

01 NAS 9-1100

LDW200-55530

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	LFM 745	NEXT ASSY	LDW200-60508	MODULE OR SER NO.	LM11(41)	REQD PER MODULE OR END ITEM	1
PART NO.	LDW200-55580-1			GAEC SCH NO.			

WORK PACKAGE FUNCTION NO. 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00		2.00		3.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO				
		PRIM NO.				
LAST DASH NO. USED	-13	207				

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/64 ± .010 ± 0.30°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
	LCD5945 PEG50

CONTRACT NO. NAS9-1100 — LINE ITEM — DOCUMENTATION TYPE II

DRAWN BY	D.RAGAS	THERMO	M Duran 11-30-71	
LAYOUT BY	D.RAGAS	MAT'LS	F Clarke 11/30/71	
CHECKED BY	[illegible] 12-1-71			
GR.LEADER				
V.E.H. DES. III	[illegible] 11-30-71			
STRUCTURES	[illegible] 11/29/71	PROJ ENGR	R.V. PHILLIPS 11-30-71	
STRUCTURES	NM 11/30/71	REL GROUP	[illegible] 12-1-71	

GRUMMAN AEROSPACE CORPORATION
BETHPAGE, L. I., NEW YORK

SUPPORT INSTALLATION
DESCENT STAGE-ENR COSMIC RAY SUPPORT
(REORDER OF LDW200-60508)

SIZE	CODE IDENT NO.	
B	26512	LDW200-55580

SCALE NONE — SHEET 1 OF 3.00

ENG 77.1 12-65

01

NAS 9-1100

LDW200-55581

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
PART NO.			

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
PART NO.			

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
LFM 744	LDW280-60508	LM12(42)	1
LFM 744 B	LDW280-60508	LM11(41)	1
PART NO. LDW280-55581-1,-3			

WORK PACKAGAGE FUNCTION NO. 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00		2.00		3.00		4.00		
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	—	GRUMMAN REL INFO			
LAST DASH NO. USED	3	PRIM NO.	240	227	227

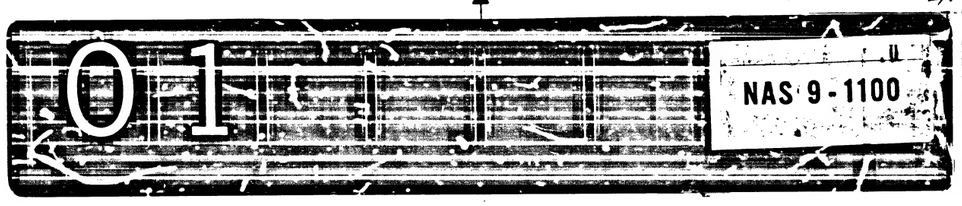
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/16 ±.030 ± ½°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS JI ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 5943 PK5	

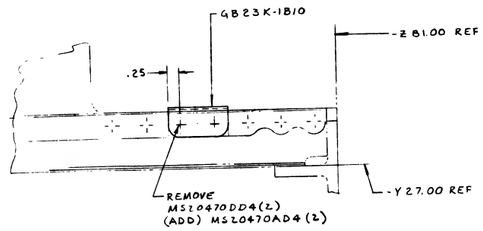
CONTRACT NO. NAS-9-1100		LINE ITEM	DOCUMENTATION TYPE II
DRAWN BY A. PRESTINARI / D. RAGAS	TECH. DIRECT.		GRUMMAN AIRCRAFT ENGRG CORP
LAYOUT BY A. PRESTINARI			BETHPAGE, L. I., NEW YORK
CHECKED BY L. MARSH 12-16-71			WIRE INSTALLATION
GRP LDR 12-16-71			DESCENT STAGE-ECA. TRANSDUCERS
			REWORK OF LDW280-60508 (LFM744)
STRUCTURES	PROJ ENGR R.V. PHILLIPS	SIZE B	CODE IDENT NO. 26512 LDW200-55581
STRUCTURES NM 12-16-71	REL GROUP L. Marsh 12-16-71	SCALE NONE	SHEET 1 OF 4

ENG 77.1 12-65

DISTR. LIST # 1

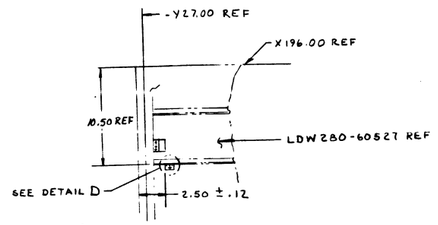


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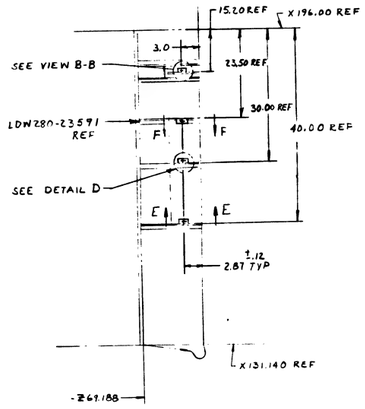


SECTION E-E SHOWN

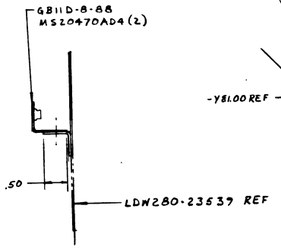
SECTION F-F OPP



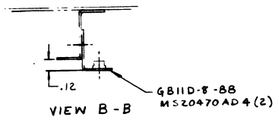
VIEW G-G



VIEW C C

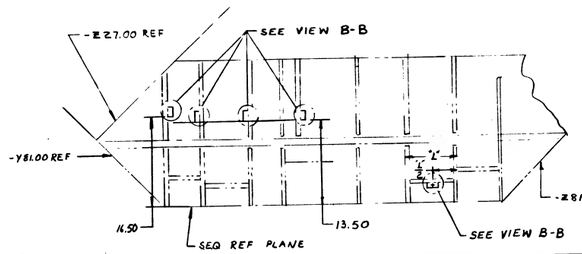


DETAIL D 2 PLACES

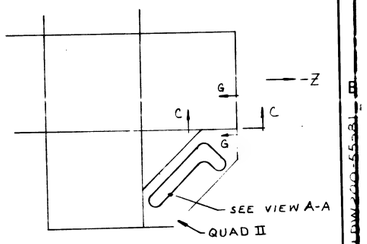


VIEW B-B

TYP 6 PLACES



VIEW A-A



LDW200-55581-3 INSTL

REVISIONS						
ZONE	LTR	DESCRIPTION	EFF CODE	MODEL	DATE	APPROVED

NOTES

1. NEXT LARGER SIZE RIVET MAY BE USED IF HOLE DIAMETER HAS BEEN ENLARGED DURING RIVET REMOVAL.
2. LSP590-002 SHALL BE USED IN CONJUNCTION WITH THIS DRAWING.
3. THE SELECTION & INSTALLATION OF LINE CLAMPS, CLAMP MOUNTING HARDWARE, ANTICHAFE SLEEVING, TAPE, GROMMETS, STRUCTURAL & ANTICHAFE BONDING SEAL SHALL BE IN ACCORDANCE WITH LPC280-23 EXCEPT IF NOTED OTHERWISE IN FID.
4. ON ALL COMPONENT PIGTAILS WHICH SPLICE INTO VEHICLE WIRING ADD A GS830 IDENTIFICATION SLEEVE. HOT STAMP THE COMPONENTS ELECTRICAL REFERENCE DESIGNATION ON THE SLEEVE. THE DASH NUMBER OF THE GS830CF SHALL BE SELECTED ACCORDING TO PIGTAIL BUNDLE DIAMETER.
5. ALL CONNECTOR & EQUIPMENT DESIGNATION NUMBERS SHALL BE PLACED ON THE VEHICLE STRUCTURE ADJACENT TO THEIR RESPECTIVE ITEMS PER LSP14-002, TYPE VII CLASS 2. ALL NUMERALS SHALL BE .31G HIGH.
6. LETTERS "A" THROUGH "H" ADJACENT TO WIRE BUNDLES INDICATE EMI CODES. WIRES HAVING UNLIKE EMI CODES SHALL NOT BE ROUTED TOGETHER UNLESS INDICATED IN FID.

FOR PARTS LIST, USAGE DATA, AND DWG SH STATUS, SEE DOCUMENT SAME NUMBER PREFIXED PL

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES			CONTRACT NO.	GRUMMAN AEROSPACE CORPORATION BETHPAGE, NEW YORK 11714		
LINEAR TOL	XX	± .03	DRAWN BY			
	.XXX	± .010	LAYOUT BY			
ANGULAR TOL		± 0°30'	CHECKED BY			
TOL ON LOFTED DELINEATIONS IS			GE LEADER			
			REL GROUP			
			PROJ ENGR			
			GOVT APPD	SIZE D	CODE IDENT NO. 26512	LDW200-55581
				SCALE		SHEET 2 OF 6

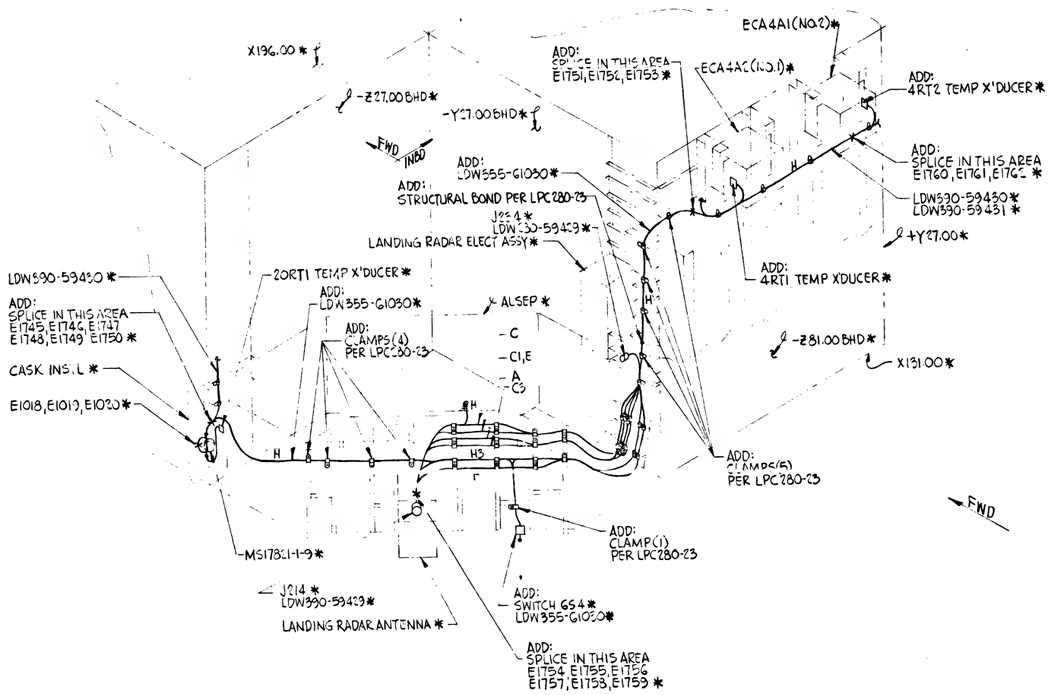
1 DISTR LIST # 6

ENG 7760 REV 5-68

NAS 9-1100

LDW200-55581

REVISIONS						
ZONE	LTR	DESCRIPTION	EFF CODE	MODEL	DATE	APPROVED



LDW200-55581-1 INSTL
VIEW LOOKING INTO QUAD II

* = REFERENCE

FOR PARTS LIST, USAGE DATA, AND DWG SH STATUS, SEE DOCUMENT SAME NUMBER PREFIXED PL

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES			CONTRACT NO.	GRUMMAN AEROSPACE CORPORATION BETHPAGE, NEW YORK 11714
LINEAR TOL	XX	± .03	DRAWN BY	
	XXX	± .010	LAYOUT BY	
ANGULAR TOL		± 0°30'	CHECKED BY	
TOL ON LOFTED DELINEATIONS IS			SE LEADER	
			REL GROUP	
			PROJ ENGR	SIZE D | CODE IDENT NO. 26512 | LDW200-55581
			GOVT APPD	SCALE NONE | SHEET 3 OF 4

DISTR LIST # 2

NAS 9-1100

GRUMMAN AEROSPACE CORPORATION
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG. NO. LDW200-55581 | EO NO. A1
CONTROL INFO NO. LDW280C1472

ADD NOTE *
STRUCTURAL OR ANTICHAFE BONDING IN ACCORDANCE WITH LPC280-23 MAY BE USED AS REQUIRED ON THE NEW WIRE RUNS TO OBTAIN ADDITIONAL SUPPORT, AVOID INTERFERENCES OR TO PREVENT CHAFING.

ADD NOTE **
GB11D-8-82 & GB23K-1810 MAY BE MOVED 1" IN EITHER DIRECTION FROM DIMENSIONS SHOWN TO ENSURE PROPER WIRING INSTALLATION

**=USE NEXT AVAIL NOTE NO.
*=USE NEXT AVAIL NOTE NO.

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓LCD5943 PKG5

REASON FOR EO: TO PROVIDE LATITUDE IN WIRE ROUTING TO ENSURE PROPER INSTL

DESCRIPTION OF EO: ADDED NOTES * & **

GAEC EO RELEASE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM744	LM12(42)	
LM	LFM744B	LM11(41)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: REWORK ✓ | SCRAP

APPROVED BY									
				PST	NM		RVP by Fax		
DATE				12-17-71	12-17-71		12-17-71	12-17-71	
	SUPPORT	RELIAB GROUP		GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ. ENGRG	GAC	

PRIORITY: C
DRAWING TITLE: WIRE INSTALLATION D/S ECA X DUCERS REWORK 280-60508
DRAWING NO.: LDW200-55581
EO NO.: A1

CDR 12-17-71
ISSUED BY A. PRESTINARI X2410
SECTION VD1 (EQUIP LINES) GROUP NO. 0332 PL 025

01

NAS 9-1100

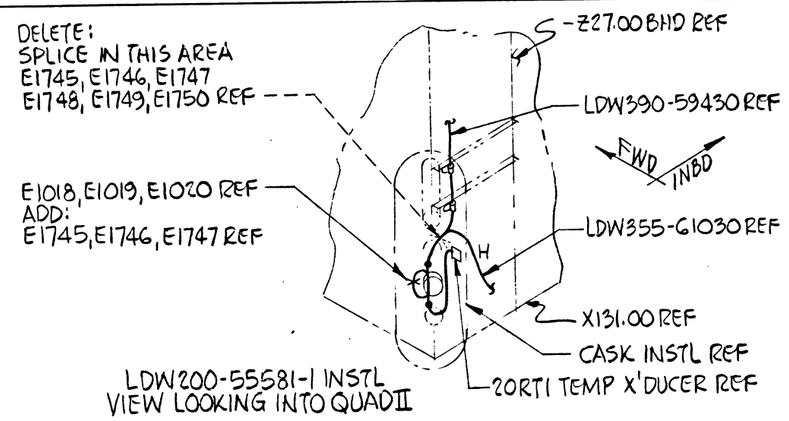
GRUMMAN AEROSPACE CORPORATION

CODE IDENT NO. 26512

ENG 32.1 REV 3-68

ENGINEERING ORDER

DWG. NO. LDW200-55581		EO NO. A2
CONTROL INFO NO. LDW280C 1473		



LDW200-55581-1 INSTL
VIEW LOOKING INTO QUAD II

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCD5943 PKG 5

REASON FOR EO: REDUCE NUMBER OF SPLICES

DESCRIPTION OF EO: ON-1 INSTL
DELETED SPLICES E1748, E1749, E1750
RELOCATED SPLICES E1745, E1746, E1747

GAEC EO RELEASE: RVP by phone 12-29-71 12-29-71

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM744	LM12(42)	
LM	LFM744A	LM11(41)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		✓	

APPROVED BY								
DATE								
			SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
					RVP	NM		RVP by phone
					12-28-71	12-29-71		12-29-71

PRIORITY: C

DRAWING TITLE: WIRE INSTALLATION DIS ECA XDUCERS REWORK 280-60508

DRAWING NO.: LDW200-55581

EO NO.: A2

CDR 12-29-71

ISSUED BY: A. PRESTINARI X2410

SECTION VDI (EQUIP LINES) GROUP NO. 0332 PL 025

0-1

NAS 9-1100

A					SEE NOTE 6			GC500J-D*T	E	CLAMP	GRUMMAN STD														1C
A					↕	↕		GB511J	↕	BOLT	GRUMMAN STD														1C
A					↕	↕		MS21042L	↕	NUT	STD PART														1C
A					SEE NOTE 6			AN960D*L	↕	WASHER	STD PART														1C
A					AS REQD			MS21044N08	↕	LOCKWIRE	STD PART															
A					↕	2		NAS1805D5-32	↕	SPACER	STD PART														1C
A					2	↕		AN960D1216L	↕	WASHER	STD PART														2D
					↕	↕		↕	↕	↕	↕														↕	
N					2	↕		LSC269-199-1019	↕	SEAL	SEE NOTE 9														2C 3D
N					4	5		↕ -504-6	↕	SEAL	↕														↕	
N					1	↕		↕ -124-6	↕	UNION-BHD	↕														2C	
N					1	↕		↕ -123-6	↕	ELBOW-90°-END	↕														3D	
N					2	↕		LSC269-119-6	↕	NUT-END, JAM	SEE NOTE 9														2C	
					↕	↕		↕	↕	↕	↕														↕	
					↕	↕		↕	↕	↕	↕														↕	
					↕	↕		↕	↕	↕	↕														↕	
					↕	↕		↕	↕	↕	↕														↕	
					↕	↕		↕	↕	↕	↕														↕	
					↕	↕		LDW280-16000	↕	↕	↕														↕	
N					↕	1		↕ -4236ECC-6	↕	TUBE ASSY	SEE DWG														2D	
N					1	↕		↕ -4238ECC-6	↕	↕	↕														3C	
N					1	↕		↕ -4239ECC-6	↕	↕	↕														3C	
N					↕	1		↕ -4238ECC-6	↕	↕	↕														1D	
N					↕	1		↕ -4282ECC-6	↕	TUBE ASSY	SEE DWG														1B	
								LDW280-16000																		
G								LDW200-55580-3		LINES INSTL-INTCNX																
E								LDW200-55580-1	E	LINES INSTL-EXTCNX																
CL					-3	-1																				
QTY PER ASSEMBLY								CODE IDENT		PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE							

CL = CLEAN LINES, LEVEL PER LTP-14-5011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

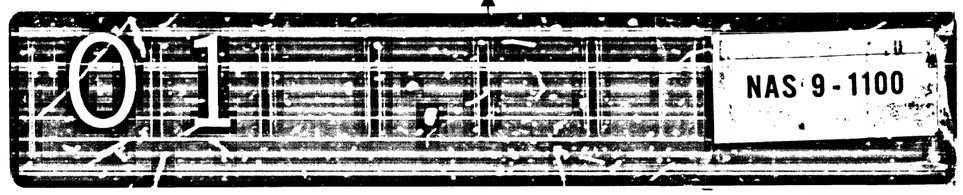
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

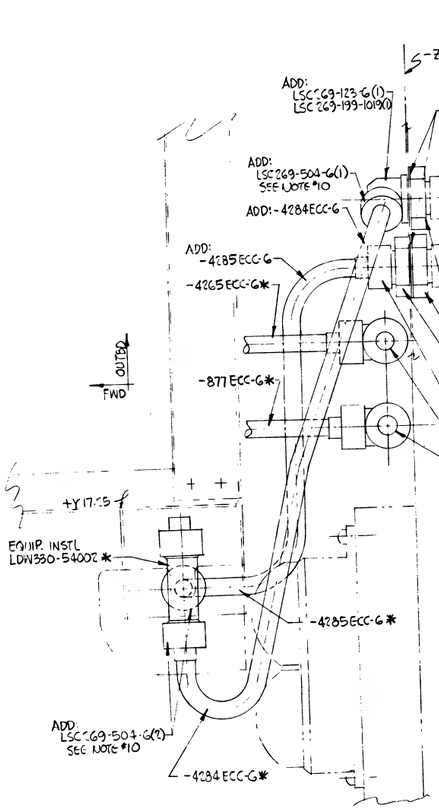
GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55582

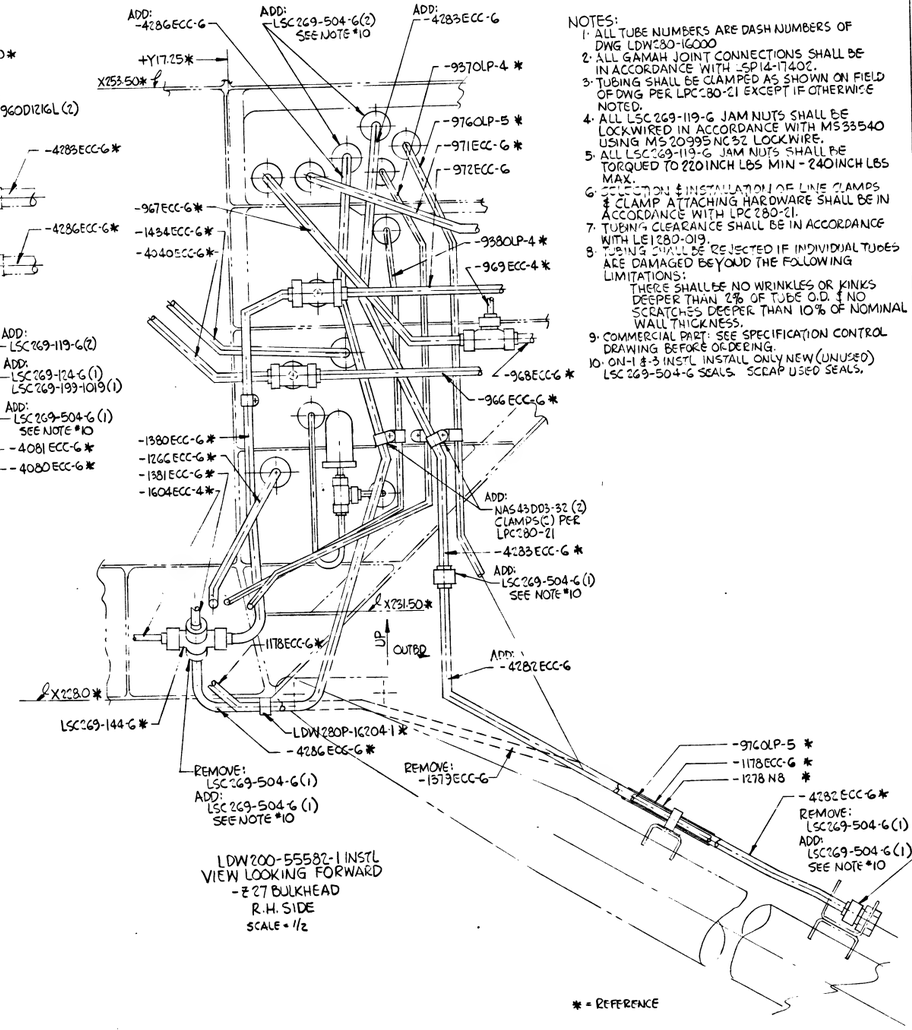
SCALE NONE SHEET 2.00

ENG 77.2 7-64





LDW200-55582-3 INSTL
PLAN VIEW
JUST FWD-Z27BHD RHSIDE
SCALE=FULL



LDW200-55582-1 INSTL
VIEW LOOKING FORWARD
-Z 27 BULKHEAD
R.H. SIDE
SCALE = 1/2

NOTES:
1. ALL TUBE NUMBERS ARE DASH NUMBERS OF DWG LDW380-16000
2. ALL GAMAH JOINT CONNECTIONS SHALL BE IN ACCORDANCE WITH -SP14-17402.
3. TUBING SHALL BE CLAMPED AS SHOWN ON FIELD OF DWG PER LPC380-21 EXCEPT IF OTHERWISE NOTED.
4. ALL LSC269-119-G JAM NUTS SHALL BE LOCKWIRED IN ACCORDANCE WITH MS33540 USING MS20995NC32 LOCKWIRE.
5. ALL LSC269-119-G JAM NUTS SHALL BE TORQUED TO 220 INCH LBS MIN - 240 INCH LBS MAX.
6. SELECTION & INSTALLATION OF LINE CLAMPS & CLAMP ATTACHING HARDWARE SHALL BE IN ACCORDANCE WITH LPC380-21.
7. TUBING CLEARANCE SHALL BE IN ACCORDANCE WITH LES380-019
8. TUBING SHALL BE REJECTED IF INDIVIDUAL TUBES ARE DAMAGED BEYOUD THE FOLLOWING LIMITATIONS:
   THERE SHALL BE NO WRINKLES OR KINKS DEEPER THAN 2% OF TUBE O.D. & NO SCRATCHES DEEPER THAN 10% OF NOMINAL WALL THICKNESS.
9. COMMERCIAL PART: SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING.
10. ON-1 & -3 INSTL INSTALL ONLY NEW (UNUSED) LSC269-504-G SEALS. SCRAP USED SEALS.

* = REFERENCE

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	LDW200-55582
	26512	
SCALE: SHOWN		SHEET 3.00

Distribution #1

LDW200-55582

PRINT FINAL LINE
FULL SIZE SHEET AREA (30 X 33 in) 6.87 SQ FT
PRINTING INFO ONLY
DWG SIZE: A

LDW200-55582

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM744	NONE	LM12(42)	1 EA
LFM744A	NONE	LM11(41)	1 EA
PART NO. LDW200-55582-1&-3		GAEC SCH NO.	

WORK PKG FUNCTION NO. 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH M

SHEET	1.00	2.00			3.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	—	GRUMMAN REL INFO			
LAST DASH NO. USED	-3	PRIM NO.	240	227	227

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS — ANGLES

ORIG DWG AUTH				
DETAIL SPEC REQUIREMENT		GRP LDR		
CLASS II ENGRG CHANGE		VDI		
CLASS I ENGRG CHANGE	✓	STRUCT		
LCD5943 PKG 5		STRUCT	CW 12-10-71	

CONTRACT NO. NAS9-1100 LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	A. PRESTINARI	MATLS	12-8-71
LAYOUT BY	A. PRESTINARI	TOOL DIR.	12-8-71
CHECKED BY	ACP		
GRP LDR	12/8/71		
GRP LDR			
VDI	12-9-71	PROJ ENGR	12/9/71
STRUCT		REL GROUP	12-10-71
STRUCT			

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

TUBING INSTL FOR MANUAL VALVE (DISCOOLANT SHUTOFF) REWORK OF DWG LDW380-60001 (LFM744)

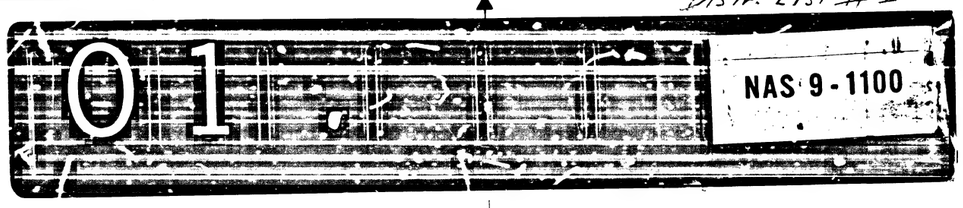
SIZE	CODE IDENT NO.	
B	26512	LDW200-55582

SCALE NONE SHEET 1.00 OF 3

CDR 12-15-71

Distr. List #1

ENG 77.1 12-65



GRUMMAN AEROSPACE CORPORATION

CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200-55582 | EO NO. A1

CONTROL INFO NO. LDW280C1485

ON-1 IN F/D RESTRICT LINE-4286ECC-6 TO LM11(41) WAS LM11(41) & LM12(42)
ADD LINE-4287 ECC-6 FOR LM12(42) (REPLACES LINE-4286 ECC-6)
IN B/M ADD LINE-4287 ECC-6

DETAIL SPEC REQ		CL II ENGRG CHG	✓	CL I ENGRG CHG		LCD5943 PKG 5

REASON FOR EO

TO RESOLVE D.R. NO. 84. NEW TUBE REQUIRED FOR LM12(42)

DESCRIPTION OF EO

ON-1
IN F/D RESTRICT LINE-4286 ECC-6 TO LM11(41) WAS LM11(41) & LM12(42). ADDED LINE-4287 ECC-6 FOR LM12(42)
ADDED-4287ECC-6 TO B/M

GAEC EO RELEASE

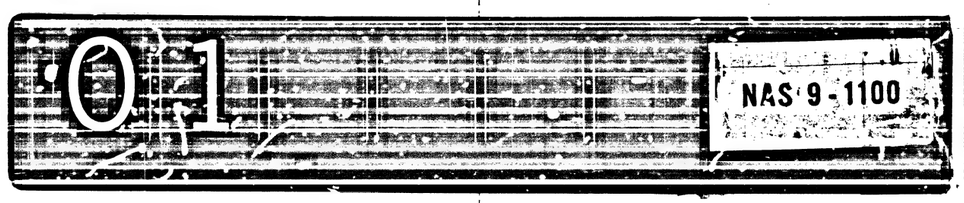
EFFECTIVITY			DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	REVISE DWG	RECORD EO	REWORK	SCRAP	DATE				SUPPORT	MATL MGMT GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GAC
LM	LFM744B	LM12(42)															

PRIORITY: C

DRAWING TITLE: TUBING INSTL FOR MANUAL VALVE (DIS COOL. SHUTOFF) REWORK LDW280-6000)

DRAWING NO.: LDW200-55582 EO NO.: A1

CDR 4-26-72
ISSUED BY A. PRESTINARI X2410 SECTION VD1 (EQUIP LINES) GROUP NO. 0332 PL 025



LDW200-55584

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
		GAEC SCH NO.				GAEC SCH NO.		LFM 749	LDW340-60781	LM-1(4)	1
PART NO.				PART NO.				PART NO. LDW200-55584-1		GAEC SCH NO.	

WORK PKG FUNCTION NO. 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00									
REV										
SHEET	2.00									
REV										
SHEET	3.00									
REV										

LAST SECT LTR USED	C	GRUMMAN REL INFO
LAST DASH NO. USED	-1	PRIM NO. 299

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES,
XX=±.03 .XXX=±.010 ±0°30

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 5949 PKG 1	

CONTRACT NO. NAS 9-1100 LINE ITEM 0 DOCUMENTATION TYPE

DRAWN BY	T. MACAULAY	TECH. DIR	12-20-71
LAYOUT BY	A. VAVARO		
CHECKED BY	12-20-71		
GP LEADER	11-30-71		
SS ENGR			
STRUCT		PROJ ENGR	12-20-71
STRUCT	NM 12/20/71	REL GROUP	12-20-71

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CONTAINER INSTALLATION
CREW PROVISIONS, DESCENT STAGE
QUAD III PALLET LRV

SIZE	CODE IDENT NO.	
B	26512	LDW200-55584

SCALE NONE SHEET 1.00 OF 3

ENG 77.1 12-65

025-0343

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
- 1		LDW200-55584-1	E	CONTAINER INSTL					NONE	NONE	
1		LDW340-60795-1		CONTAINER ASSY	SEE DWG						
1		LDW340-60795-5		STRAP ASSY	SEE DWG						
1		LDW310-15463-23		BLOCK	SEE DWG						
2		GB511J08-12		BOLT	GRUMMAN STD						
5		GB511K08-10		BOLT							
2		GB511K08-4		BOLT							
7		GN512H08		NUT							
3		GS500E08D50-5		SPACER	GRUMMAN STD						
4		MS27983-6N		FASTENER	GOVT STD						
4		MS27983-7N		FASTENER							
2		MS21043-08		NUT							
2		AN960D8L	E	WASHER	GOVT STD						
A/R		EPON 934		ADHESIVE							
A/R		CORFIL #615		ADHESIVE							

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55584

SCALE NONE SHEET 2.00

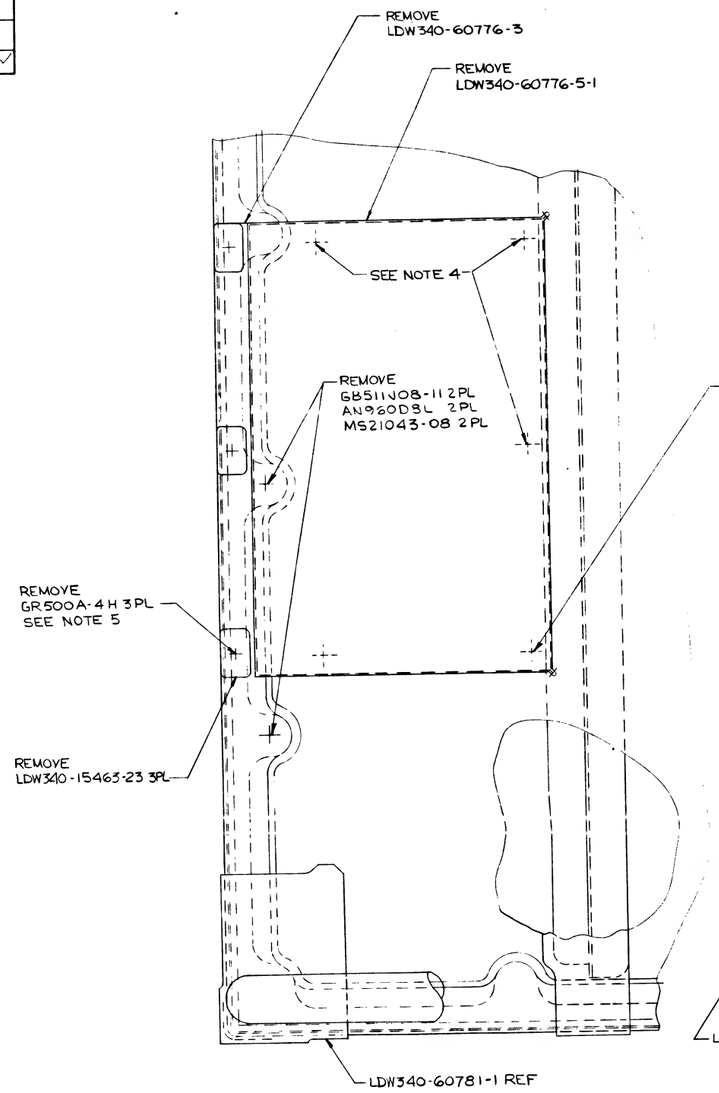
ENG 77.2 7-64

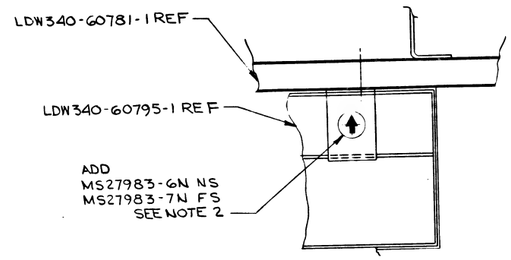
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NAS 9-1100

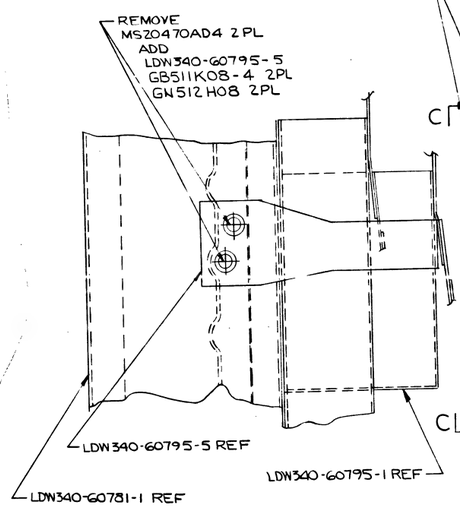
SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH MIL STD-130	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED (SEE) USE BOTH SIDES IF NECESSARY	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL RIVETS IN ACCORDANCE WITH SP14-15306	✓

NOTES
1. POT HOLE WITH EPON 934 ADHESIVE PER LSP14-22500 CURE RANGE I OR II. WIPE OFF EXCESS & INSTALL FASTENERS BEFORE CURE.
2. PULL STRAP TAUT AGAINST SAMPLER TOOL OR ITS MASS REPRESENTATION BEFORE INSTALLING MS27983-6N AND MS27983-7N TO INSURE A SNUG FIT.
3. PULL STRAP TAUT AGAINST LCRU RETAINER STRAP OR ITS MASS REPRESENTATION BEFORE INSTALLING MS27983-6N AND MS27983-7N TO INSURE A SNUG FIT.
4. HOLES MAY BE LEFT OPEN.
5. HOLES TO BE FILLED WITH CORFIL NO. 615 PER LSP14-20000

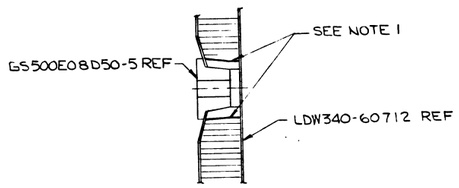




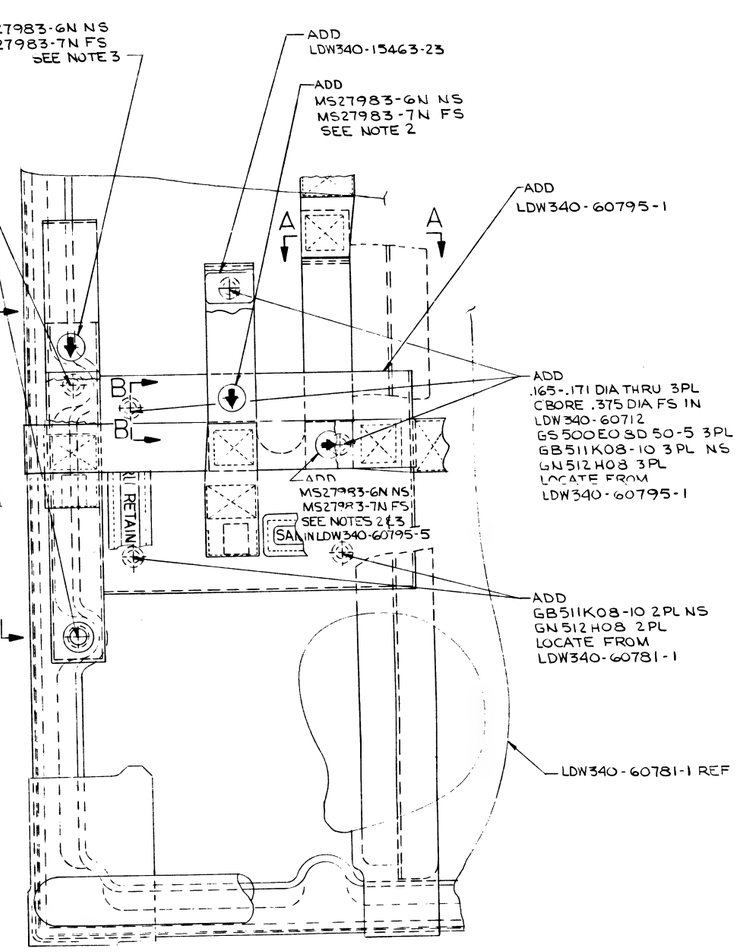
SECTION A-A



SECTION C-C



SECTION B-B
TYP INSTL FOR GS500E08D50
SCALE : NONE



LDW200-55584-1 INSTL

NAS 9-1100

GRUMMAN AEROSPACE CORPORATION BETHPAGE, NEW YORK 11714			
SIZE	CODE IDENT NO	LDW200-55584	
E	26512		
SCALE FULL		SHEET 500	

LDW200-55584

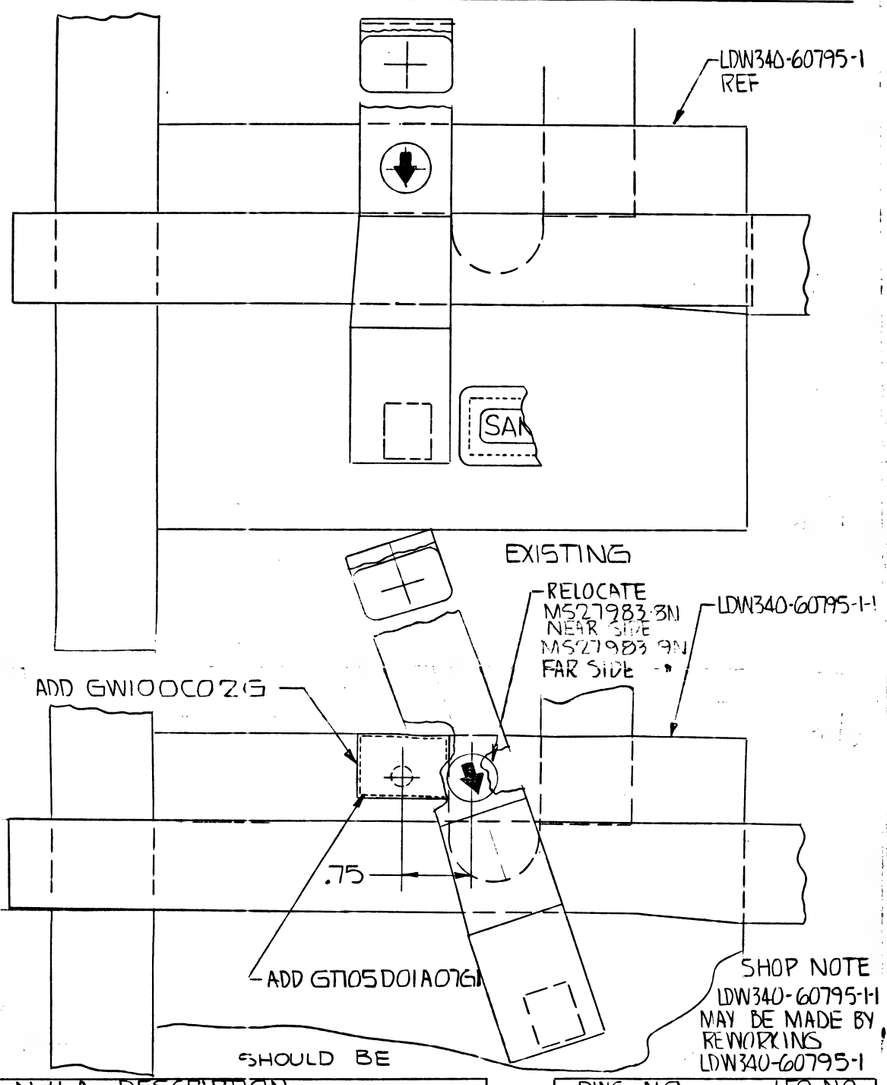
GRUMMAN AEROSPACE CORPORATION
CODE IDENT NO. 26512

BNG 32.2 REV 3-66

ENGINEERING ORDER

DWG. NO. NOTED | EO NO. X

CONTROL INFO NO. LDW340-10042



N.H.A. DESCRIPTION
QN-1 IN FLD & B/M REMOVED LDW340-60795-1 ADDED LDW340-60795-1-1

DWG NO.	EO NO
LDW340-60795	A3
N.H.A. NO.	
LDW200-55584	A1

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | LCD 5949 PKG 1

REASON FOR EO: TO PROVIDE CLEARANCE WITH MAG TRIPOD

DESCRIPTION OF EO: IN FLD & B/M REMOVED LDW340-60795-1 ADDED LDW340-60795-1-1

GAEC EO RELEASE

EFFECTIVITY			
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 7498	LM-11 (4I)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO | DISPOSITION OF PARTS: REWORK ✓ | SCRAP

APPROVED BY / DATE: SUPPORT | RELIAB GROUP | GROUP LEADER 3-8-72 | STRESS GROUP 3-8-72 | LIAISON ENGRG | PROJ ENGRG 4/10/72 | GAC 3.8.72

PRIORITY: C

DRAWING TITLE: CONTAINER ASSY - CP, D/S QUAD III PALLET-LRV

DRAWING NO.: NOTED

EO NO.: X

ISSUED BY A. VARVARO X9481 SECTION CREW PROVISION GROUP NO. 0356 PL 0015

NAS 9-1100

LDW200-55585

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM 7SC	LDW340-60781	LM-11(41)	1
PART NO. LDW200-55585-1		GAEC SCH NO.	

WORK PKG FUNCTION NO. 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00									
REV										
SHEET	2.00									
REV										
SHEET	3.00									
REV										

LAST SECT LTR USED	—	GRUMMAN REL INFO						
LAST DASH NO. USED	-1	PRIM NO.	299					

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
.XX=±.03 .XXX=±.010 ±0°30'

ORIG DWG AUTH			
DETAIL SPEC REQUIREMENT			
CLASS II ENGRG CHANGE			
CLASS I ENGRG CHANGE	✓		
LCD 5952 PKG1			

CONTRACT NO. NAS 9-1100 — LINE ITEM — DOCUMENTATION TYPE II

DRAWN BY	T MACAULAY	MATL	
LAYOUT BY	A YAYARO	Test D.E.	12-28-71
CHECKED BY	12-29-71		
GP LEADER	12-28-71		
SS ENGR			
STRUCT		PROJ ENGR	12-28-71
STRUCT	12/29/71	REL GROUP	

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

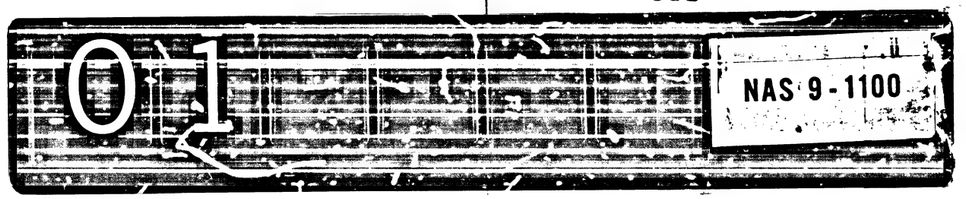
TAPE INSTALLATION
CREW PROVISION - DESCENT STAGE
QUAD III PALLET REWORK OF LDW340-60781

SIZE	CODE IDENT NO.	
B	26512	LDW200-55585

SCALE NONE — SHEET 100 OF 3

ENG 77.1 12-66

025-0343 Distr List #1



QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
A/R		EPON 934	E	ADHESIVE							
1		GT535G-LCW-0006		VELCRO LOOP		GRUMMAN STD					
2		GT535G-LAW-0021		VELCRO LOOP		GRUMMAN STD					
2		GT535G-LAW-0017		VELCRO LOOP		GRUMMAN STD					
									NONE	NONE	
-1		LDW200-55535-1	E	TAPE INSTL							

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

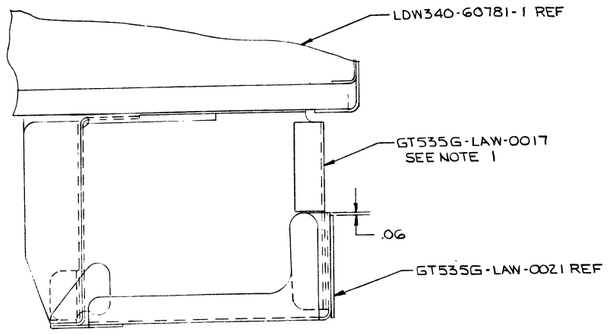
SIZE	CODE IDENT NO.	
B	26512	LDW200-55585

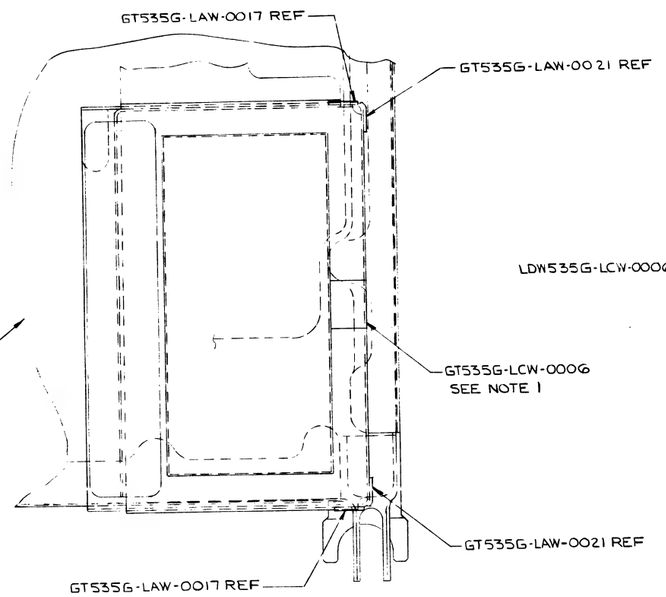
SCALE NONE SHEET 2.00

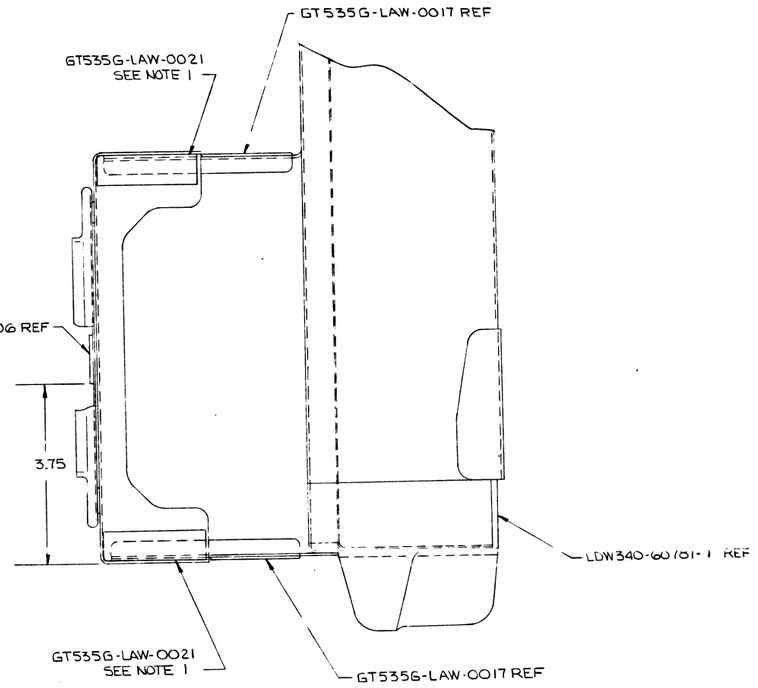
ENG 77.2 7-64

Q1 NAS 9-1100

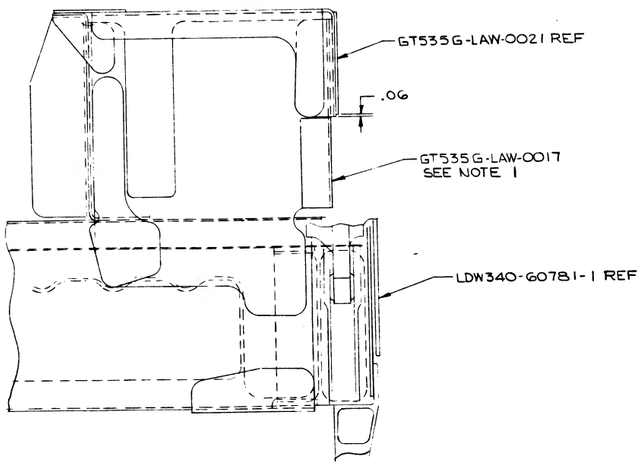
SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130.	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☐ USE BOTH SIDES IF NECESSARY	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL RIVETS IN ACCORDANCE WITH	







LDW200-55585-1 INSTL



NOTES:

1. BOND IN ACCORDANCE WITH EPON 934 IN ACCORDANCE WITH LSP14-22500 CURE RANGE 1 ROOM TEMP CURE PERMISSIBLE.

Q1

NAS 9-1100

GRUMMAN AEROSPACE CORPORATION
BETHPAGE, NEW YORK 11714

SIZE	CODE IDENT NO.	LDW200-55585
E	26512	

SCALE FULL SHEET 3 OF 3

LDW200-55585 C

LDW200-55585 C

GRUMMAN AEROSPACE CORPORATION

CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200-55585		EO NO. A1
CONTROL INFO NO. LDW390-9966		

ON-1 IN B/M & F/D REMOVE: GT535G-LCW-0006 #
ADD: GT535G-LCS-0006, VELCRO LOOP, QTY 1 REQ'D.

IN B/M & F/D REMOVE: GT535G-LAW-0021 #
ADD: GT535G-LCS-0021, VELCRO LOOP, QTY 2 REQ'D.

IN B/M & F/D REMOVE: GT535G-LAW-0017 #
ADD: GT535G-LCS-0017, VELCRO LOOP, QTY 2 REQ'D.

DETAIL SPEC REQ. | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD5952 (LCRP5952-1)

REASON FOR EO: TO CORRECT CALLOUT OF VELCRO MATERIAL

DESCRIPTION OF EO: ON-1 IN B/M&F/D REMOVED: GT535G-LCN-0006 (QTY 1), ADDED: GT535G-LCS-0006 (QTY 1); REMOVED: GT535G-LAW-0021 (QTY 2), ADDED: GT535G-LCS-0021 (QTY 2); REMOVED: GT535G-LAW-0017 (QTY 2), ADDED: GT535G-LCS-0017 (QTY 2)

GAEC EO RELEASE

EFFECTIVITY				DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY									
MODEL (V)	PROCURING ACTIVITY I	GAEC UNIT NO.	SUB CONTR UNIT NO.	REVISE DWG	RECORD EO	REWORK	SCRAP	DATE									
LM	LFM # 752	LM-11(G1)									SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GAC
				✓		✓					1-6-72	1/1/72			1-6-72	1-6-72	

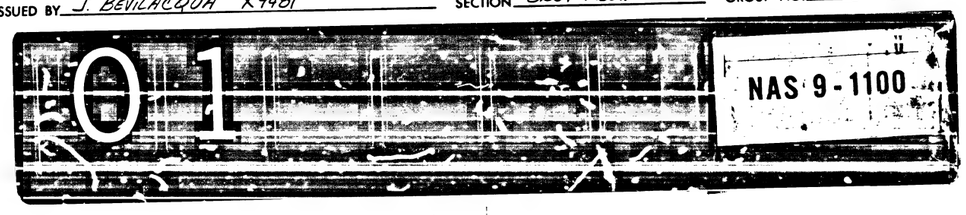
PRIORITY: C

DRAWING TITLE: TAPE INSTALLATION C.P.~DES. STAGE, QUAD III PALLET

DRAWING NO.: LDW200-55585

EO NO.: A1

ISSUED BY J. BEVILACQUA X9981 SECTION CROV PROV. GROUP NO. 0356 PL 025



LDW200-55586

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM 753	———	LM-11(A1)	1
PART NO. LDW200-55586-1		GAEC SCH NO.	

WORK PACKAGE FUNCTION NO. 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00										
REV											
SHEET	2.00	2.01	2.02	2.03	2.04	2.05					
REV											
SHEET	3.00	4.00	5.00	6.00							
REV											

LAST SECT LTR USED	AG-AC
LAST DASH NO. USED	-44

GRUMMAN REL INFO — PRIM NO. 299

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
~~FRACTIONS~~ - DECIMALS – ANGLES
.XX±.03, .XXX±.010, ±0°-30'

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 5953	

CONTRACT NO. NAS9-1100 — LINE ITEM — DOCUMENTATION TYPE III

DRAWN BY	FRANCHINO PICARSTAGEN MCCAULAY	TECH DIR.	
LAYOUT BY	R. SEEDOL		
CHECKED BY			
SP LDR			
E.S. ENGR			
STRUCT	NM 2/16/72	PROJ ENGR	2/14/72
STRUCT		REL GROUP	2-28-72
MATERIALS			

GRUMMAN AEROSPACE CORPORATION
BETHPAGE, L. I., NEW YORK

HARDCOVER INSTALLATION
CREW PROVISIONS ~ DESCENT STAGE
FAR U.V. CAMERA – REWORK OF LDW340-6073

SIZE	CODE IDENT NO.	
B	26512	LDW200-55586

SCALE NONE — SHEET 1.00 OF 11

77.1 12-65

025 0356 Distr List #1

01

NAS 9-1100

-13	-11	-9	-7	-5	-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
QTY PER ASSEMBLY																	
								LDW200-55586-44	E	PLATE	AL ALLOY SH	QQ-A-250/12	7075-T6	.063 X 2 X 5	NONE	NONE	18D
								-43						.063 x 2 x 5			18D
								-42						.063 x 2 x 5			18C
								-41						.063 x 2 x 5			18C
								-40						.063 x 2 x 5			4D
								-39						.063 x 2 x 5			4D
								-38						.063 X 2 X 5			9A
								-37	E	PLATE	ALALLOY SH	QQ-A-250/12	7075-T6	.063 X 2 X 5	NONE	NONE	9A
						2		-35	E	PIN	AL ALLOY WIRE	QQ-A-225/2B	3003	.032 DIA x 2	NONE	NONE	35A 15C
	AR							-33		ACLAR	SEE NOTE 5						38B
						2		-31		WASHER	AL ALLOY ROD	QQ-A-225/8	6061-T6	.437 DIA x 1			36A 15C
								-29		PIN	MAKE FROM	MS20392-2C33					36B
								-27		BLOCK	AL ALLOY ROD	QQ-A-225/8	6061-T6	.437 DIA x 1			37A
								-25		RING	STL STEEL WIRE	QQ-W-423	302	.063 DIA x 6			36C
		1						-23		LATCH ASSY	SEE NOTE 11						38D
						8		-21		BLOCK	AL ALLOY SH	QQ-A-250/12	7075-T6	.160 x 2 x 2	NONE		38A
	1							-13		PIN ASSY (WELDED)					SW		36B
						2		-11		STRAP ASSY					NONE		36C 15C
			1					-9		STRAP ASSY					NONE		38D
						12		-7		LATCH ASSY					NONE		37C 26K
						1		-5		COVER ASSY (WELDED)					AW		3A
						1		-3		COVER ASSY					NONE		3A
								LDW200-55586-1	E	COVER INSTALLATION					NONE	NONE	3A

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
SW	FUSION WELD	MIL-W-8611
AW	RESISTANCE WELD	LSP14-6102

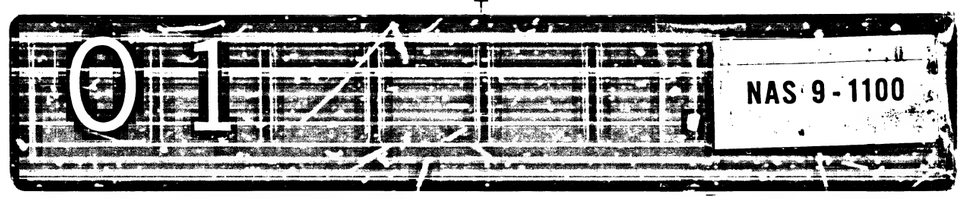
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55586

SCALE NONE SHEET 2.00

ENG 77.2 7-65



-13	-11	-9	-7	-5	-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
QTY PER ASSEMBLY																	
				1				LDW340-15901-13	E	COVER							7C
								LDW340-15900 -46		ZEE							26D
								-45									26D
								-44									26D
								-43									26D
								-42									27D
								-41									27D
								-40									27D
								-39		ZEE							27D
					1			-38		CLIP							26D
					1			-37									26D
					2			-36									25D
					2			-35									25D
					1			-34									25D
					1			-33									25D
					1			-32									28D
					1			-31		CLIP							28D
					2			-29		PLATE							25D
					2			-27		PLATE							27D
					8			-25		PLATE							25D 26D 27D
				1				-24		ZEE							28D
				1				-23									28D
				1				-22									25D
				1				-21									25D
				1				-20									25D
				1				LDW340-15900-19	E	ZEE							25D

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55586

SCALE NONE SHEET 2.01

ENG 77.2 7-65

NAS 9-1100

-13	-11	-9	-7	-5	-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
QTY PER ASSEMBLY																	
					1			LDW340P15906-13	E	GLASS							4C
				12				LDW340-15905-23		PLATE							5C
				1				-19		PLATE							3C
					1			-17		WASHER							18C
				1				-16		CHANNEL							17D
				1				-15									5C
				1				-13									3C
				1				LDW340-15905-11		CHANNEL							
					1			LDW340-15904-24		ANGLE							22B
					1			-23		ANGLE							22B
					1			-21		FRAME							3A
					12			-19		PLATE							2A,2B 2B,2BB
					3			-16		ANGLE							2BB 2B 2BB 2B 2BB 3B 16C
					3			-15									
				2				-13									
				2				LDW340-15904-11		ANGLE							6B
				1				LDW340-15903-1		CHANNEL ASSY							7B
							8	LDW340-15902-23		PLATE							5B 6B 7B 9B
							2	-22		CLIP							9A
							2	-21		CLIP							9A
						4		-19		PLATE							25B
							4	-17		PLATE							3A, 4A, 16A
				1				-15		FRAME							6C
				1				-13		FRAME							6C
				4				LDW340-15902-11	E	FRAME							8C

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55586

SCALE NONE SHEET 2.02

ENG 77.2 7-64

NAS 9-1100

-13	-11	-9	-7	-5	-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
QTY PER ASSEMBLY																	
						1		LDW340-15916-18	E	CLIP							21D
						1		-17									21D
						1		-16									24D
						1		-15									24D
						6		-13									23D 24D 24C 23C
						8		LDW340-15916-11		CLIP							
						8		LDW340-15915-27		CLIP							23C 21D 24D 23C 24C 21D 21D
						3		26		CLIP							
						3		25		CLIP							
								24		ZEE							
								23									21D
								22									21D
								21									21D
								20									21D
								19									22D
								18									22D
								17									23D
								16									23D
								15									23D
								14									23D
								13									24D
								12									24D
						1		LDW340-15915-11		ZEE							24C
																	24C
						1		LDW340M15908-17		FITTING							11D
						1		LDW340M15908-15									15D
						1		LDW340M15907-14									13D
						1		LDW340M15907-13	E	FITTING							12A

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW200-55586	

SCALE NONE SHEET 2.03

ENG 77.2 7-64

NAS 9-1100

-13	-11	-9	-7	-5	-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
QTY PER ASSEMBLY																	
					18			GB511J08-16	E	BOLT	GRUMMAN STD						
					50			-15									
					8			-10									
					8			-9									
					4			-6									
				3				-4									
				4				-3									
				33				GB511J08-2		BOLT	GRUMMAN STD						
								LDW340-15917-26		SPLICE							16C
								25									18C
								24									2C
								23									5D
								19									4D
								16									2B
								15									5E
								14									16C
								13									18C
					1			LDW340-15917-11		SPLICE							17D
						4		LDW340-15916-27		PLATE							22D
						6		-25									23D
						1		-24									24D
						1		-23		PLATE							24D
						1		-22		CLIP							22D
						1		-21									22D
						2		-20									21D 22D
						2		LDW340-15916-19	E	CLIP							21D 22D

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55586

SCALE NONE SHEET 2.04

ENG 77.2 7-64

01

NAS 9-1100

-13	-11	-9	-7	-5	-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
QTY PER ASSEMBLY																	
					12	20		NAS1598-08	E	WASHER	IND STD						
	1	1						NAS43DD8-32		SPACER	IND STD						
					28			NAS697-08		PLATENUT	IND STD						
						12		MS27983-8N		FASTENER	GOVT STD						
		1						MS27983-7N		FASTENER	↑						
		1						MS27983-6N		FASTENER	↕						
			AR					MS20426AD5		RIVET	↕						
						AR		MS20426AD4		RIVET	↕						
						68		MS21043-08		NUT	↕						
		4						MS20230B20		GROMMET	↕						
					AR			MS20470AD4		RIVET	↓						
						68		AN960D8		WASHER	GOVT STD						
		AR						GW100C06 G		WEBBING	GRUMMAN STD						
	AR							GW100C03 G		WEBBING	GRUMMAN STD						
	AR							GW100C01 G		WEBBING	GRUMMAN STD						
					AR			MS20426AD3		RIVET	GOVT STD						
					1			GV500RM1		VALVE	GRUMMAN STD						
											↕						
						7		GT535AJ1L0020		TAPE	↕						
						1		GT535AJ1L0016			↕						
		1						GT535AJ1L0004			↕						
		1						GT535AJ1H0010			↕						
	1							GT535AJ1H0004		TAPE	↕						
											↕						
	ALT	ALT						GT105D01A07G1		THREAD	↕						
	AR	AR						GT105D02A07G1		THREAD	↕						
											↕						
						12		GR501A-5A		RIVET	↕						
											↕						
					12	20		GN510A08		NUT	↓						
			2					GL10B2-8	E	LANYARD	GRUMMAN STD						

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

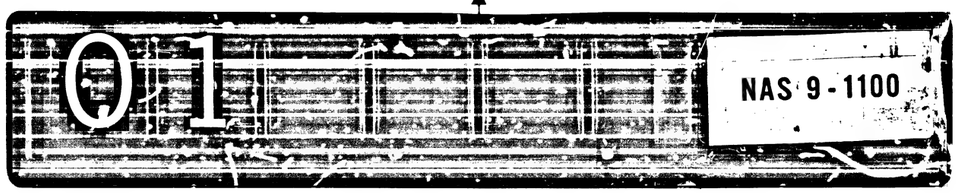
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55586

SCALE NONE SHEET 2.05

ENG 77.2 7-64



SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.
MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130.
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED/SEQ ~~USE-340M15907-F~~
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
INSTALL RIVETS IN ACCORDANCE WITH

LDW340-15903 -41 REF

-LDW340-15917-25 REF FOR SECT AB-AB
-26 REF FOR SECT AC-AC

SECT AB-AB SHOWN ZONE 18C SH4
SECT AC-AC OPP ZONE 16C SH4

.50 TRIM ON ASSY TO MAINTAIN THIS DIM

LDW340-15917-25 REF

.41 REF

.25R TYP 4 PL

.165-.171 DRILL
GBS11J03-2
NAS6970B
MS20426AD3 2PL
CSK NS LDW340-15917-25 & -26
ON-3

LDW340-15917-13 REF FOR SECT Z-Z
-24 REF FOR SECT AA-AA

LDW340-15901-13 REF

LDW340-15917-23 REF

.25R TYP 4 PL

.37 REF

.165-.171 DRILL 2PL
GBS11J08-2 2PL
NAS697-08 2PL
MS20426AD3 4PL
CSK NS LDW340-15917-23 & -24
ON-3

.50 TRIM ON ASSY TO MAINTAIN THIS DIM

SECT Z-Z SHOWN ZONE 4C
SECT AA-AA OPP ZONE 2C

LDW340-15901-13 REF

LDW340-15917-15 REF FOR SECT W-W
-16 REF FOR SECT Y-Y

.37 REF

SECT W-W SHOWN ZONE 4C
SECT Y-Y OPP ZONE 2C

.25R TYP 4 PL

.50 TRIM ON ASSY TO MAINTAIN THIS DIM

(-37) SHOWN BEND R .34
(-38) OPP

.165-.171 DRILL 2PL
GBS11J08-2 2PL
NAS697-08 2PL
MS20426AD3 4PL
CSK NS LDW340-15917-15 & -16
ON-3

LDW340-15917-15 REF

S R C

38.69 REF
34.22
28.16
22.87
17.62
11.62
6.00

.25 TRUE
.25 TRUE
.25 TRUE
.25 TRUE
.25 TRUE
1.00
.50
.50
.50

GT535AJ1L0020 REF

LDW340-15917-11 REF

3 EQ SPACES

LDW340-15917-26 REF

LDW340-15917-14 REF

LDW340-15905-23 REF

LDW200-55586-7 REF

.56 TYP 8 PL

LDW340-15904-13 REF

.50 TYP

.31 TYP

.25 TYP

.25 TYP

.25 TRUE TYP 4 PL

.25 TYP

.25 TRUE TYP 6 PL

LDW340-15915-3 REF

LDW340-15915-11 REF

344 (7) .71

344 (6) .64

GT535AJ1L0020 ON-1 SEE NOTE 4

44 TYP 5 PL

344 (10) .75

344 (4)

.25

.75

.38 TYP 14 PL

.165-.171 DRILL 4 PL
GBS11J08-9 4 PL
NAS1598-08 FS 4 PL
GN510A-08 4 PL ON-1

LDW200-55586-7 4 PL ON-1

LDW200-55586-21 4 PL ON-1

.165-.171 DRILL 4 PL
GBS11J08-10 4 PL
NAS1598-08 FS 4 PL
GN510A-08 4 PL ON-1

.28 TYP 4 PL

.81 TYP 4 PL

LDW340-15902-23 ON-1

MS20426AD4 4 PL
CSK FS LDW340M15907-13 ON-1

MS27983-8N 4 PL
GR501A-5A 4 PL
CSK FS LDW340M15907-13 ON-1

344 (6) .71 TYP 3 PL

344 (6) .71

344 (7) .69 TYP 3 PL

344 (7) .69

344 (7)

344 (6)

LDW340-15902-17 REF

LDW340M15908-15 REF

LDW340-15902-22 SHOWN -21 OPP ON-1

ZONE 17A SH 4 SL MS20426AD4 2PL CSK FS LDW340M15907-13 ON-1

H ZONE 27A SH5

G ZONE 26A SH5

F ZONE 26A SH5

F ZONE 26A SH5

E

LDW340-15915-5 REF

LDW340-15915-17 REF

344 (6) .77

GT535AJ1L0020 ON-1 SEE NOTE 4

344 (7) .76

344 (5) .80

GT535AJ1L0020 ON-1 SEE NOTE 4

LDW340-15915-13 REF

LDW340-15901-13

LDW340-15902-11

LDW340-15904-15 REF

LDW340-15902-11

LDW340-15904-15 REF

.88 TYP 3 PL

.12 TYP 4 PL

.12 TYP 4 PL

.38 TYP 4 PL

.38 TYP 3 PL

.44 TYP 3 PL

.56 TYP 4 PL

.50 TYP 4 PL

.550 TYP 4 PL

.478 TYP 4 PL

LDW340-15903-1

LDW340-15904-11

.44 TYP 4 PL

.88 TYP 4 PL

LDW340-15902-23 ON-1

MS20426AD4 4 PL
CSK FS LDW340M15907-13 ON-1

LDW340-60780-3

LDW340-15902-23 ON-1

MS20426AD4 4 PL
CSK FS LDW340M15907-13 ON-1

LDW340M15907-13 R

344 (6) .75 TYP 3 PL

344 (6) .75

344 (7) .69 TYP 3 PL

344 (7) .69

VIEW A-A SHOWN
B-B OPP

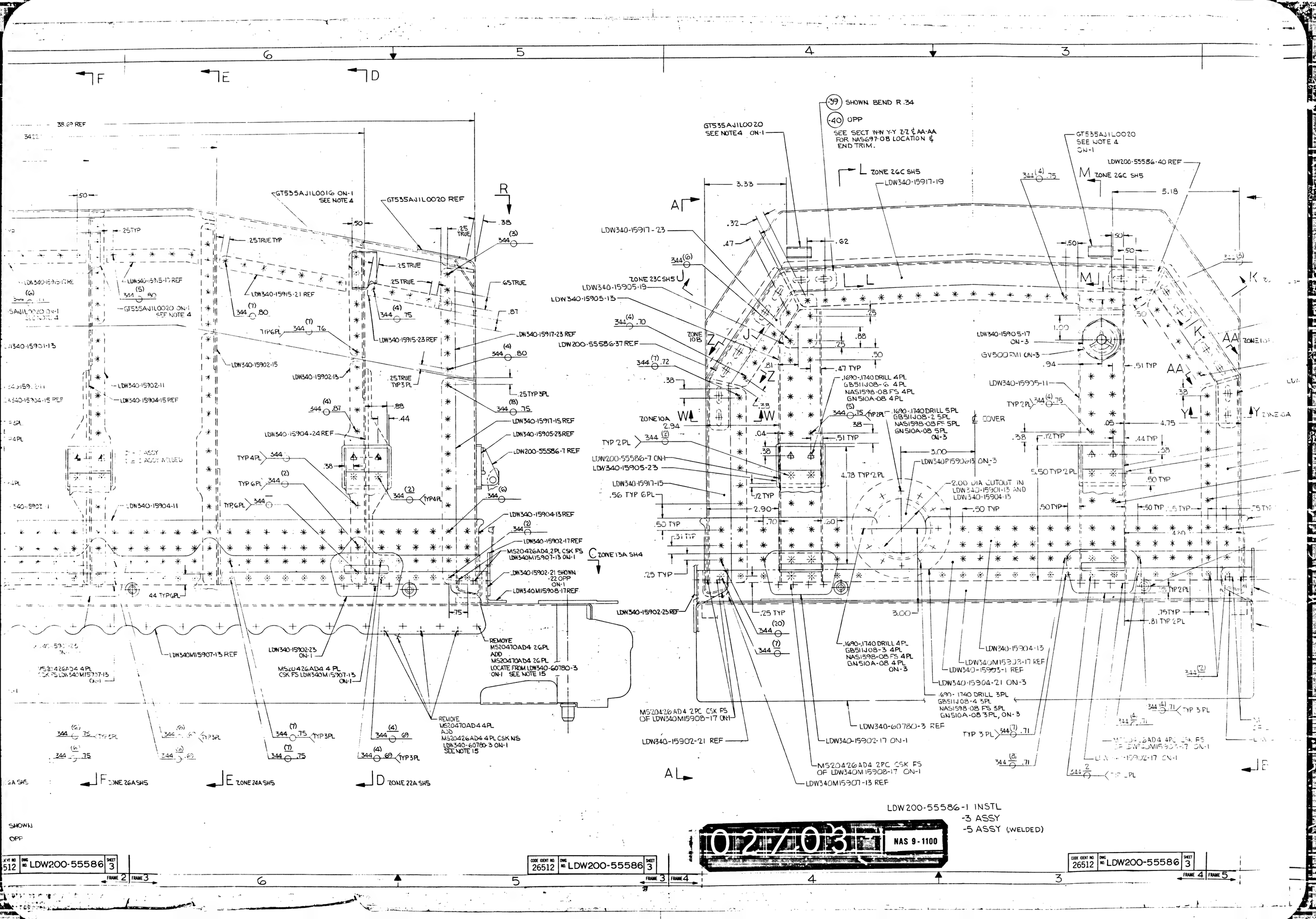
01703 NAS 9-1100

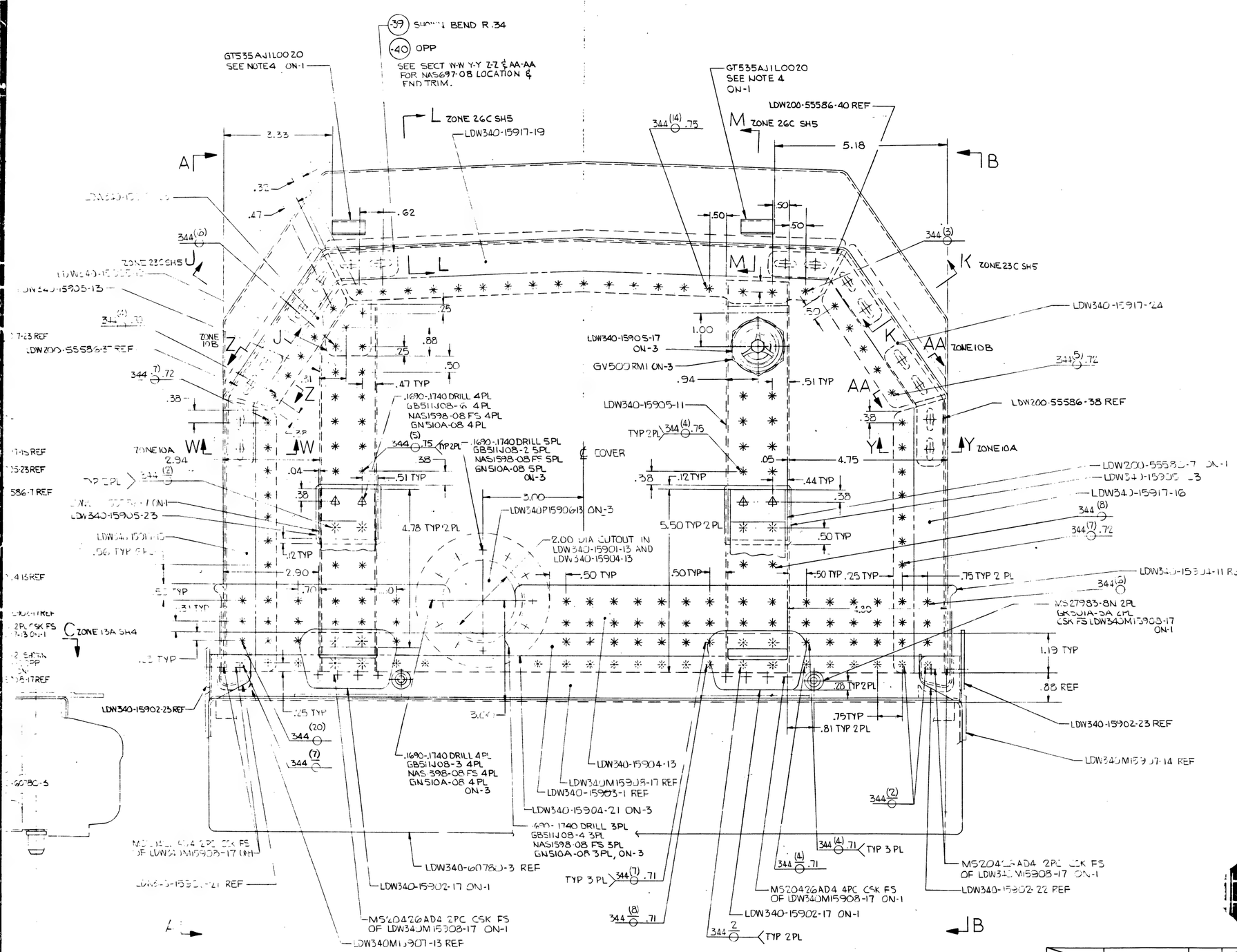
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26512	LDW200-55586	3

FRAME 1 FRAME 2

CODE IDENT NO.	DWG NO.	SHEET
26512	LDW200-55586	3

FRAME 2 FRAME 3


6
5
4
3
F
E
D
38.69 REF
.50
25 TYP
25 TRUE TYP
GT535AJ1L0016 ON-1 SEE NOTE 4
GT535AJ1L0020 REF
.50
25 TRUE
.38
(3) 344
65 TRUE
.87
LDW340-15917-23 REF
(4) 344 .80
.25 TYP 3PL
(8) 344 .75
LDW340-15917-15 REF
LDW340-15905-23 REF
LDW200-55586-7 REF
(6) 344
LDW340-15904-13 REF
(2) 344
LDW340-15902-17 REF
MS20426AD4,2PL CSK FS LDW340M15907-13 ON-1
LDW340-15902-21 SHOWN -22 OPP ON-1
LDW340M15908-17 REF
.75
REMOVE MS20470AD4 2PL ADD MS20470AD4 2PL LOCATE FROM LDW340-60780-3 ON-1 SEE NOTE 15
LDW340-15915-21 REF
(7) 344 .80
TYP 6PL
(7) 344 .76
LDW340-15902-15
LDW340-15902-13
.25 TRUE TYP 3PL
LDW340-15915-23 REF
(4) 344 .75
LDW340-15902-11
LDW340-15904-15 REF
(4) 344 .87
.88
.44
LDW340-15904-24 REF
TYP 4PL 344
.38
TYP 6PL (2) 344
344 (2) TYP 4PL
TYP 6PL 344
LDW340-15904-11
.44 TYP 6PL
LDW340-15907-13 REF
LDW340-15902-23 ON-1
MS20426AD4 4PL CSK FS LDW340M15907-13 ON-1
REMOVE MS20470AD4 4PL ADD MS20426AD4 4PL CSK NS LDW340-60780-3 ON-1 SEE NOTE 15
(6) 344 .75 TYP 2PL
(6) 344 .62 TYP 3PL
(7) 344 .75 TYP 3PL
(7) 344 .75
(4) 344 .69
(4) 344 .69 TYP 3PL
F ZONE 26A SH5
E ZONE 24A SH5
D ZONE 22A SH5
C ZONE 13A SH4
(39) SHOWN BEND R.34
(40) OPP
SEE SECT N-N Y-Y Z-Z & AA-AA FOR NAS697-08 LOCATION & END TRIM.
GT535AJ1L0020 SEE NOTE 4 ON-1
L ZONE 26C SH5
LDW340-15917-19
3.33
A
.32
.47
LDW340-15917-23
.62
344 (6)
ZONE 23C SH5 U
LDW340-15905-19
LDW340-15905-13
344 (4) .70
ZONE 10B
Z
J
LDW200-55586-37 REF
344 (7) .72
.38
.81
Z
ZONE 10A W
2.94
TYP 2PL 344 (2)
LDW200-55586-7 ON-1
LDW340-15905-23
LDW340-15917-15
.56 TYP 6PL
.50 TYP
.31 TYP
.25 TYP
LDW340-15902-25 REF
.25 TYP
(20) 344
(7) 344
LDW340-15902-21 REF
MS20426AD4 2PC CSK FS OF LDW340M15908-17 ON-1
LDW340M15907-13 REF
AL
.25
.88
.25
.50
.47 TYP
.1690-.1740 DRILL 4 PL GB511J08-6 4 PL NAS1598-08 FS 4 PL GN510A-08 4 PL
(5) 344 .75 TYP 2PL
.1690-.1740 DRILL 5 PL GB511J08-2 5PL NAS1598-08 FS 5PL GN510A-08 5PL ON-3
.38
.51 TYP
.04
.38
3.00
LDW340P15906-13 ON-3
4.78 TYP 2PL
.12 TYP
2.90
.70
.60
.1690-.1740 DRILL 4 PL GB511J08-3 4PL NAS1598-08 FS 4PL GN510A-08 4 PL ON-3
3.00
LDW340-15904-13
LDW340M15903-17 REF
LDW340-15903-1 REF
LDW340-15904-21 ON-3
.1690-.1740 DRILL 3PL GB511J08-4 3PL NAS1598-08 FS 3PL GN510A-08 3PL, ON-3
LDW340-60780-3 REF
LDW340-15902-17 ON-1
M5204'26AD4 2PC CSK FS OF LDW340M15908-17 ON-1
LDW340M15907-13 REF
M ZONE 26C SH5
LDW200-55586-40 REF
344 (4) .75
5.18
.50
.50
.50
LDW340-15905-17 ON-3
1.00
GV500RMI ON-3
.94
.51 TYP
LDW340-15905-11
TYP 2PL 344 (4) .75
COVER
.38
.12 TYP
.05
4.75
.44 TYP
.38
5.50 TYP 2PL
.50 TYP
2.00 DIA CUTOUT IN LDW340-15901-13 AND LDW340-15904-13
.50 TYP
.50 TYP
.50 TYP
.75 TYP
.75 TYP
4.60
.75 TYP 2PL
.81 TYP 2PL
.75 TYP
K
AA
ZONE 10A
Y
ZONE 8A
344 (2)
344 (4) .71 TYP 3 PL
TYP 3 PL 344 (7) .71
344 (2) .71
344 2 TYP PL
E
SHOWN
OPP
LDW200-55586-1 INSTL
-3 ASSY
-5 ASSY (WELDED)
02/03
NAS 9-1100
CODE IDENT NO 26512 DWG NO LDW200-55586 SHEET 3
FRAME 2 FRAME 3
CODE IDENT NO 26512 DWG NO LDW200-55586 SHEET 3
FRAME 3 FRAME 4
CODE IDENT NO 26512 DWG NO LDW200-55586 SHEET 3
FRAME 4 FRAME 5



NOTES:

1a. PREPARE SURFACES OF LDW340M15907-13 & -4, LDW340M15908-15 & -17 AND LDW340-15903-1 BY DRY HONING & SOLVENT WIPE WITH M.E.K.;
& PRIME ABOVE PARTS WITH SS-4155 BLUE SILICON PRIMER. MIX RTV 630 A/B IN THE RATIO 10 pbw BASE TO 1 pbw CATALYST DE-AIR MIXED RTV 630 FOR A MAXIMUM TIME OF 5 MINUTES.

2. COAT THE CONTACTING SURFACES OF LDW340M15907-13 & -14 AND LDW340M15908-15 & -17 TO THE PALLET AND TO EACH OTHER WITH A .008 - .016 THICK LAYER OF RTV 630 PRIOR TO ASSEMBLY WITHIN 3 HOURS OF DRY HONING.

3. MOLD IN PLACE AN RTV 630 SEAL BONDED TO LDW340M15907-13 & 14 AND LDW340M15908-15 & -17.

4. BOND IN PLACE USING EPON 934 PER LSP14-22500 CURE RANGE I ROOM TEMP CURE PERMISSIBLE.

5. PURCHASE IN ACCORDANCE WITH LSM14-4055 TYPE I - 5 M.L -33 ACLAR 33C.

6. USE -33, .50 DIA ACLAR BETWEEN MS20230B20 GROMMET, MS27983 FASTENER AND INTERFACING MATERIAL.

7. GT105D01A07G1 MAY BE USED AS AN ALTERNATE FOR GT105D02A07G1.

8. ALL STITCHING TO BE IN ACCORDANCE WITH FED STD 751, TYPE 301, 6-11 STITCHES PER INCH. ALL STITCHING TO BE BACK-STITCHED A MIN OF .33 TO .50 INCH. STITCHING TOLERANCE FROM THE EDGE OF STRAP ASSY SHALL BE .12 ±.06.

9. DIMENSIONAL TOLERANCE .12 TO .75 ±.06, .76 AND UP = ±.12. GROMMET LOCATION TO BE HELD TO ±.03.

10. FOLDS, SEAMS AND STITCHING SHALL BE DETERMINED FROM ENGINEERING APPROVED MASTER TEMPLATE.

11. MAKE FROM CAMLOC PART NO. 46L14-1AA MAY BE PURCHASED FROM CAMLOC, REX CHAIN BELT INC., 22 SPRING VALLEY RD, PARAMUS N.J. 07652

12. SEAL AREA AS SHOWN CONSTANT ALL AROUND TO PROVIDE AIRTIGHT SEAL USING EPON 934 PER LSP14-22500 CURE RANGE I ROOM TEMPERATURE CURE PERMITTED.

13. COAT OUTSIDE SURFACE OF LDW340-15903-1 REF ON-1 TO PROVIDE CONTACT SURFACE FOR SEALING WITH RTV 630, COATING SHALL NOT EXCEED .030.

14. NO TOOLING HOLES PERMITTED IN PARTS.

15. EXTRANEOUS HOLES TO BE PLUGGED USING AD MATERIAL NEXT LARGER SIZE RIVET MAY BE USED IF HOLE DIAMETER HAS BEEN ENLARGED DURING RIVET REMOVAL. CAPTURED RIVET TAILS MAY REMAIN.

16 CREW HAZARD PARTS REQUIRE SPECIAL HANDLING TO INSURE REMOVAL OF ALL SHARP EDGES AND BURRS.

17 PTV 630 MAY BE PURCHASED FROM
GENERAL ELECTRIC CO.
WATERFORD N.Y.
CODE IDENT 01139

18 SS-4155 MAY BE PURCHASED FROM
GENERAL ELECTRIC CO
WATER FORD N.Y.
CODE IDENT 01139

03/034 NAS 9-1100

LDW200-55586-1 INSTL
-3 ASSY
-5 ASSY (WELDED)

PERTINENT DOCUMENTS				REVISIONS							
GROUP	DOCUMENT	NUMBER	DATE	CHANGE LTR	ITEM NO	ZONE	AUTHORITY FOR REVISION	DESCRIPTION	EFFECTIVITY	REVISED BY AND DATE	ENGRG APPD

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

CONTRACT NO. | LINE ITEM | DOCUMENTATION TYPE

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCE UNLESS SPECIFIED FRACTIONS – DECIMALS – ANGLES

DRAWN BY | LAYOUT BY | CHECKED BY | CHECKED BY

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE
GRUMMAN REL INFO
PRIM. NO.

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., N. Y.

SIZE J | CODE IDENT NO. 26512 | LDW200-55586
SCALE FULL | SHEET

DISTR LIST # 1

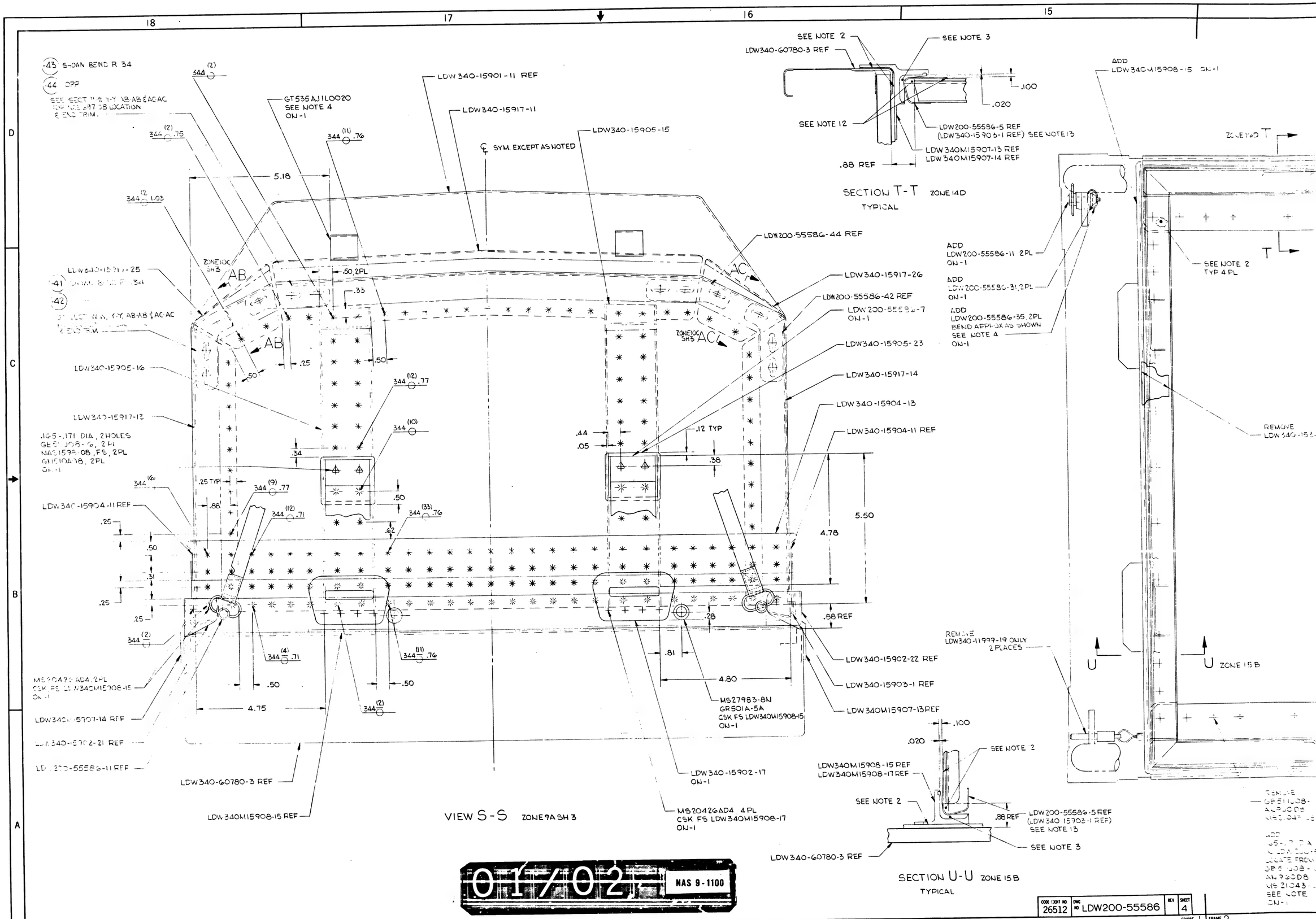
CODE IDENT NO	DWG NO.	SHEET
26512	LDW200-55586	3

FRAME 3 | FRAME 4 | FRAME 4 | FRAME 5

DWG SIZE 34 X 44 IN.
PRINTING INFO ONLY
FULL SIZE SHEET AREA ON 34 X 44 IN = 50 SQ FT
½ SIZE SHEET AREA ON 17 X 22 IN = 12.5 SQ FT
PRINT TRIM LINE

LDW200-55586 D
LDW200-55586 A
LDW200-55586 C

LDM500-22886 SH 3



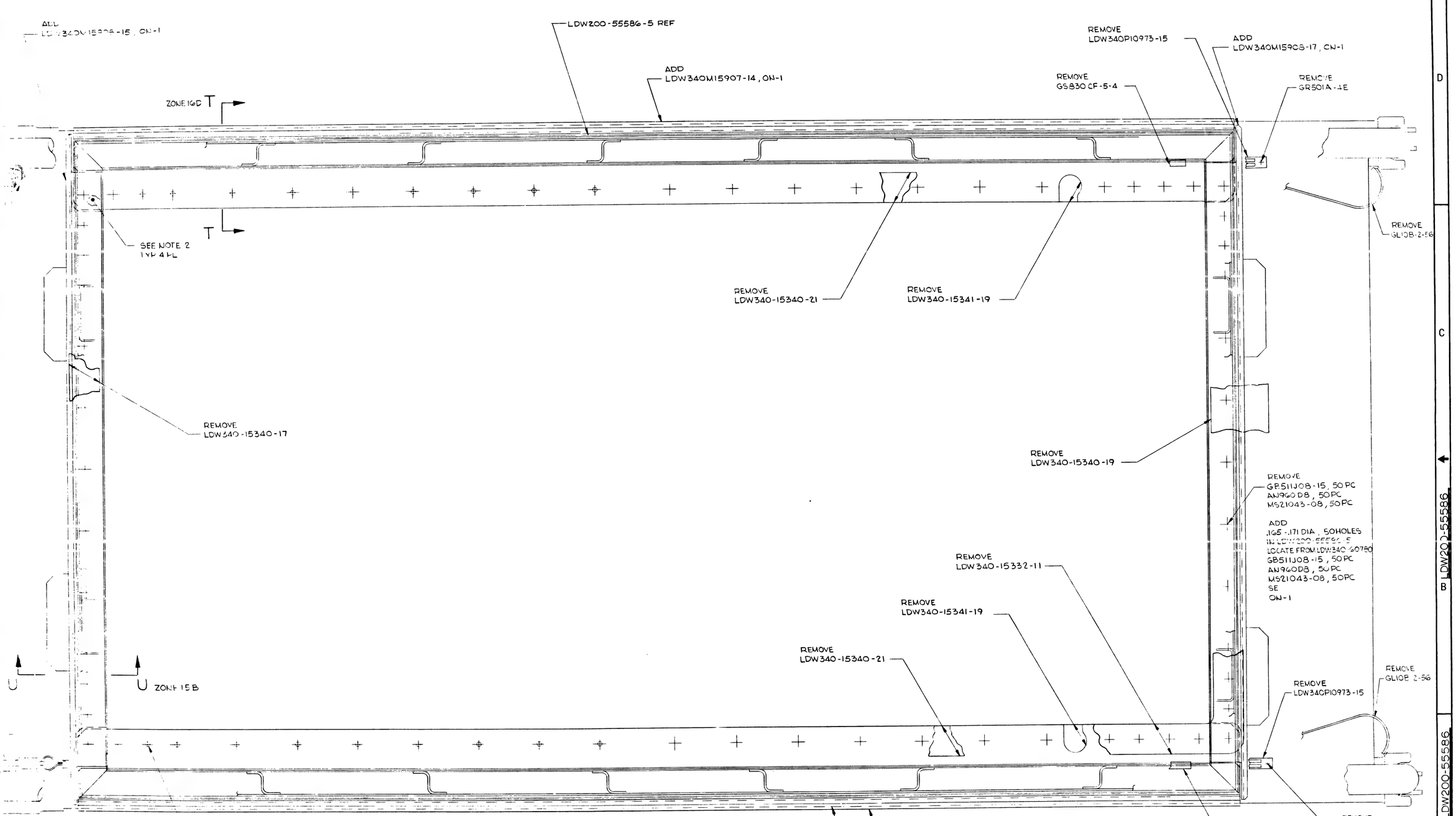
01/02

NAS 9-1100

CODE IDENT NO	DWG NO	REV	SHEET
26512	LDW200-55586		4

FRAME 1 FRAME 2

REVISIONS						
ZONE	LTR	DESCRIPTION	OFF CODE	MODEL	DATE	APPROVED



SECTION C-C ZONE 5B SH 3

02702 NAS 9-1100

FOR PARTS LIST, USAGE DATA, AND DWG SH STATUS, SEE DOCUMENT SAME NUMBER PREFIXED 9L

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES		
LINEAR TOL	.XX	± .03
	.XXX	± .010
ANGULAR TOL		± 0°30'
TOL ON LOFTED DELINEATIONS IS		

CONTRACT NO.

GRUMMAN AEROSPACE CORPORATION
BETHPAGE, NEW YORK 11714

DRAWN BY
LAYOUT BY
CHECKED BY
DR LEADER
REL GROUP
PROJ ENGR
GOVT APPD

SIZE J | CODE IDENT NO 26512 | LDW200-55586

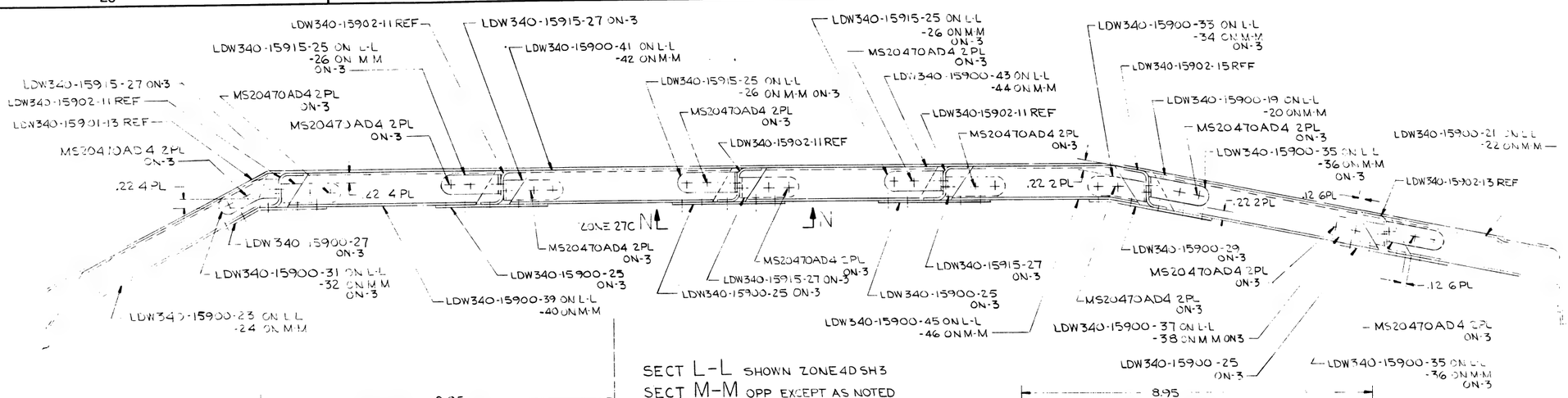
SCALE FULL | SHEET 4 OF

DISTR LIST # 2

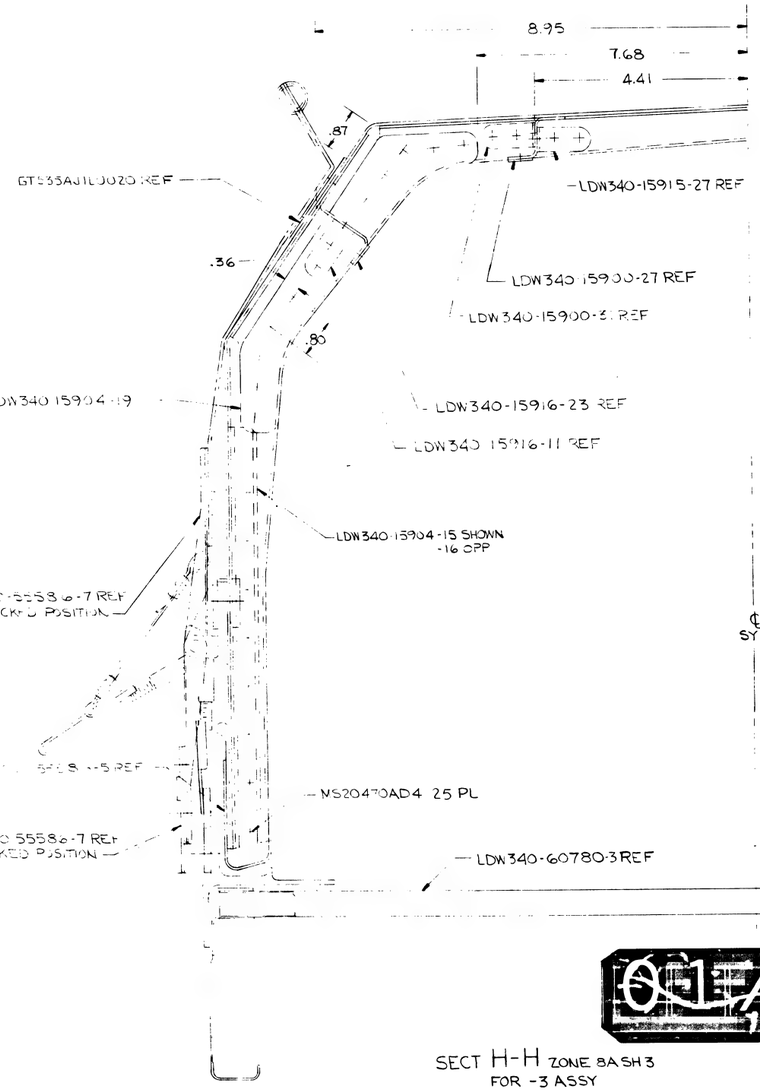
PRINTING INFO ONLY
DWG SIZE 34 X 88
FULL SIZE SHEET AREA ON 2 90 IS 24.5 SQ FT
½ SIZE SHEET AREA (½ OF FULL) = 6.5 SQ FT

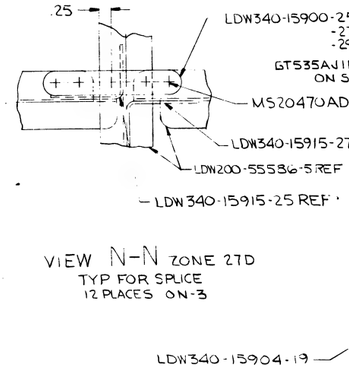
LDW200-55586 | REV | SHEET 4

FRAME 1 | FRAME 2

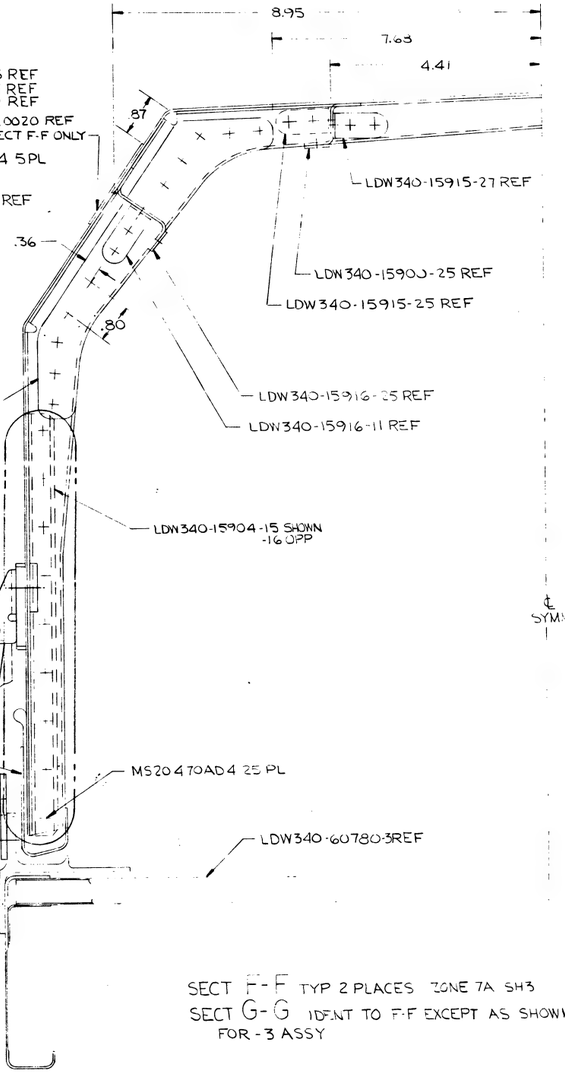


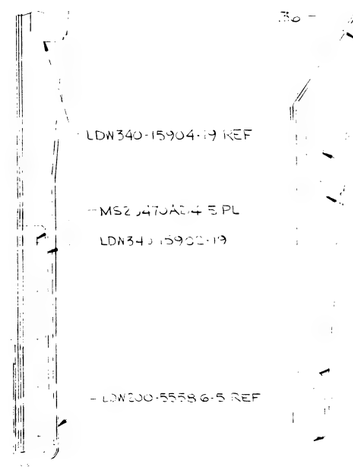
SECT L-L SHOWN ZONE 4D SH3
SECT M-M OPP EXCEPT AS NOTED ZONE 3D SH3
FOR -5 ASSY EXCEPT AS NOTED





VIEW N-N ZONE 27D
TYP FOR SPLICE
12 PLACES ON-3





DETAIL P ZONE 2SB
FOR SECT G-G

SECT F-F TYP 2 PLACES ZONE 7A SH3
SECT G-G IDENT TO F-F EXCEPT AS SHOWN ZONE 8A SH3
FOR -3 ASSY

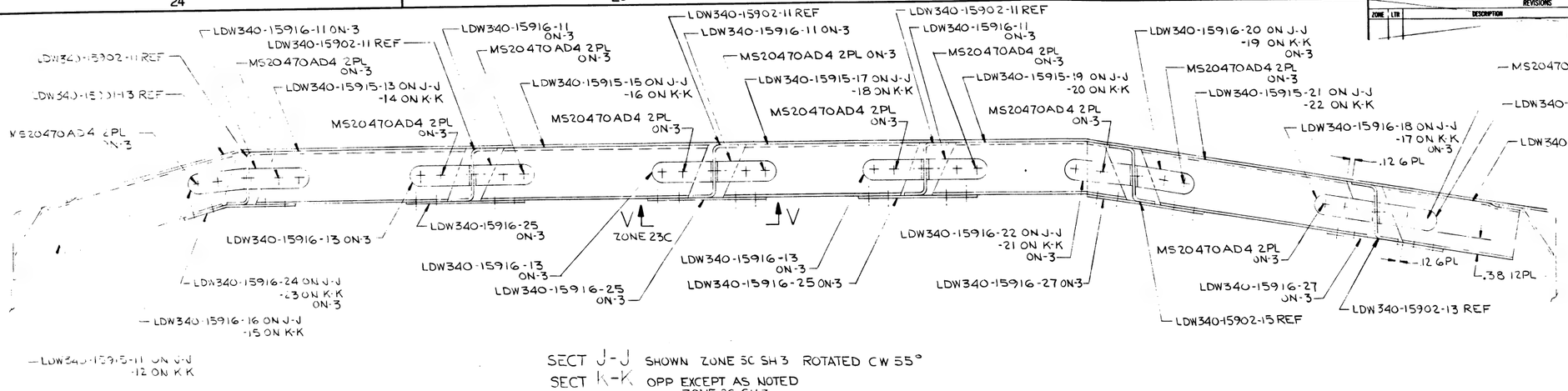
SECT H-H ZONE 8A SH3
FOR -3 ASSY

01/02 NAS 9-1100

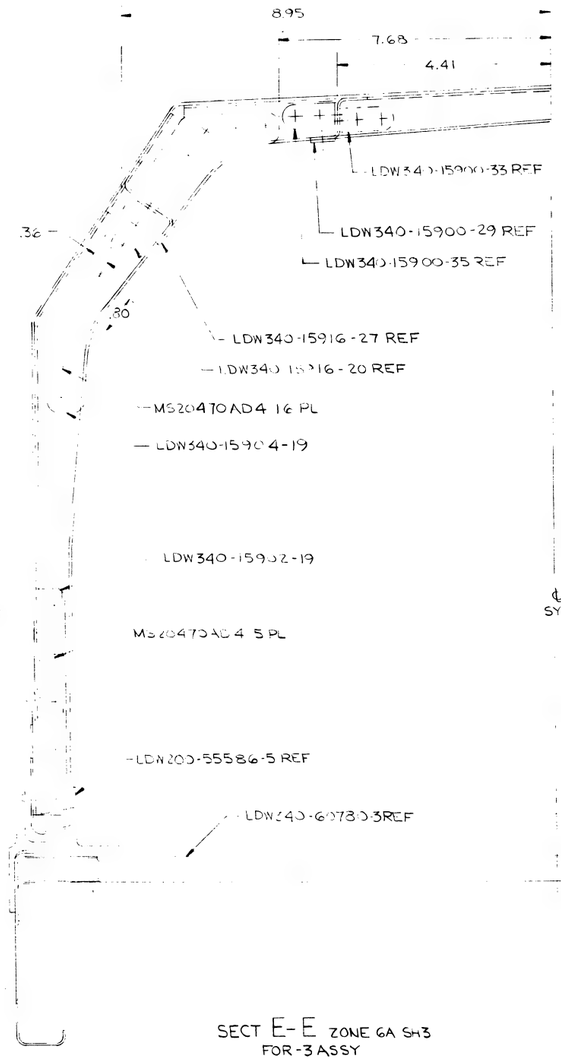
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26512	LDW200-55586		5

FRAME FRAME

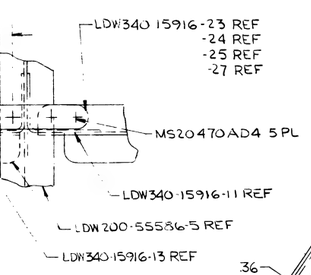
REVISIONS					
ZONE	LTR	DESCRIPTION	EFF CODE	MODEL	DATE	APPROVED



SECT J-J SHOWN ZONE 5C SH 3 ROTATED CW 55°
SECT K-K OPP EXCEPT AS NOTED
ZONE 2C SH 3
FOR -5 ASSY EXCEPT AS NOTED



SECT E-E ZONE 6A SH3
FOR -3 ASSY



VIEW V-V ZONE 23D
TYP FOR SPLICE
12 PLACES

SECT D-D ZONE 6A SH3
FOR -3 ASSY

02/02 NAS 9-1100

FOR PARTS LIST, USAGE DATA, AND DWG SW STATUS, SEE DOCUMENT SAME NUMBER PREFIXED PL

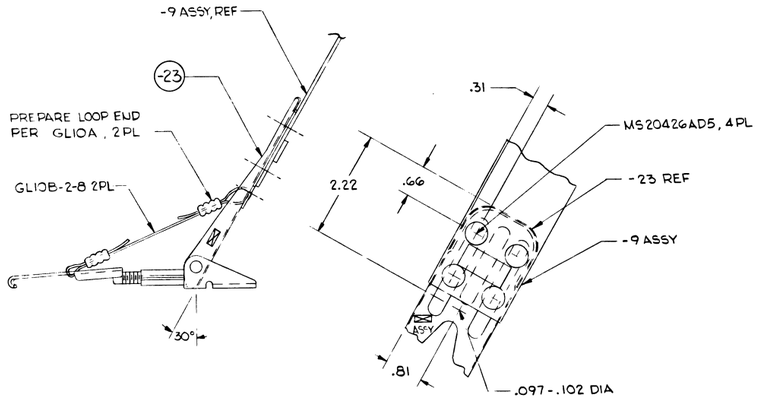
UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES			CONTRACT NO.	GRUMMAN AEROSPACE CORPORATION BETHPAGE, NEW YORK 11714
LINEAR TOL	XX	± .03		
	XXX	± .010	DRAWN BY	
ANGULAR TOL		± 0°30'	LAYOUT BY	
TOL ON LOFTED DELINEATIONS IS			CHECKED BY	
			DH LEADER	
			REL GROUP	
			PROJ ENGR	
			GOVT APPD	

SIZE	CODE IDENT NO	LDW200-55586
J	26512	
SCALE		SHEET 5 OF

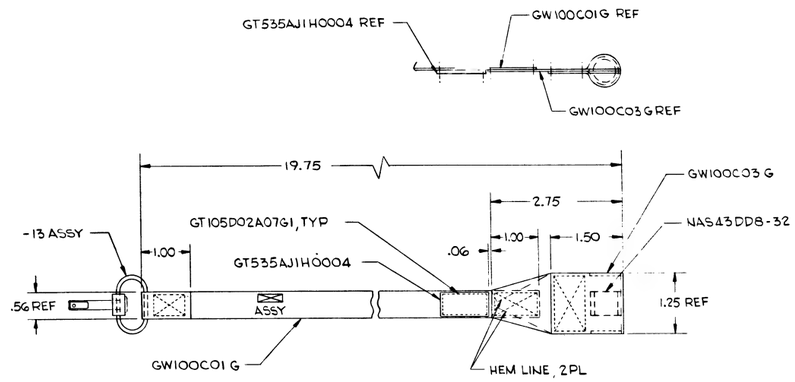
DISTR LIST # 2

PRINTING INFO ONLY
DWG SIZE 34 X 88 (FULL SIZE SHEET AREA 24.5 SQ FT)
½ SIZE SHEET AREA (½ OF FULL) 6.5 SQ FT

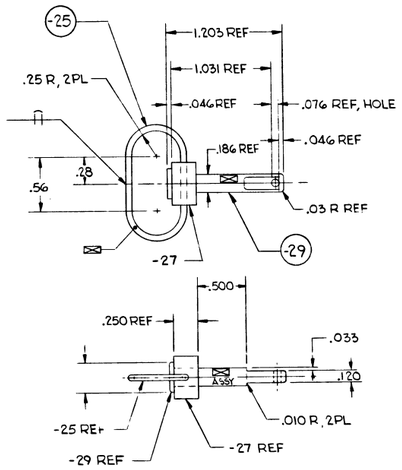
LDW200-55586 REV SHEET 5



LDW200-55586-7 ASSY

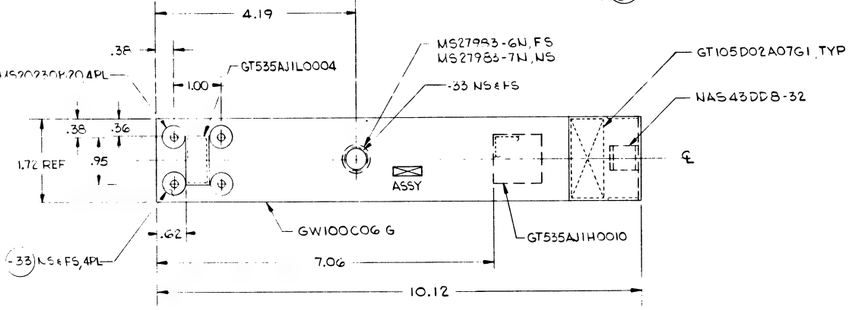


LDW200-55586-11 ASSY

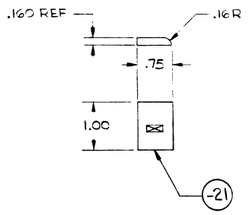


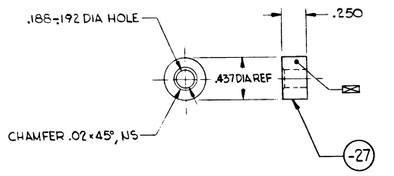
LDW200-55586-13 ASSY, WELDED

SCALE 2:1

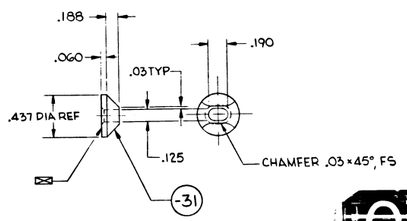


LDW200-55586-9 ASSY

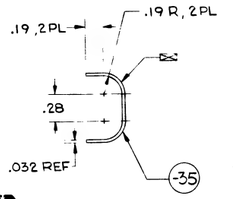




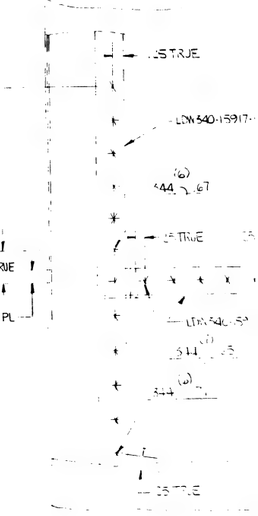
SCALE 2:1



SCALE 2:1



SCALE 2:1

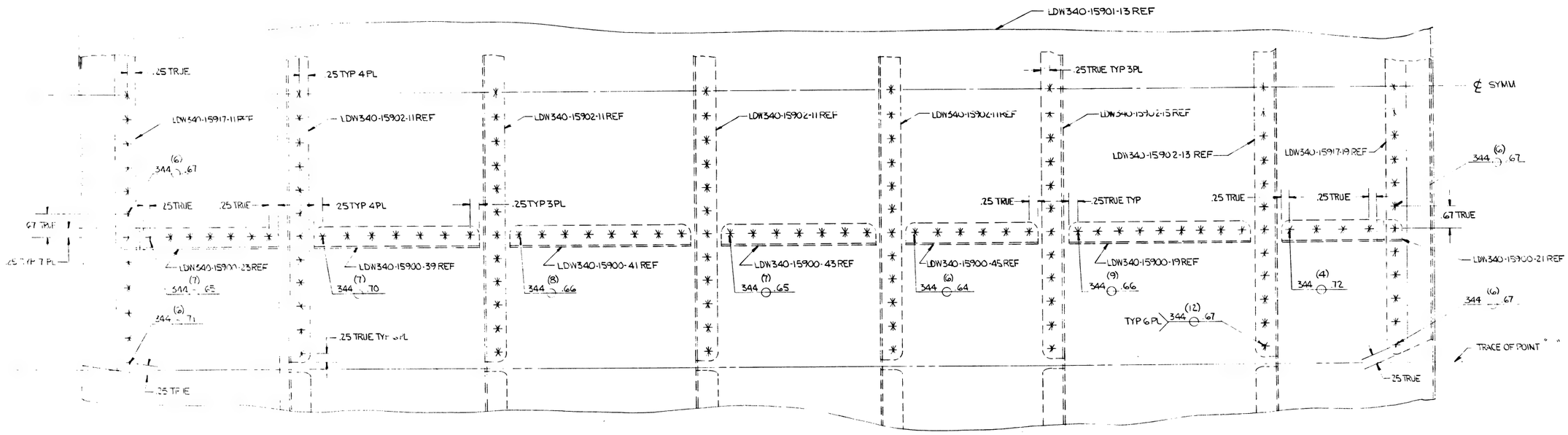


01/02 NAS 9-1100

CODE IDENT NO	DWG NO	REV	SHEET
26512	LDW200-55586		6

FRAME 1 FRAME 2

REVISIONS						
ZONE	LTR	DESCRIPTION	EFF CODE	MODEL	DATE	APPROVED



VIEW R-R ZONE 5D SH3

FOR PARTS LIST, USAGE DATA, AND DWG SH STATUS, SEE DOCUMENT SAME NUMBER PREFIXED PL

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES			CONTRACT NO	GRUMMAN AEROSPACE CORPORATION BETHPAGE, NEW YORK 11714	
LINEAR TOL	.XX	± .03	DRAWN BY		
	.XXX	± .010	LAYOUT BY		
ANGULAR TOL		± 0° 30'	CHECKED BY		
TOL ON LOFTED DELINEATIONS IS			DR LEADER		
			REL GROUP		
			PROJ ENGR		
			GOVT APPD	SIZE J	CODE IDENT NO 26512 LDW200-55586
				SCALE FULL & NOTED	SHEET 2 OF

02/02 NAS 9-1100

LDW200-55586 REV SHEET 6

FRAME 1 FRAME 2

DISTR LIST # 2

DWG SIZE D & E ONLY
FULL SIZE SHEET AREA (36 X 96) - 24.5 SQ FT
½ SIZE SHEET AREA (18 X 48) - 6.5 SQ FT

PRINTING INFO ONLY

LDW200-55586 B
LDW200-55586 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LFM 757	LDW280-60508	LM11(41)	1
PART NO.	GAEC SCH NO.			PART NO.	GAEC SCH NO.			PART NO. LDW200-55587-1	GAEC SCH NO.		

WORK PACKAGE FUNCTION NO. 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH											
SHEET	1.00		2.00		3.00						
REV											
SHEET											
REV											
SHEET											
REV											

LAST SECT LTR USED		GRUMMAN REL INFO					
		PRIM NO.					
LAST DASH NO. USED	- 35	207					

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS — DECIMALS — ANGLES
XX = ±.03 .XXX = ±.10 ±0°30'

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 5959 PKG 50	

CONTRACT NO. NAS9-1100 — LINE ITEM — DOCUMENTATION TYPE II

DRAWN BY	D. RAGAS	THERMO	2/16/72
LAYOUT BY	D. RAGAS	Tech. Dir.	2/16/72
CHECKED BY	2-16-72		
GPLDR	2-15-72		
STRUCTURE			
STRUCTURE	NM 2-16-72	PROJ ENGR	2/16/72
		RELEASE	2-16-72

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

DOOR INSTALLATION
DESCENT STAGE - QUAD III
(REWORK OF LDW280-60508)

SIZE	CODE IDENT NO.	
B	26512	LDW200-55587

SCALE NONE — SHEET 1 OF 3

ENG 77.1 9-64

DISTR. LIST #1

Q1
NAS 9-1100

-23	-21	-19	-17	-15	-13	-12	-11	-5	-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
								AR				GW10H-3	E	WASHER	GRUMMAN STD						
								AR				GR11B-1		RETAINER							
								AR				GT835BE-8		TAPE							
								AR				GT835P-8		TAPE							
							AR					GT105D		THREAD							
								AR				GT534C-1		THREAD							
							1					GW13A-08-0640		WEBBING							
							2					GW13A-08-0360		WEBBING							
								1				GT535GLCS-0220		TAPE - LOOP							
								2				GT535G-LCS-0625		TAPE - LOOP							
								1				GT535GHCS-0260		TAPE - HOOK	GRUMMAN STD.						
		AR	AR	AR								LDW200-55587-35	E	INSULATION	SEE NOTE 3						
					AR	AR	AR					-33	E	INSULATION	SEE NOTE 3						
	AR	AR										-31	E	INSULATION	SEE NOTE 3						
								1				-23		BLANKET					NONE	NONE	
								1				-21									
								1				-19									
								1				-17									
								1				-15									
								1				-13									
								1				-12									
								1				-11		BLANKET							
								1				-5		STRAP ASSY							
									1			-3	1	BLANKET ASSY							
										1		LDW200-55587-1	E	DOOR INSTL					NONE	NONE	

QTY PER ASSEMBLY

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55587

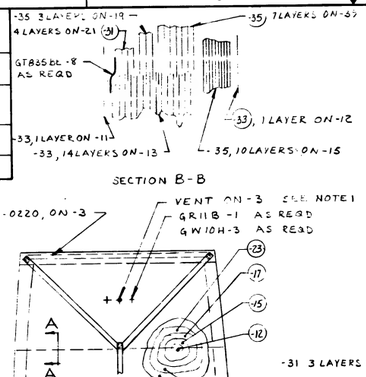
SCALE NONE SHEET 2.00

ENG 77.2 7-64

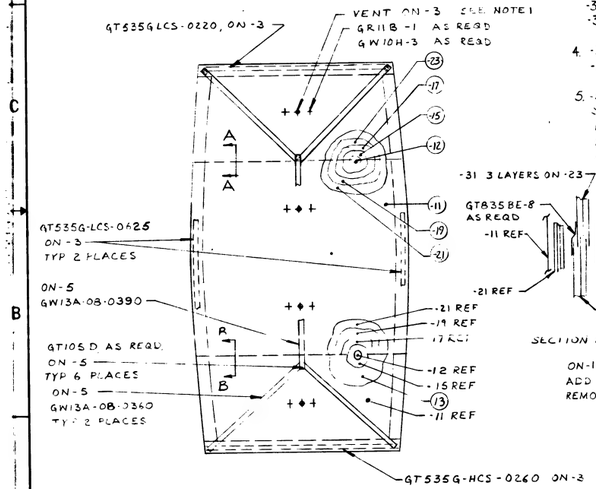
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NAS 9-1100

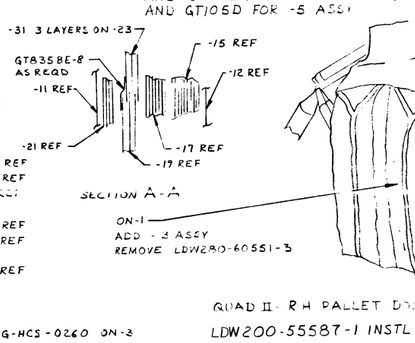
SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.
MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130
AND ALL OTHER MARKINGS IN REGION MARKED ☐ USE BOTH SIDES IF NECESSARY. PART NUMBER
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED
INSTALL RIVETS IN ACCORDANCE WITH



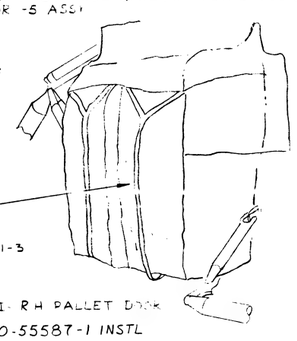
SECTION B-B



LDW200-55587-3 ASSY
-5 ASSY



SECTION A-A



QUAD II - RH PALLET DOOR
LDW200-55587-1 INSTL

NOTES
1. APPLICABLE PROCEDURES:
LPC 280-1 FABRICATION
LPC 280-2 VENTING
LPC 280-3 SEAMS & FOLD

2. FINAL SIZE (WITH FOLD, SEAM, VENT LOCATIONS) OF BLANKET ASSY SHALL BE DETERMINED FROM ENGINEERING APPROVED MASTER TEMPLATE.

3. -31 ALUMINIZED POLYIMIDE (.00025) PER LSM14-5301, TYPE IIA, CL2
-33 ALUMINIZED POLYIMIDE (.0005) PER LSM14-5301, TYPE IA, CL1
-35 ALUMINIZED MYLAR (.00015) PER LSM14-5300

4. -3 ASSY IS SIMILIAR TO LDW280-60551-3
-5 ASSY IS SIMILIAR TO LDW280-60551-5

5. -3 ASSY TO BE BACKED USING GT835P-3 TAPE FOR SEWING, GT535G & -5 ASSY. STITCH USING .18±.06 FROM EDGE IN ACCORDANCE WITH FED STD 751 AND STITCH TYPE 301 USE GT534C-1 FOR GT535G, AND GT10SD FOR -5 ASSY

GRUMMAN AEROSPACE CORPORATION BETHPAGE, NEW YORK 11714		
SIZE C	CODE IDENT NO 26512	LDW200-55587
SCALE		SHEET 3

DISTRIBUTION #1

LDW200-55587

01 NAS 9-1100

GRUMMAN AEROSPACE CORPORATION

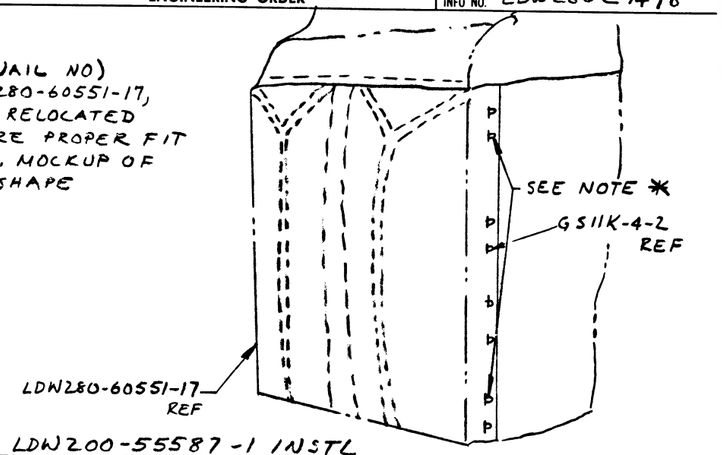
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG NO. LDW200-55587		EO NO. A1
CONTROL INFO NO. LDW280C 1478		

ADD
NOTE * (USE NEXT AVAIL NO)
ON INSTL OF LDW280-60551-17,
GS11K-4-2 MAY BE RELOCATED
AS REQD, TO INSURE PROPER FIT
WHEN USING ENGR. MOCKUP OF
FAR U.V. CAMERA SHAPE



LDW200-55587-1 INSTL

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	√ LCD5959 MKG 50

REASON FOR EO: TOY TABS (GS11K-4-2) MAY HAVE TO BE READJUSTED

DESCRIPTION OF EO: ADDED NOTE *.

GAEC EO RELEASE

MODEL	EFFECTIVITY	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM757	LM11(4)	

DRAWING CHANGE REQD: REVISE DWG √ — RECORD EO

DISPOSITION OF PARTS: HOT REWORK — REQD SCRAP

APPROVED BY								
DATE					3-1-72	3/1/72		3/1/72
			SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
								3-1-72
								GAC

PRIORITY: C

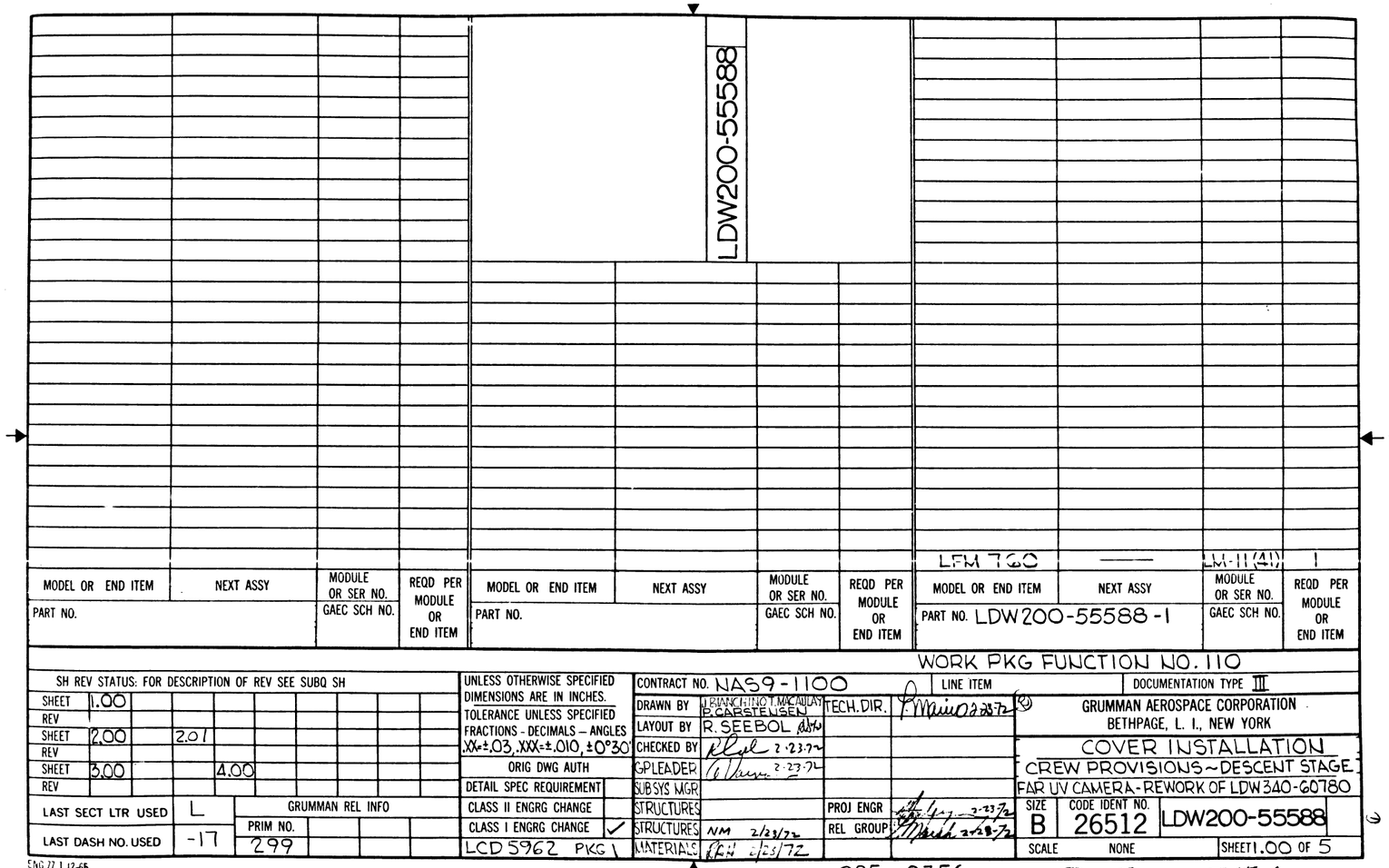
DRAWING TITLE: DOOR INSTL D/S - QUAD III - REWK OF LDW280-60508

DRAWING NO.: LDW200-55587 — EO NO.: A1

ISSUED BY DON RAGAS X2410 SECTION VD1 GROUP NO. 0335 PL 025

021

NAS 9-1100



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LEM 760	——	LM-11 (4!)	1
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW200-55588-1		GAEC SCH NO.	

WORK PKG FUNCTION NO. 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00								
REV									
SHEET	2.00		2.01						
REV									
SHEET	3.00			4.00					
REV									

LAST SECT LTR USED	L	GRUMMAN REL INFO	
LAST DASH NO. USED	-17	PRIM NO.	299

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS — ANGLES
.XX=±.03, .XXX=±.010, ±0°30'

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 5962 PKG 1	

CONTRACT NO. NAS9-1100 — LINE ITEM — DOCUMENTATION TYPE III

DRAWN BY	J. BIANCHINO T. MACAULAY R. CARSTENSEN	TECH. DIR.	
LAYOUT BY	R. SEEBOL		
CHECKED BY			
GPLEADER			
SUBSYS MGR			
STRUCTURES		PROJ ENGR	
STRUCTURES	NM 2/23/72	REL GROUP	
MATERIALS	2/23/72		

GRUMMAN AEROSPACE CORPORATION
BETHPAGE, L. I., NEW YORK

COVER INSTALLATION
CREW PROVISIONS~DESCENT STAGE
FAR UV CAMERA-REWORK OF LDW340-60780

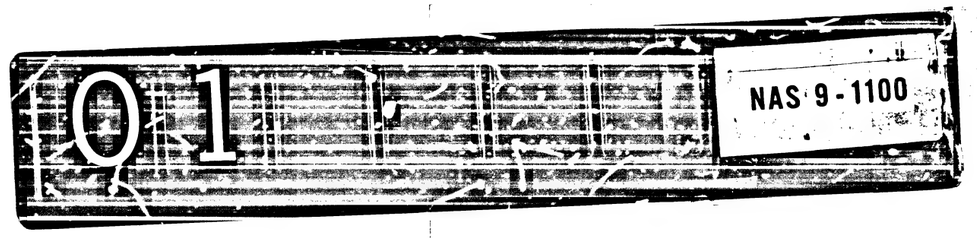
SIZE	CODE IDENT NO.	
B	26512	LDW200-55588

SCALE NONE — SHEET 1.00 OF 5

ENG 77.1 12-65

025 0356

DISTR. LIST #1



-17	-15	-13	-11	-9	-7	-5	-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
QTY PER ASSEMBLY																			
								AR	AR	RTV630	E	SEALANT	SEE NOTE						
									1	6874209-01		VALVE	GFE						13B
									1	6874208-01		DOUBLER	GFE						13B
								68		MS21043-08	E	NUT	GOVT STD						
								68		AN960D8	E	WASHER	GOVT STD						
							3			502-100		VALVE	GFE	SEE NOTE 8					
								18		GB511J08-16	E	BOLT	GRUMMAN STD						
								50		GB511J08-15		BOLT	GRUMMAN STD						
				4						LDW340-15923-17		CLIP							14B,C 17B,C
					4					-16		CLIP							1A,18D
					4					-15		CLIP							6A,11A 5A,13A
			2							-13		ANGLE							5A,14A 7A,11A
			2							LDW340-15923-11		ANGLE							3A
				2						LDW340-15922-17		ANGLE							17D,16A
				2						-15		ANGLE							14C,18C
					1					-13		PAN							3A
								1		LDW340-15922-11		RIING							17D
			1							LDW340-15921-1	E	COVER ASSY							2C
																	NONE	NONE	2B
								2		LDW200-55588-17	E	CLIP ASSY					NONE	NONE	14D
								2		LDW200-55588-15	E	CLIP ASSY					NONE	NONE	14D
							1			LDW200-55538-13	E	COVER ASSY	(WELDED)				AW	NONE	4A
						1				-11		ANGLE ASSY					NONE		4A
						1				-9		PAN ASSY	(WELDED)				AW		4A
							1			-7		PAN ASSY	(WELDED)				AW		4A
								1		-5		COVER ASSY					NONE		4A
								1		-3		PAN ASSY					NONE		4A
										LDW200-55588-1	E	COVER INSTL					NONE	NONE	4A

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
AW	RESISTANCE WELD	MIL-W-6858

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

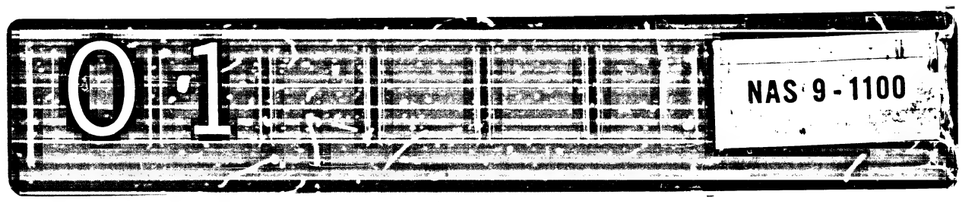
I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55588

SCALE NONE SHEET 2.00

ENG 77.2 7-64



QTY PER ASSEMBLY												CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
									AR	AR			CORD	E								
							6						NAS1598-06	E	WASHER SEALING	IND STD						
								2					GT535AJIL0020	E	LOOP	GRUMMAN STD						
								8					GT535AJIL0012	E	LOOP							
									2	2			GT535AJIH0005	E	HOOK							
									AR	AR			GT534E2	E	THREAD							
									AR	AR			GT534A1	E	THREAD							
									AR	AR			GW100C01-G	E	WEBBING							
									2	2			GS830C-13F-12	E	SLEEVE							
									2	2			GS830G-19-1	E	SLEEVE							
									24	47			GC542H-1	E	CLIP							
							6						GN512CF06C	E	NUT DOME							
							6						GB511J06-4	E	BOLT	GRUMMAN STD						
								2					LDW200-55586-35	E	PIN	SEE DWG						18C
								2					LDW200-55586-31	E	WASHER	SEE DWG						18C
								2					LDW200-55586-11	E	STRAP ASSY	SEE DWG						18C

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55588

SCALE NONE SHEET 2 01

ENG 77.2 7-64

201

NAS 9-1100

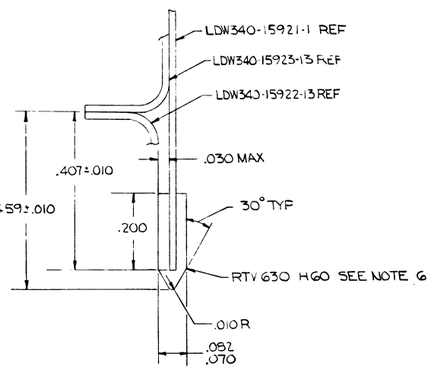
SUPPLEMENTARY DATA
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS D

MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130.

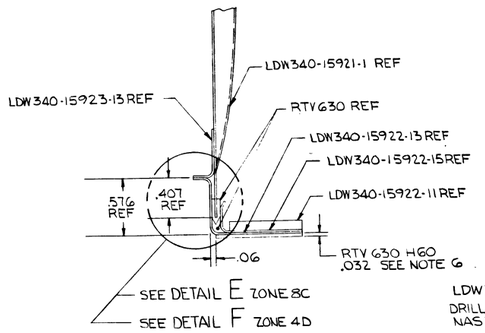
D18826 CAVITY PART NUM-
AND ALL OTHER MARKINGS IN REGION
MARKED (SEE (SEE-BOTH-SIDES-B
HINDSIGHT)

LENGTHS OF AN, NAS & MS AL ALY
RIVETS SHORTER THAN 1 INCH ARE
NOT SPECIFIED.

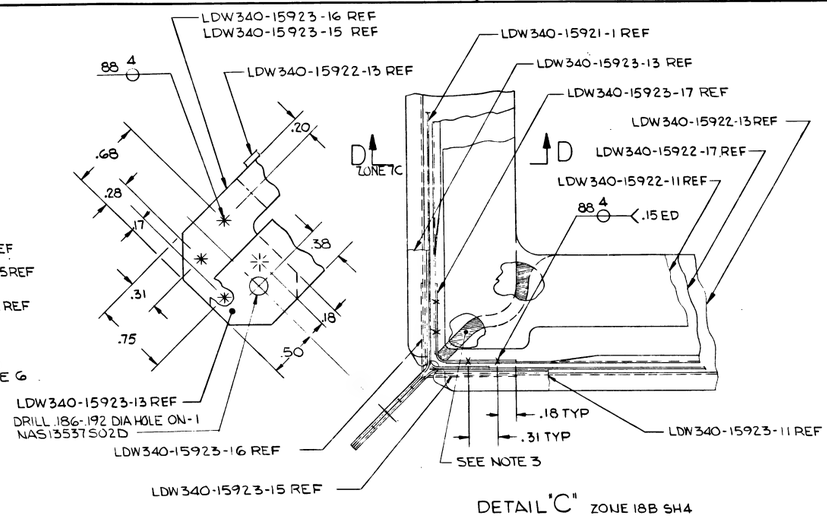
INSTALL RIVETS IN ACCORDANCE WITH



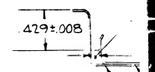
DETAIL E ZONE 7D
SCALE 3/1



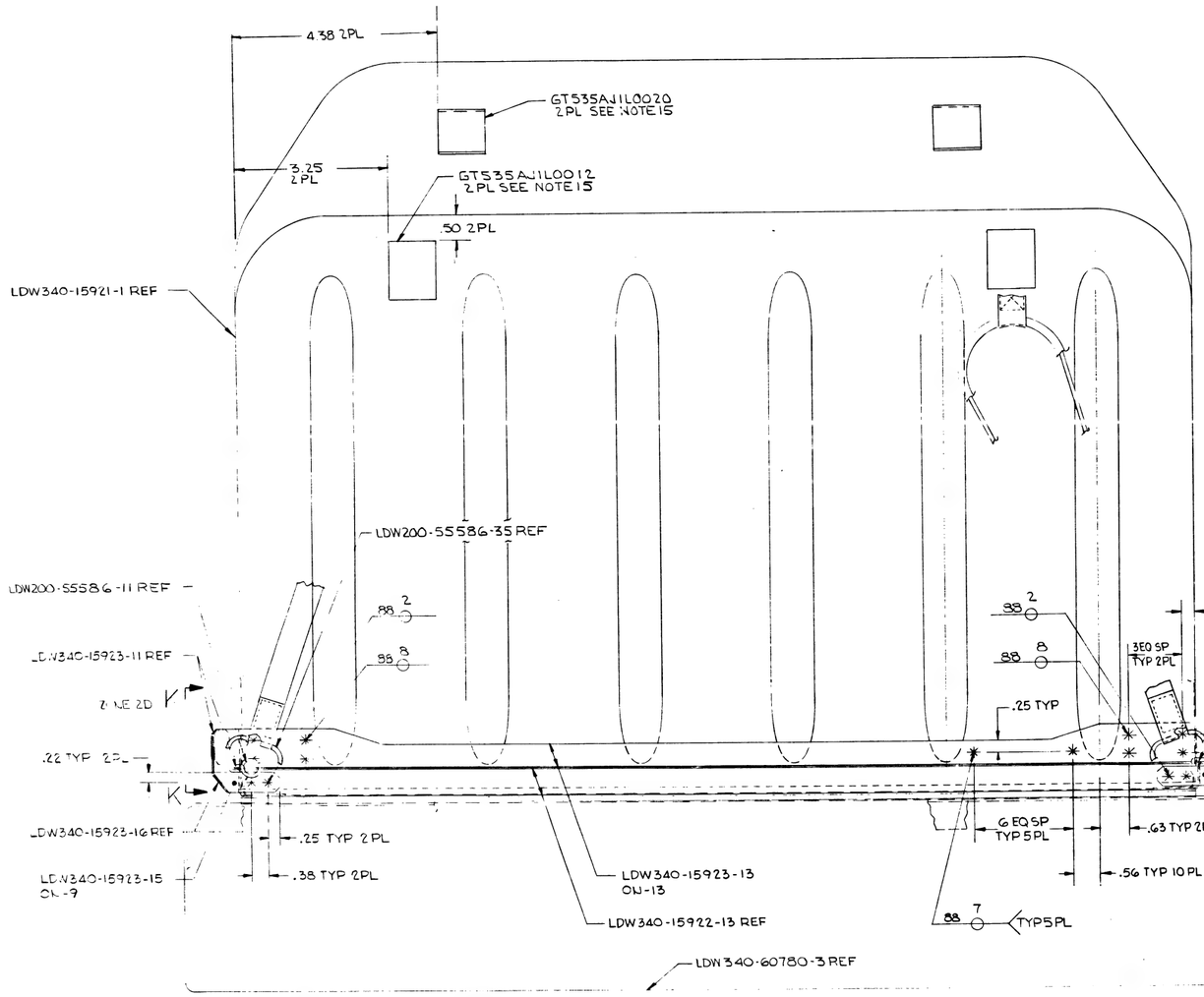
SECTION D-D ZONE 6D
SCALE 2/1

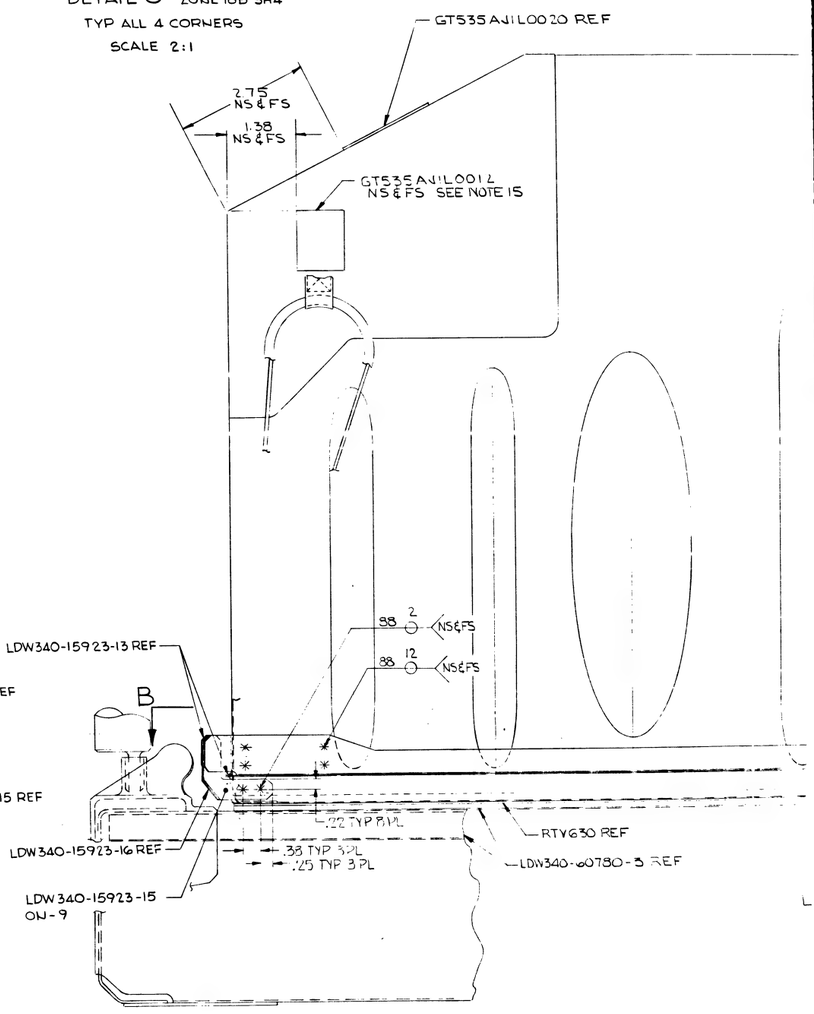


DETAIL 'C' ZONE 18B SH4
TYP ALL 4 CORNERS
SCALE 2:1



DETAIL F
SCALE





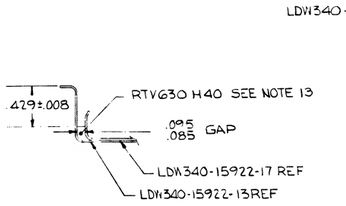
CODE IDENT NO	DWG NO	REV	SHEET
26512	LDW200-55588		3

FRAME FRAME

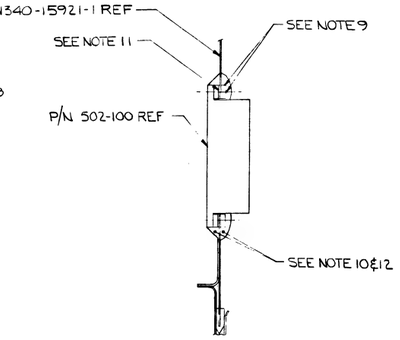
01/02 NAS 9-1100

ENG 770.12 REV 11-70

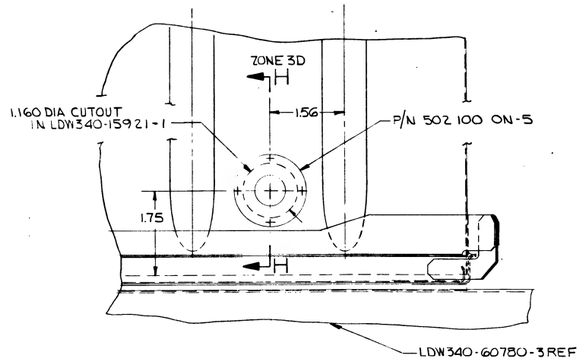
REVISIONS						
ZONE	LTR	DESCRIPTION	EFF CODE	MODEL	DATE	APPROVED



DETAIL F ZONE 7C
SCALE 2/1



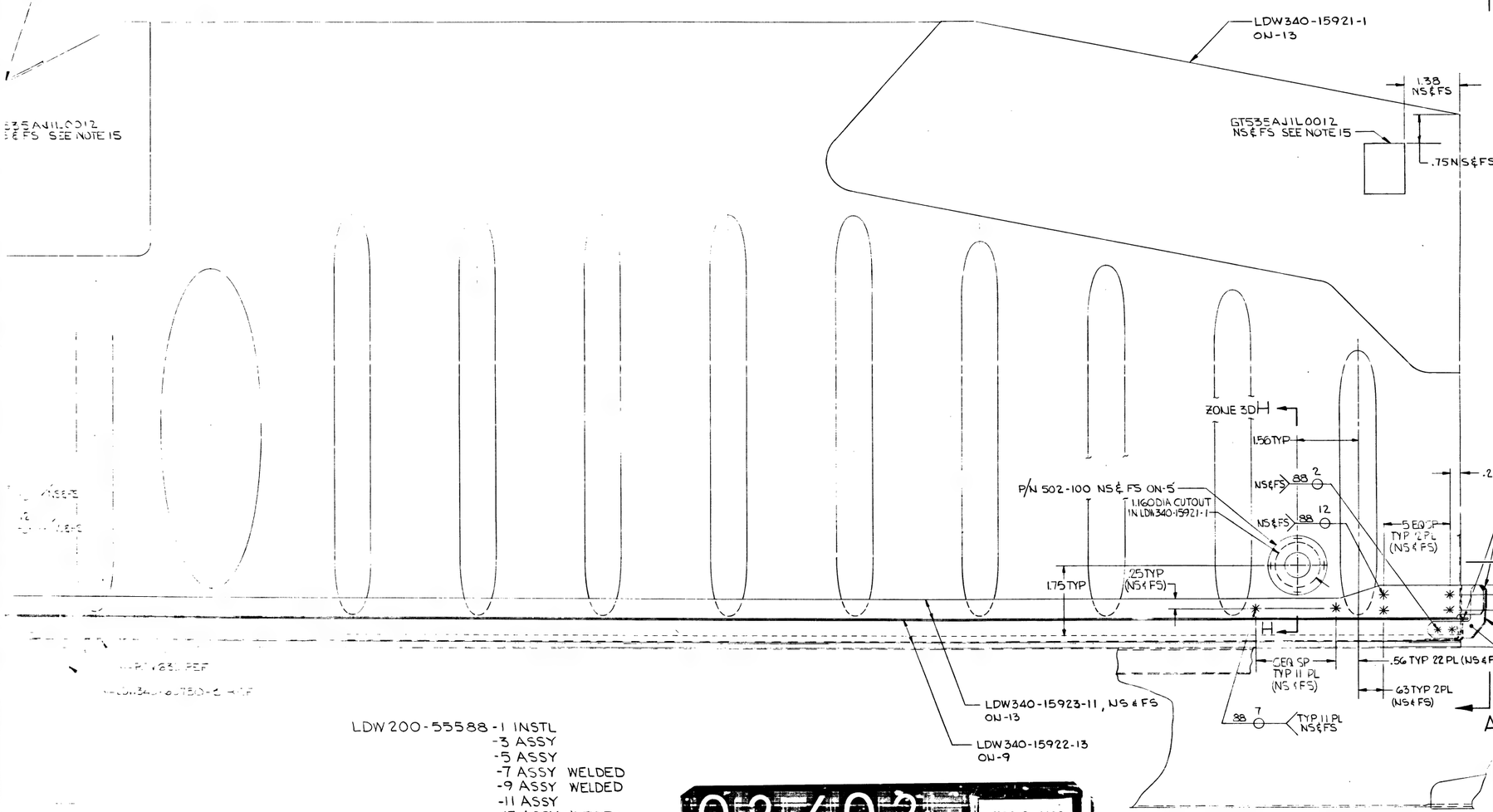
SECT H-H SHOWN ZONE 2B & 2D
TYP 2 PLACES
SECT J J OPP
SCALE 2/1



SECT K-K ZONE 8A

NOTES:

1. CREW HAZARD: PARTS REQUIRE SPECIAL HANDLING TO INSURE REMOVAL OF ALL SHARP EDGES AND BURRS.
2. NO TOOLING HOLES PERMITTED IN PARTS.
3. APPLY EPON 919 IN ACCORDANCE WITH LSP14-14102.
4. APPLY WELD THROUGH SEALANT EPON 919 ON FAYING SURFACES PER LSP 14-14400. SUFFICIENT MATERIAL SHALL BE APPLIED TO RESULT IN A BEAD AT THE EDGES OF FAYING SURFACES.
5. CURE EPON 919 BEFORE APPLYING RTV 630 FOR 8 HOURS INSTEAD OF 24 HOURS BEFORE BAKING AT 180° FOR 4 HOURS PER LSP14-14102.
6. a) PREPARE SURFACES TO RECEIVE RTV 630 BY VAPOR HONE ABRASIVE BLAST SURFACE TO BE COATED PER LSP14-7012 - EXCEPT THAT THE CLEANING PAVAMETERS ARE 120-150 GRIT ALUMINUM OXIDE - BLAST PRESSURE 10 TO 20 PSI WITH A NOZZLE DISTANCE OF 8 TO 10 INCHES AND A NOZZLE ANGULARITY OF 90°. DWELL TIME IS TO BE ZERO. SOLVENT WIPE/CLEAN ABRADED AREA WITH M.E.K.
   b) APPLY SS-4155 BLUE SILICONE PRIMER ON ALL DRY HONED SURFACES.
   c) DEAIR AND APPLY RTV 630 SILICONE, LSM 14-4102 LESS THAN 8 HRS OF DRY HONING.
   d) LET RTV 630 SETTLE FOR 16 HOURS AT ROOM TEMP THEN HEAT CURE FOR 8 HOURS AT 180°F.
   e) VACUUM BAKE FOR 8 HOURS AT 180°F IN 10^{-5} RANGE.
7. TRIM LDW340-15921-1 ASSEMBLY TO SIZE AFTER RESISTANCE WELDING LDW340-15923-11 & -13 ANGLES IN PLACE.
8. P/N 502-100 TO BE PURCHASED FROM SIERRA ENG'G CO. SIERRA MADRE, CALIF.
9. VALVE MOUNTING RING & SCREWS (4) SUPPLIED WITH VALVE.
10. SEAL SURFACES BOTH SIDES AS SHOWN WITH RTV 731 PER LSP14-22601 TYPE II, CLASS 1.
11. MAKE FROM .010-.020 CAST RTV 630 H40.
12. WHEN INSTALLING RTV 731 SEALANT INSURE THE INTEGRITY OF THE VALVE BY MASKING THE VALVE POPPET, SEAT & SPRING CAVITY BEFORE APPLICATION.
13. MAKE FROM .032 CAST RTV 630 H40.
14. P/N 6874208-01 & P/N 6874209-01 TO BE PURCHASED FROM NAVAL RESEARCH LABORATORY WASHINGTON, D.C
15. BOND IN PLACE WITH EPON 934 PER LSP 14-22500. ROOM TEMP. CURE PERMISSIBLE.



LDW200-55588-1 INSTL
-3 ASSY
-5 ASSY
-7 ASSY WELDED
-9 ASSY WELDED
-11 ASSY
-13 ASSY WELDED

02/02 NAS 9-1100

FOR PARTS LIST, USAGE DATA, AND DWG SH STATUS, SEE DOCUMENT SAME NUMBER PREFIXED PL

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES			CONTRACT NO.	GRUMMAN AEROSPACE CORPORATION BETHPAGE, NEW YORK 11714
LINEAR TOL	XX	± .03	DRAWN BY	
	XXX	± .010	LAYOUT BY	
ANGULAR TOL		± 0°30'	CHECKED BY	
TOL ON LOFTED DELINEATIONS IS			DR LEADER	
			REL GROUP	
			PROJ ENGR	
			GOVT APPD	

SIZE J | CODE IDENT NO. 26512 | LDW200-55588
SCALE FULL & NOTED | SHEET 3 OF 6

DISTR LIST #

LDW200-55588 | REV | SHEET 3

FRAME ← FRAME →

LDW200-55588 A LDW200-55588 B LDW200-55588 C D

PRINTING INFO ONLY
DWG SIZE 34 X 88
FULL SIZE SHEET AREA (SK 1 SH)= 23.5 SQ FT
½ SIZE SHEET AREA (½ OF FULL)= 6 SQ FT

LDW340-15922-13 REF
LDW340-15923-11 REF
LDW340-15923-16 ON-9
LDW340-15922-17 ON-11
LDW340-15922-11
LDW340-15921-1 REF
GC542H1 REF
GT534A-1
DETAIL L ZONE 14D TYP 46 PL ON-15 TYP 23 PL ON-17 SCALE: NONE
SEE DETAIL L
LDW200-55588-15 REF
LDW340-15923-15 ON-9
ADD LDW200-55586-11 2PL ON-1
ADD LDW200-55586-31 2PL ON-1
ADD LDW200-55586-35 2PL ON-1
LDW340-15923-15 REF
LDW200-55588-17 REF
LDW340-15922-15 ON-11
LDW340-15923-13 REF
.53 TYP 2PL
.18 TYP 4PL
TYP 2PL
LDW340-15923-17 ON-11
REMOVE LDW340-15340-21
REMOVE LDW340-15341-19
LDW340-15923-17 ON-11
REMOVE LDW340-15340-7
REMOVE LDW340-15340-19
4 EQ SP TYP 2PL
LDW340-15923-16 REF
SEE DETAIL "C" ZONE 5C SH3
.59 TYP 2PL
.18 TYP 2PL
.25 TYP 42PL
.25 TYP 2PL
TYP 2PL
LDW340-15923-17 ON-11
.25 TYP 2PL
.84 TYP 2PL
.093 TYP 2PL
REMOVE LDW340-15332-11
REMOVE LDW340-15340-19
REMOVE LDW340-15340-21
LDW340-15923-17 ON-11
TYP 2PL
LDW340-60780-3 REF
LDW200-55583-15 REF
REMOVE GB511J08-16, 18PC AN960D8, 18PC MS21043-08, 18PC ADD JGE-.171 DIA, 18 PL IN LDW340-15922-11,-13 & -17 LOCATE FROM LDW340-60780 GB511J08-16, 18PC AN960D8, 18PC MS21043-08, 18PC

SECTION B-B
ZONE 2A SH3

REVISIONS

ZONE	LTR	DESCRIPTION	EFF CODE	MODEL	DATE	APPROVED

39.09 FOR -15
19.90 FOR -17
GC542H1 47 PL ON -15
GC542H1 24 PL ON -17
SEE DETAIL L ZONE 13D
.080 TYP 46 PL ON -15
.080 TYP 23 PL ON -17
2.00
GS830G-19-1 2 PLACES
1.800 LOOP
3 STRAND DOUBLE KNOT APPROX 2.00 SPACING
GW100C01-G 2.87 LONG 2 PLACES
.87
GT535AJ1H0005 2 PLACES
GT534E2 TYP
GS830C-13F-12 2 PLACES
3 STRAND DOUBLE KNOT TYP EACH END

P/N 6874208-01 REF
GB511J06 REF
P/N 6874209-01 REF
LDW340-15921-1 REF
NAS1598-06 REF
GN512CF06C REF
SEE NOTE 13

LDW200-55588-15 ASSY
-17 ASSY IDENT EXCEPT AS NOTED

LDW200-55588-15 REF
LDW340-15923-15 ON-9
LDW340-15923-16 REF
LDW340-15923-17 ON-11
LDW340-15923-13 REF
LDW340-15922-15
REMOVE LDW340-15340-19
REMOVE GB511J08-15 50 PC AN960D8, 50PC MS21043-08, 50PC ADD .165-.171 DIA 50 PL IN LDW340-15922-11, -13, -15 & -17 LOCATE FROM LDW340-60780 GB511J08-15, 50PC AN960D8, 50PC MS21043-08 50PC
LDW340-15923-17 ON-11
LDW200-55588-17 REF
LDW340-15923-15 REF
REMOVE LDW340P10973-15, 2PL
REMOVE GL10B-2-56, 2PL
.080 GAP REF TYP
LDW200-55588-15 REF
REMOVE GR501A-4E, 2PL
LDW340-15923-16 REF
REMOVE GS820CF-5-4, 2PL

SECT G-G ZONE 12B
ROTATED 30° CW

3.25 TYP 2 PL
1.38 TYP 2 PL
GT535AJ-L0012 TYP 2 PL SEE NOTE 15
GT535AJ1L0012 REF
LDW200-55588-17 REF
LDW340-15921-1 REF
P/N 6874209-01 ON-5
P/N 6874208-01 ON-5
1.58 DIA CUTOUT IN LDW340-15921-1
ZONE 12D
2.94
.25 TYP 2 PL
3 EQ SP TYP 2 PL
.88 4 TYP 2 PL
LDW340-15923-11 REF
.38 TYP 2 PL
.25 TYP 2 PL
LDW340-15923-16 REF
.63 TYP 2 PL
6 EQ SP TYP 5 PL
.88 7 TYP 5 PL
.56 TYP 10 PL
LDW340-15923-15 ON-9
.25 TYP
2.20
.1440-.1490 HOLE IN LDW340-15921-1 6 PL TO MATCH GB511J06-4 HD NS 6 PL NAS1598-06 FS 6 PL GN512CF06C FS 6 PL ON-5
LDW340-15923-13 ON-13
LDW340-15922-13 REF
LDW340-15923-11 REF
.22, 2 PL
.25, 2 PL
.38, 2 PL
LDW340-15923-15 REF
LDW340-15923-6 ON-9
.89 2 TYP 2 PL
LDW340-60780-3 REF

VIEW A-A
ZONE 2A SH 3

02702 NAS 9-1100

FOR PARTS LIST, USAGE DATA, AND DWG SH STATUS, SEE DOCUMENT SAME NUMBER PREFIXED PL

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES			CONTRACT NO.	GRUMMAN AEROSPACE CORPORATION BETHPAGE, NEW YORK 11714
LINEAR TOL	.XX	± .03	DRAWN BY	
	.XXX	± .010	LAYOUT BY	
ANGULAR TOL		± 0°30'	CHECKED BY	
TOL ON LOFTED DELINEATIONS IS			SR-LEADER	
			REL GROUP	
			PROJ ENGR	
			GOVT APPD	

SIZE J | CODE IDENT NO 26512 | LDW200-55588
SCALE FULL | SHEET 1 OF

DWG SIZE 34 X 88
FILE: 22C 22C1 ASCII CG 2 D4mm 2.5.5 34 X 1
½ SIZE SHEET AREA (½ OF FULL) = 6 50 FT

PRINTING INFO ONLY

LDW200-55588 | REV | SHEET 4

FRAME 1 | FRAME 2

DISTR LIST # 1

LDW200-55588 B
LDW200-55588 A

LDW200-55593 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		LEM 759	NONE	LM-12(42)	1
								PART NO. LDW200-55593-1		GAEC SCH NO.	

WORK PKG FUNCTION NO.110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH											
SHEET	1.00	1.10									
REV	A	A									
SHEET	2.00										
REV											
SHEET	3.00										
REV	A										

LAST SECT LTR USED	–	GRUMMAN REL INFO	
LAST DASH NO. USED	-1	PRIM NO.	299

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
~~FRACTIONS~~ - DECIMALS – ANGLES
XX=±.03, .XXX=±.010 ±0°30'

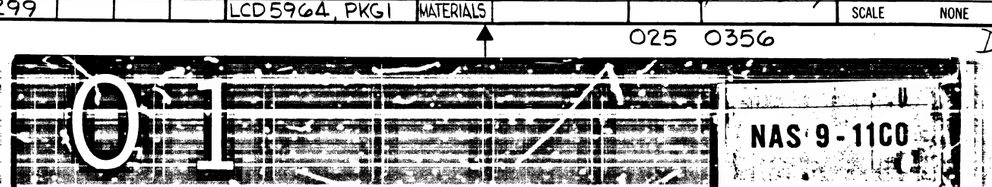
ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD5964, PKG1	

CONTRACT NO. NAS9-1100		LINE ITEM	DOCUMENTATION TYPE II	
DRAWN BY	P.CARSTENSEN	TECH. DIR.		GRUMMAN AIRCRAFT ENGRG CORP
LAYOUT BY	J. GROSS			BETHPAGE, L. I., NEW YORK
CHECKED BY				STRAP INSTALLATION
GP LDR				CREW PROVISIONS~DESCENT STAGE
S.S. MGR				MESA-REWORK OF LDW340-60769
STRUCT.		PROJ ENGR		SIZE B | CODE IDENT NO. 26512 | LDW200-55593 | A
STRUCT	NM 3-6-72	REL GROUP		SCALE NONE | SHEET 1.00 OF +
MATERIALS				

ENG 77.1 12-65

025 0356

Distr List #1



REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	APPD
A	1	3.00 & 1.00		LFM 759		✓		LCD5964-PKG1	IN FLD OF DRAWING REMOVED THE FOLLOWING CALLOUTS: REMOVE GB511J08-2, AN960D8L 2PC, GN510C832 — REMOVE LDW340-60728-1 — REMOVE GB511J08-3, AN960 D8L, MS 21042L08 — REMOVE MS27983-8N, GR501A-5E — REMOVE MS27983-8N, GR501A-5B — ADDED SH 1.10 (2)	LM-12 (42) (2)	NOT RQD	RQD sh 1.10	JOE B 5-2-72		5-3-72

CHG APPROVED	LTR	GROUP LDR	S.S.MGR	STRUCT	STRUCT	MATL	TECH DIR	PROJ ENGR	REL GROUP
	A	5-3-72			NM 5-3-72				

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
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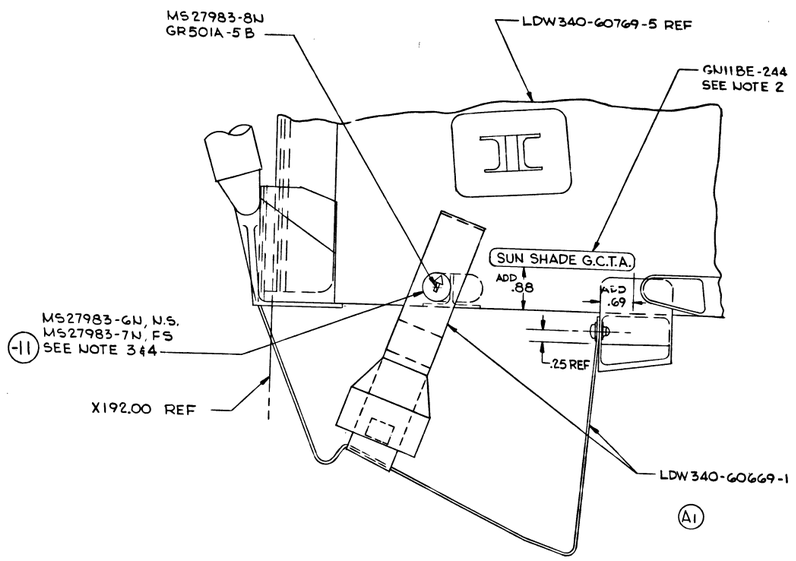
SCALE NONE SHEET 1.10

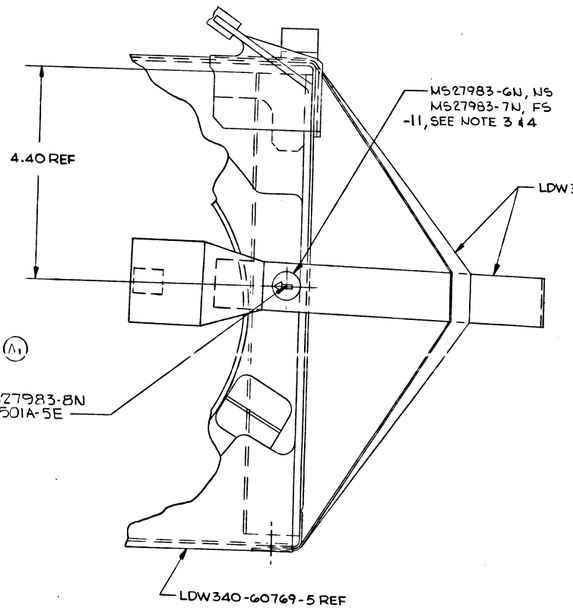
ENG 77.16 3-66

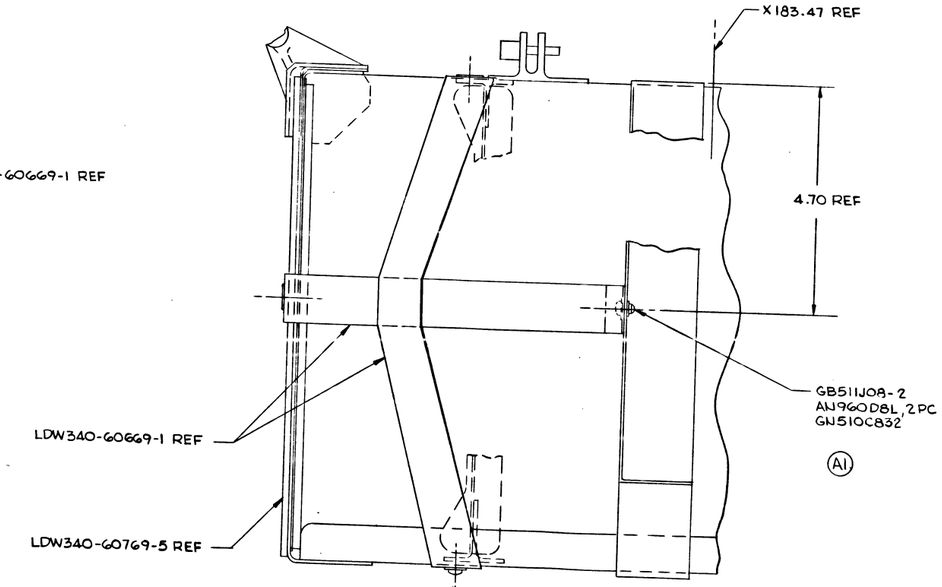
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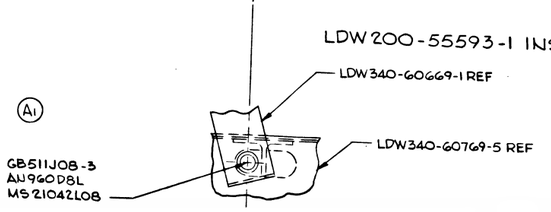
NAS 9-1100

SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY	
LENGTHS OF AN NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL RIVETS IN ACCORDANCE WITH	









NOTES:

1. CREW HAZARD - PARTS REQUIRE SPECIAL HANDLING TO INSURE REMOVAL OF ALL SHARP EDGES AND BURRS
2. BOND IN PLACE USING EPON 934 PER LSP14-22500, CURE RANGE I, ROOM TEMPERATUREE CURE PERMISSIBLE.
3. PULL STRAP ASSY TAUT AGAINST SUN SHADE RETAINER OR ITS MASS REPRESENTATION BEFORE INSTALLING MS27983-6N AND MS27983-7N IN LDW340-60669-1 STRAP ASSY TO INSURE SNUG FIT.
4. USE -11 .62 DIA ACLAR BETWEEN MS27983 FASTENER AND INTERFACING FABRIC.
5. PURCHASE IN ACCORDANCE WITH LSM14-4055 TYPE I, 5 MIL. -11 ACLAR 33C.

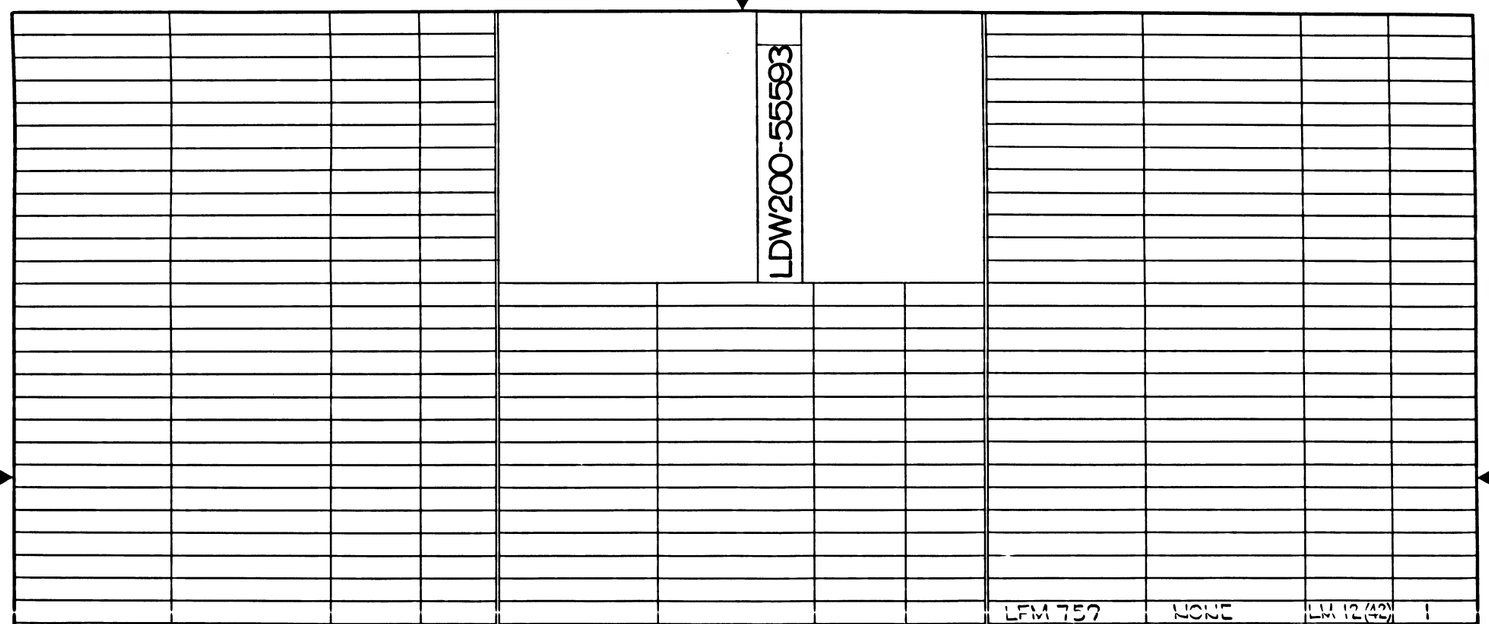
01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714			
SIZE E	CODE IDENT NO. 26512	LDW200-55593	A
SCALE FULL		SHEET 3.00	

Distr List #1 1

LDW200-55593A



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LEM 757	NONE	LM 12 (12)	1
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW200-55593-1		GAEC SCH NO.	

WORK PKG FUNCTION NO. 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH												
SHEET	1.00											
REV												
SHEET	2.00											
REV												
SHEET	3.00											
REV												

LAST SECT LTR USED	–	GRUMMAN REL INFO
LAST DASH NO. USED	-1	PRIM NO. 299

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
~~FRACTIONS~~ - DECIMALS – ANGLES
XX=±.03, .XXX=±.010 ±0°30'

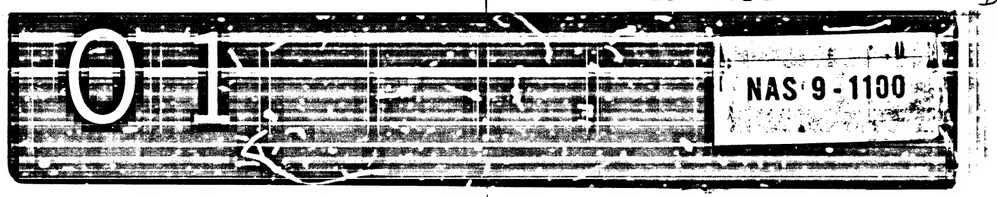
ORIG DWG AUTH				
DETAIL SPEC REQUIREMENT				
CLASS II ENGRG CHANGE				
CLASS I ENGRG CHANGE	✓			
LCD 5964, PKG 1				

CONTRACT NO. NAS9-1100		LINE ITEM		DOCUMENTATION TYPE II	
DRAWN BY P. CARSTENSEN	TECH. DIR.			GRUMMAN AIRCRAFT ENGRG CORP	
LAYOUT BY J. GROSS				BETHPAGE, L. I., NEW YORK	
CHECKED BY				STRAP INSTALLATION	
GP LDR				CREW PROVISIONS~DESCENT STAGE	
S.S. MGR				MESA-REWORK OF LDW340-60769	
STRUCT.		PROJ ENGR		SIZE B	CODE IDENT NO. 26512	LDW200-55593
STRUCT NM 3-6-72		REL GROUP		SCALE NONE	SHEET 1.00 OF 3
MATERIALS					

ENG 77.1 12-65

025 0356

Distr List # 1



QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
2		MS27983-8N	E	FASTENER	GOVT STD						
2		MS27983-7N	E	FASTENER	GOVT STD						
2		MS27983-6N	E	FASTENER	GOVT STD						
1		MS21042L08		NUT							
3		AN960D8L		WASHER	GOVT STD						
1		GR501A-5E		RIVET	GRUMMAN STD						
1		GR501A-5B		RIVET							
1		GN510C832		NUT							
1		GN11BE-244		NAMEPLATE							
1		GB511J08-3		BOLT							
1		GB511J08-2	E	BOLT	GRUMMAN STD						
1		LDW340-60669-1	S	STRAP ASSY							
AR		LDW200-55593-11	E	ACLAR	SEE NOTE 5				NONE	NONE	
		LDW200-55593-1	E	STRAP INSTL					NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

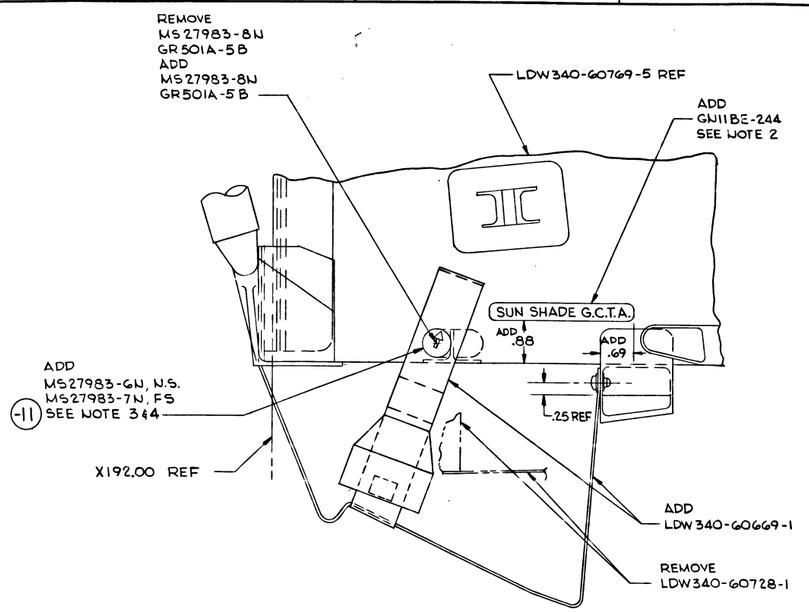
SIZE	CODE IDENT NO.	
B	26512	LDW200-55593

SCALE NONE SHEET 2.00

ENG 77.2 7-64

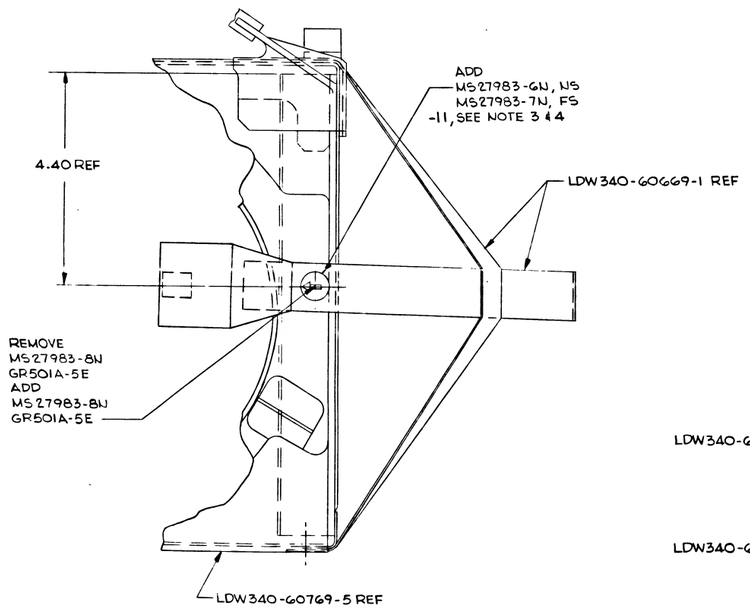
01 NAS 9-1100

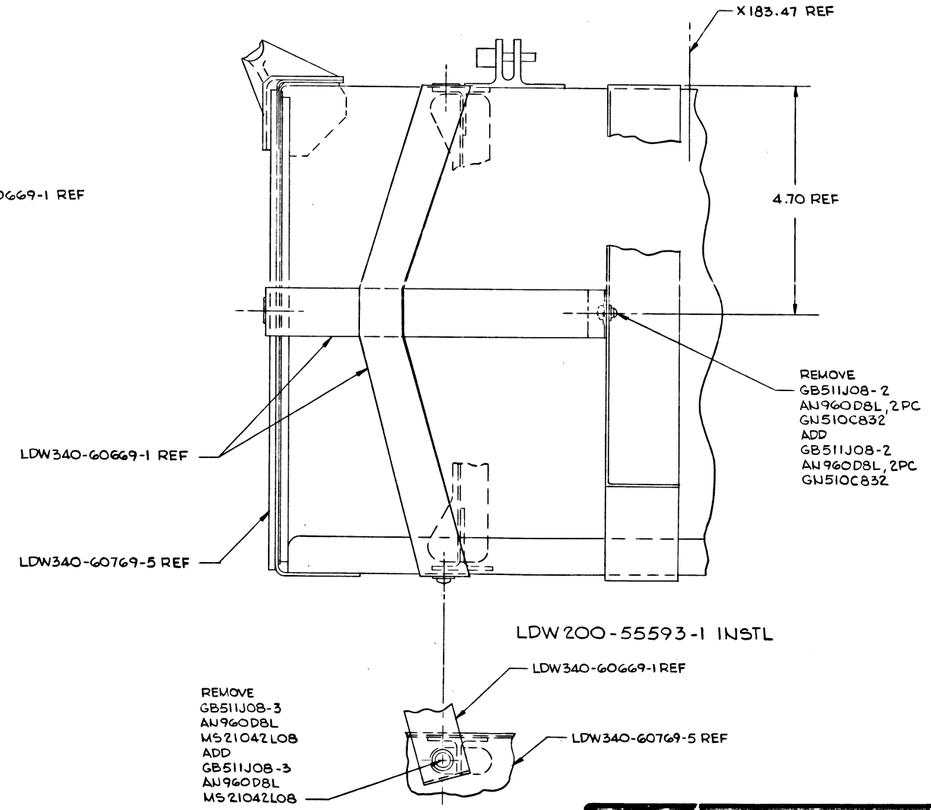
SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH MIL STD 130	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED (ED) USE BOTH SIDES IF NEEDED ANY	
LENGTHS OF AN, MAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL RIVETS IN ACCORDANCE WITH	



NOTES

1. CREW HAZARD - PARTS REQUIRE SPECIAL HANDLING TO INSURE REMOVAL OF ALL SHARP EDGES AND BURRS
2. BOND IN PLACE USING EPON 934 PER LSP14-22500, CURE RANGE I, ROOM TEMPERATUREE CURE PERMISSIBLE.
3. PULL STRAP ASSY TAUT AGAINST SUN SHADE RETAINER OR ITS MASS REPRESENTATION BEFORE INSTALLING MS27983-GN AND MS27983-7N IN LDW340-60669-1 STRAP ASSY TO INSURE SNUG FIT.
4. USE -11 .62 DIA ACLAR BETWEEN MS27983 FASTENER AND INTERFACING FABRIC.
5. PURCHASE IN ACCORDANCE WITH LSM14-4055, TYPE I, 5 MIL. -11 ACLAR 33C.





LDW200-55593-1 INSTL

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714			
SIZE E	CODE IDENT NO 26512	LDW200-55593	
SCALE FULL		SHEET 3.00	

Distr List #1

LDW200-55593

ENG 73.4 REV 5-67

GRUMMAN AEROSPACE CORPORATION
CODE IDENT NO. 26512

ENG 32.2 REV 3-68

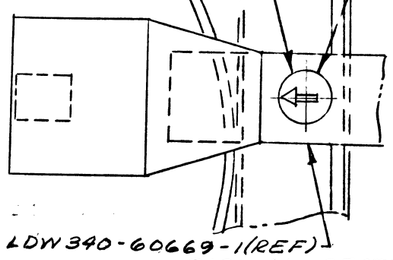
ENGINEERING ORDER

DWG. NO. LDW 200-55593	EO NO. B1
CONTROL INFO NO. LDW.340-10142	

ADD - IN ZONE 8C

GB510F08-14 BOLT
AN960-D8L WASHER
MS21042L08 NUT

MS27983-8N WAS
MS27983-8N GR501A-5E

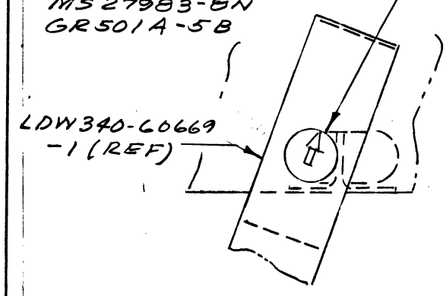


LDW340-60669-1(REF)

PARTIAL SECTION IN ZONE 7D

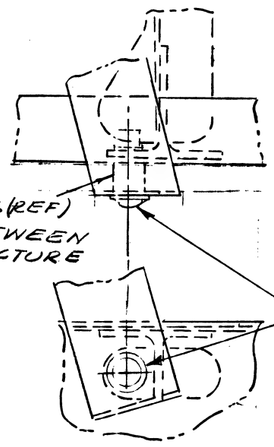
IN ZONE 5H

MS27983-8N FASTNER
GR501A-5F RIVET
WAS
MS27983-8N
GR501A-5B



LDW340-60669-1(REF)

PARTIAL SECTION IN ZONE 4G



NAS43DD3-6(REF) LOCATED BETWEEN STRAP & STRUCTURE

IN ZONE 5A

REVISED HARDWARE CALLOUT.

GB511J08-4 BOLT
AN960D8L WASHER
MS21042L08 NUT
NAS43DD3-6 SPACER

WAS
GB511J08-3
AN960D8L
MS21042L08

PARTIAL SECTION IN ZONE 4B

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	LCD5964 PKG 1

REASON FOR EO
REVISED HARDWARE CALLOUTS TO FACILITATE INSTL. OF LDW340-60669-1 STRAP INSTL.

DESCRIPTION OF EO
IN B/M & FIELD ON -1 INSTL., DELETED GR501A-5B, ADDED GB510F08-14, AN960-D8L, MS21042-L08, DELETED GR501A-5B, ADDED GR501A-5F, DELETED GB511J08-3, ADDED GB511J08-4, & NAS43DD3-6

GAEC EO RELEASE

(Reqd)	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQ'D: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY / DATE	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
LM	LFM 759	LM-12		✓		✓					5-25-72	5/25/72		5-26-72

PRIORITY: C

DRAWING TITLE: STRAP INSTALLATION C.P. DESCENT STAGE

DRAWING NO.: LDW 200-55593

EO NO.: B1

ISSUED BY John Gross x 9291 SECTION CREW SYS. GROUP NO. 1356 PL 025

NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LFM 759	LDW280-6050B	LM1C(4K)	1
PART NO.	GAEC SCH NO.			PART NO.	GAEC SCH NO.			PART NO. LDW200-55594-1	GAEC SCH NO.		

WORK PACKAGE FUNCTION NO. 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00		2.00		3.00					
REV										
SHEET										
REV										
SHEET										
REV										

		GRUMMAN REL INFO				
LAST SECT LTR USED	S	PRIM NO.				
LAST DASH NO. USED	-1		207			

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS — DECIMALS — ANGLES
— — —

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 5964 PG 50	

CONTRACT NO. NAS 9-1100		LINE ITEM	DOCUMENTATION TYPE II
DRAWN BY	D. RAGAS	THERM	P. Bender 3/16/72
LAYOUT BY	D. RAGAS	TECH. DIR.	P. Marino 3/16/72
CHECKED BY			
VEH. DES INT	P. Thojsen 3-16-72		
STRUCTURES	N.M 3-16-72	PROJ ENGR	
		RELEASE	

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

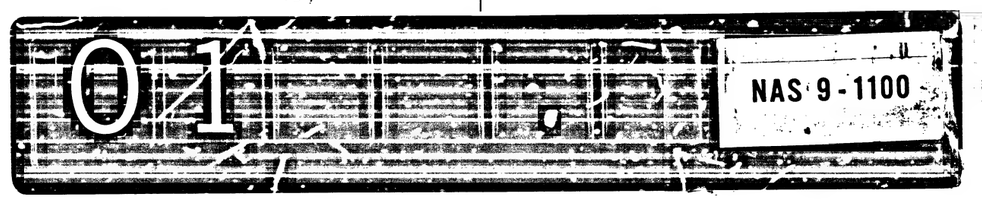
SHIELD ASSEMBLY
DESCENT STAGE - MESA
REWORK OF LDW280-6050B

SIZE	CODE IDENT NO.	
B	26512	LDW200-55594

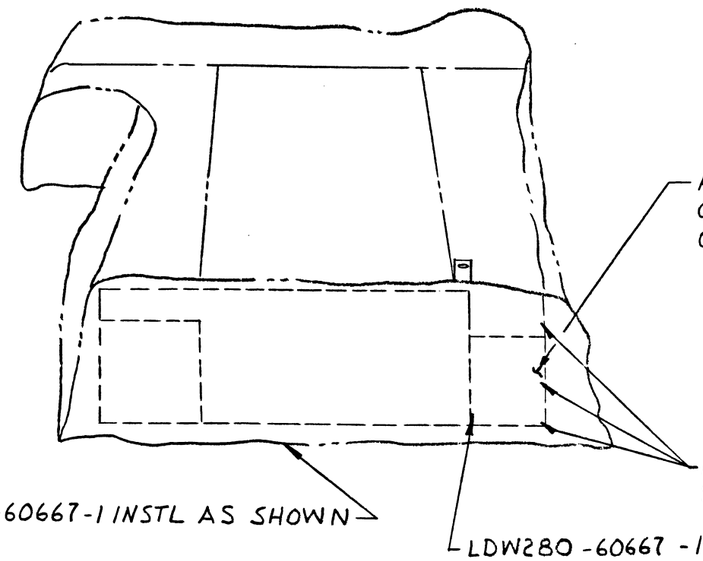
SCALE NONE SHEET 1.00 OF 3.00

ENG 77.1 9-64

5964



NOTES:
1- LDW280-60667-165 MAY BE FOLDED OR TRIMMED AS REQD. UNDER DIRECTION OF COG. ENGR. TO CREATE -1 ASSY.
2- APPLICABLE PROCEDURES:
LPC-280-1 FABRICATION



LDW200-55594-1 ASSY

GRUMMAN AEROSPACE CORPORATION BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW200-55594	
SCALE NONE		SHEET 3.00	

ENG 73.1 6-64

01

NAS 9-1100

QTY PER ASSEMBLY			CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
	1			LDW340P15747-21	E	FITTING							8C
	1			-19									8A
	2			-17									8A/2A
	1			-15									6B
	1			-13									1C
	1			LDW340P15747-11		FITTING							1C
	1			LDW340M15749-11		FITTING							6B
	1			LDW340M15746-11		FITTING							2C
	1			LDW340M15745-11		FITTING							5B
	1			LDW340-15729-17		PLATE							7C
	1			LDW340-15729-15		BRACKET							7B
	2			LDW340-15748-13		BLOCK							8D/8C
	2			LDW340-15748-11		BLOCK							8A/8C
2				LDW340-11999-37		PIN							1B
	2			LDW340-60659-1		STRAP ASSY							7B/8D
	2			LDW200-55595-11		BLOCK	AL ALLOY SH	QQ-A-250/4	2024-T3	.10 x 1.00 x 2.00	NONE	88	2A
	1			LDW200-55595-3		LANYARD ASSY					NONE	NONE	4A
				LDW200-55595-1	E	NEUTRON FLUX INSTL					NONE	NONE	4A

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						88	ANODIZE	LSP14-9030

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55595

SCALE NONE SHEET 2.00

ENG 77.2 7-64

.01

NAS 9-1100

QTY PER ASSEMBLY -3	QTY PER ASSEMBLY -1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
	2		GR501A-5A	E	RIVET	GRUMMAN STD						
	4		GR500L4-3		RIVET							
A/R			GS830G-25C3		SLEEVE							
A/R			GS531B2		SLEEVE							
1			GL10B-20		LANYARD							
	9		GN512CF06		NUT							
	1		GR500L5-3		RIVET							
	1		GN11BF484		NAME PLATE							
	2		GB511J08-6		FASTENER	GRUMMAN STD						
	9		GB511J06-9		FASTENER	GRUMMAN STD						
	A/R		NAS1097AD4		RIVET	IND STD						
	2		MS27983-8N		FASTENER SNAP	GOVT STD						
	2		MS27983-7N		FASTENER SNAP							
	2		MS27983-6N		FASTENER SNAP							
	2		MS21042L08		NUT							
	A/R		MS20426AD4		RIVET							
	A/R		MS20470AD4		RIVET							
	9		AN960D06L		WASHER							
	4		AN960D8L	E	WASHER	GOVT STD						

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

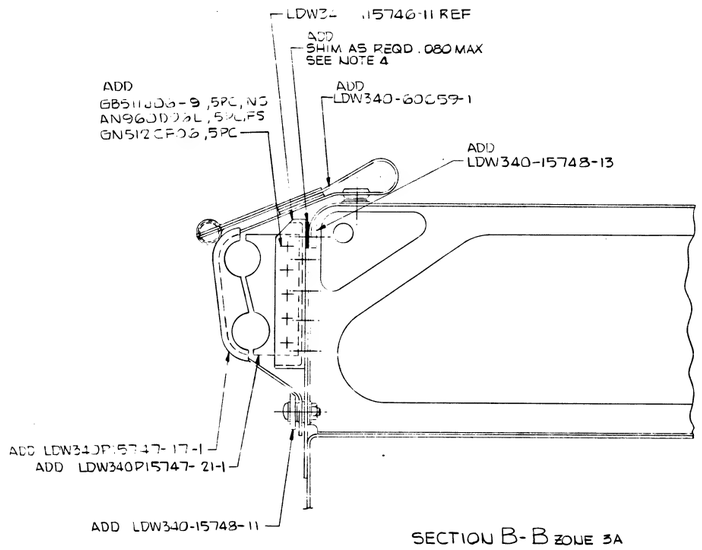
SIZE	CODE IDENT NO.	
B	26512	LDW200-55595

SCALE NONE SHEET 201

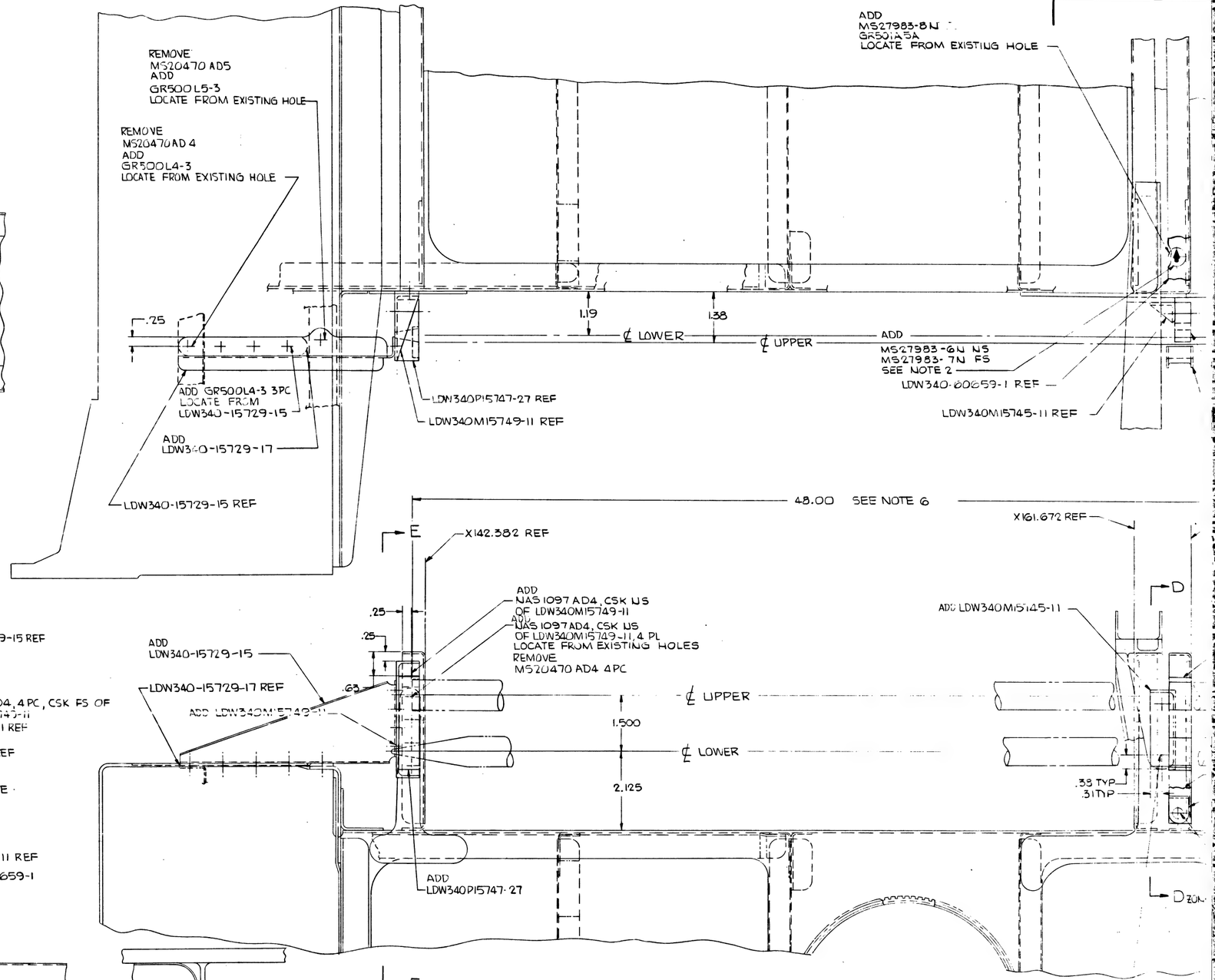
ENG 77.2 7-64

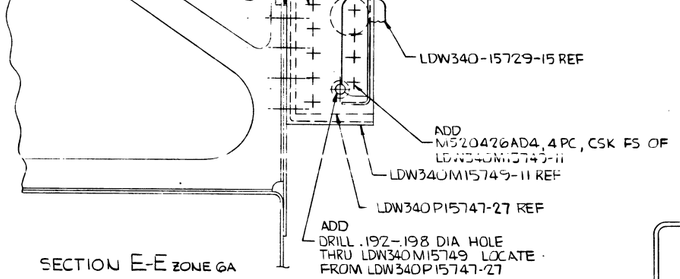
01

NAS 9-1100

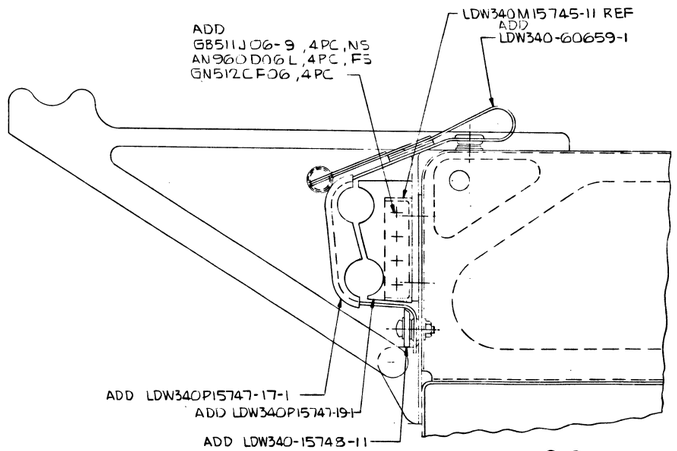


SECTION B-B ZONE 3A





SECTION E-E ZONE 6A



SECTION C-C ZONE 4A

SECTION D-D ZONE 4A

01/02 NAS 9-1100

CODE IDENT NO.	DWG NO.	REV	SHEET
26512	LDW200-55595		3

FRAME 1 FRAME 2

REVISIONS						
ZONE	LTR	DESCRIPTION	EFF CODE	MODEL	DATE	APPROVED

ADD
MS27983-8N
GR501A5A
LOCATE FROM EXISTING HOLE

LDW340-60659-1 REF

ADD
MS27983-6N NS
MS27983-7N FS
SEE NOTE 2

LDW340M15746-11 REF

LDW340P15747-17-1 REF

LDW340P15747-21-1 REF

LDW340P15747-23REF

LDW340P15747-25 REF

ADD
LDW200-55595-3

MS20470AD4 10PC

NOTES:

1. NO TOOLING HOLES PERMITTED IN PARTS
2. PULL STRAP TAUT AGAINST NEUTRON FLUX MONITOR OR ITS MASS REPRESENTATION BEFORE INSTALLING SNAPS IN LDW340-60659-1 TO INSURE SNUG FIT
3. PREPARE END OF LANYARD PER GL10K
4. SHIM AS REQUIRED USING MIL-S-22499 COMP I, TYPE I, CLASS I
5. BOND IN PLACE USING EPON 934 PER LSP14-22500 CURE RANGE I
6. SHIM AS REQD .12 MAX WITH RTV 630 PER LSM14-4102

NOTE 6

X161.672 REF

X163.242 REF

X182.532 REF

REMOVE
MS20470AD4 5PC
ADD
MS20426AD4, 5PC CSK NS
OF LDW340M15746-11
LOCATE FROM EXISTING HOLES

ADD LDW340M15745-11

LDW340P15747-19-1REF

.38 TYP
.31 TYP

LDW340-60659-1 REF

LDW340-15748-11 REF

LDW340P15747-21-1 REF

LDW340-60659-1 REF

LDW340P15747-25 REF

SEE NOTE 6

LDW340-15748-11 REF

D ZONE 6A

C ZONE 7A

B ZONE

ADD
GB511J08-6
AN960D8L, 2PC
MS21042L08
LOCATE FROM EXISTING HOLE

.190-.194 DIA HOLE THRU LDW340M15745-11
TO MATCH LDW340M15974, TYP 2PL

ADD
GB511J08-6
AN960D8L, 2PC
MS21042L08
LOCATE FROM EXISTING HOLE

LDW340P15747-23REF

LDW340P15747-25 REF

ADD
LDW340P15747-25

ADD
LDW340P15747-23

GS5318-2, TYP 3 PL, ON-3

GS8306-25C3, TYP 3 PL, ON-3

SEE NOTE 3

10.50

LDW200-55595-11
SEE NOTE 5

SEE NOTE 3

GL10B2-20 ON-3

LDW200-55595-11 SEE NOTE 5

LDW340-11999-37 2PC ON-3

LINE DRILL .184 - .194 DIA HOLE 2PL
LOCATE FROM LDW340P15747-23

X142.382 REF

X163.242 REF

X182.532 REF

X196.000 REF

LDW340-60769 REF

A ZONE 4A

ENGINEERING REF DWG SCALE - NONE

VIEW A-A ZONE

LDW200-55595-1 INSTL
-3 ASSY

.75

.25R, 2 PL

-11

30°

.47

.110

02/02

NAS 9-1100

FOR PARTS LIST, USAGE DATA, AND DWG SH STATUS, SEE DOCUMENT SAME NUMBER PREFIXED PL

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES			CONTRACT NO.	GRUMMAN AEROSPACE CORPORATION BETHPAGE, NEW YORK 11714
LINEAR TOL	.XX ± .03	.XXX ± .010	DRAWN BY	
ANGULAR TOL ± 0°30'			LAYOUT BY	
TOL ON LOFTED DELINEATIONS IS			CHECKED BY	
			DR LEADER	
			REL GROUP	
			PROJ ENGR	
			GOVT APPD	

SIZE	CODE IDENT NO.	LDW200-55595
J	26512	
SCALE FULL		SHEET 3 OF 3

LDW200-55595 REV 3 SHEET 3

FRAME 1 FRAME 2

DISTR LIST #

PRINTING INFO ONLY
DWG SIZE 24 x 36
FULL SIZE SHEET AREA (96 IN SQ IN = 24.5 SQ FT
½ SIZE SHEET AREA (½ OF FULL) = 12.5 SQ FT

B LDW200-55595

A LDW200-55595

GRUMMAN AEROSPACE CORPORATION
CODE IDENT NO. 26512
ENG 32.1 REV 3-65
ENGINEERING ORDER

DWG. NO. LDW200-55595 | EO NO. A1
CONTROL INFO NO. LDW340-10133.

IN B/M FOR -1 LDW340P15747-11,-13,-15,-17,-19 & -21
SHOULD BE LDW340P15747-23,-25,-27,-17-1,-19-1 & -21-1
RESPECTIVELY

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD 5966 PKG 2

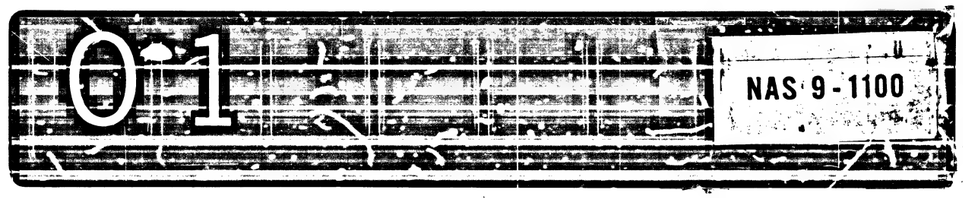
REASON FOR EO: To ENSURE DETAIL PARTS AGREE WITH ASSY.

DESCRIPTION OF EO: IN B/M FOR -1 LDW340P15747-23,-25,-27,-17-1,-19-1 & -21-1 WAS -11,-13,-15,-17,-19 & -21 RESPECTIVELY

GAEC EO RELEASE (E)

EFFECTIVITY				DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY									
PROCURING ACTIVITY NO.		GAEC UNIT NO.	SUB CONTR UNIT NO.	REVISE DWG	RECORD EO	REWORK	SCRAP	DATE			SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
LM	LFM 762A	LM-12 (42)				✓							C.L.Z.74	2-23-74		NH	GAC
				PRIORITY C	DRAWING TITLE: NEUTRON FLUX REWORK OF LDW340-60769-MESA			INSTL-C/P D/S					DRAWING NO. LDW200-55595				EO NO. A1

ISSUED BY A. VARVARO SECTION CREW PROVISIONS GROUP NO. 0356 PL 025



GRUMMAN AEROSPACE CORPORATION

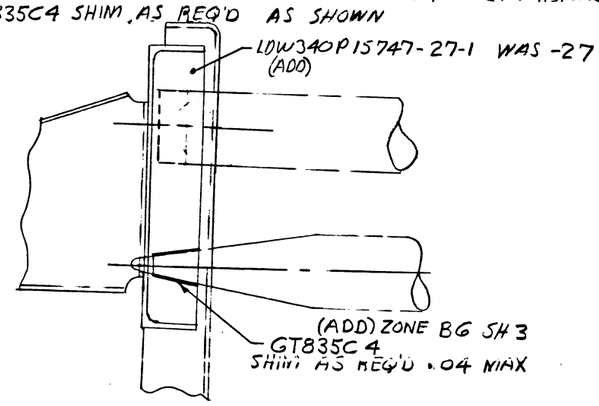
ENG 32.1 REV 3-65

CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LDW200-55595		EO NO. A2
CONTROL INFO NO. LDW340-16157		

IN FLD & B/M ON -1 ADD LDW340P15747-27-1 ~ -27-1 REPLACES -27
ADD GT835C4 SHIM, AS REQ'D AS SHOWN



DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	ICD 5966 PKG 2

REASON FOR EO: FACILITATE INST'L

DESCRIPTION OF EO: IN FLD & B/M ADDED LDW340P15747-27-1 AND REMOVED -27. ADDED GT835C4 SHIM AS REQ'D

GAEC EO RELEASE

EFFECTIVITY				DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY									
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	REVISE DWG	RECORD EO	REWORK	SCRAP	DATE			SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GAC
LM	LFM 7628	LM 12(42)		✓		✓							KW 6.14.72	NM 6/14/72		6/15/72	6/19/72
				PRIORITY C	DRAWING TITLE: NEUTRON FLUX INST'L C.P. – MESA – D.S. – REWORK OF LDW340-60769								DRAWING NO. LDW200-55595				EO NO. A2

ISSUED BY B. R. Savoie X9481 SECTION CREW PROV GROUP NO 0356 PL 025

01

NAS 9-1100

GRUMMAN AEROSPACE CORPORATION

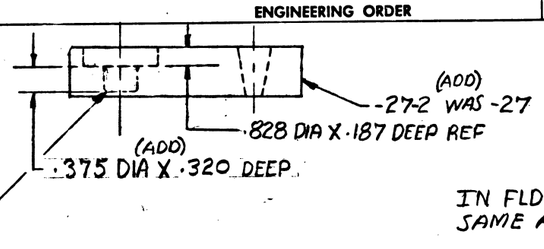
CODE IDENT NO. 26512

ENG 22.1 REV 3-66

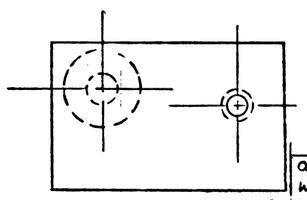
ENGINEERING ORDER

DWG NO. NOTED | EO NO. X

CONTROL INFO NO. LDW 340-10186



IN FLD, M/B & BM ADD -27-2 SAME AS -27-1 EXCEPT AS SHN



NHA DESCRIPTION	DWG NO	EO NO
ON -1 LDW340P15747-27-2	LDW340P15747	A7 ✓
WAS LDW340P15747-27-1	NHA NO	EO NO
	LDW700-55595	A3 ✓

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | X LCD 5766 PKG 1

REASON FOR EO: FACILITATE INST'L OF GFE EQUIPMENT

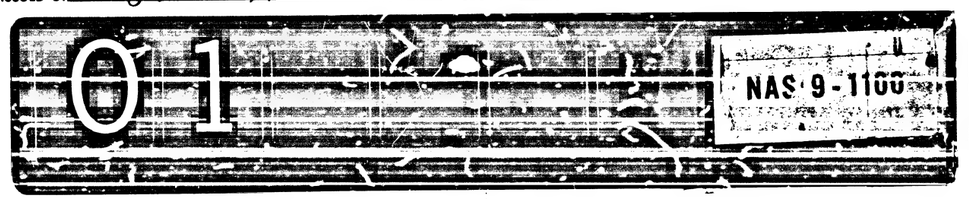
DESCRIPTION OF EO: IN FLD M/B & BM ADDED -27-2 WAS -27

GAEC EO RELEASE (2)

EFFECTIVITY			DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY									
PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	REVISE DWG	RECORD EO	REWORK	SCRAP	DATE			SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
LM	LFM7628	LM12(42)										6-27-74	4/29/74		7-3-74	6-28-74

PRIORITY: C* | DRAWING TITLE: FITTING CREW PROV - O.S - NEUTRON FLUX SUPPORT | DRAWING NO.: NOTED | EO NO. X

ISSUED BY B.R. LaVoie X9481 SECTION Crew Prov GROUP NO. 0356 PL 025

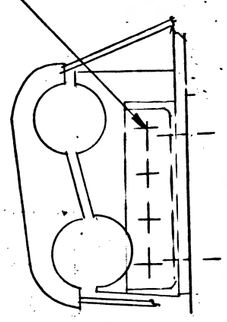


GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

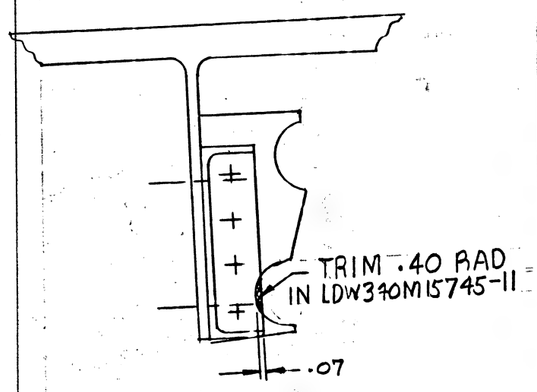
DWG. NO. LDW200-55595 | EO NO. AA
CONTROL INFO NO. LDW340-10237

ENG 32.2 REV 3-65

MS21042-06 4 PC
SEE NOTE *
(WAS) GN512CF06 .4PC



SECTION C-C ZONE 4A



SECTION D-D ZONE 4A

SHOP INFO ONLY
FINISH REWORKED AREA WITH #76
BRUSH ALODINE PER LSP-14-9010A

* INDICATES USE NEXT AVAILABLE NOTE NO.

* COVER EXPOSED THREADS WITH EPON 934 PER LSP14-22500 CURE RANGE #1 (ROOM TEMP PERMISSIBLE). SPREAD ADHESIVE SMOOTHLY SO NO SHARP EDGES ARE APPARENT.

IN FLD S/B/M LDW340-60659-1 S/B LDW340-60659-1-1

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCU# 5966 PKG 1

REASON FOR EO: FACILITATE INST'L DR# 361

DESCRIPTION OF EO: IN FLD S/BM ON-1, ADDED MS21042-06 4 PC SEE NOTE *
REMOVED GN512CF06 4 PC. ADDED NOTE *
ADDED LDW340-60659-1-1 WAS LDW340-60659-1

GAEC EO RELEASE (R)

MODEL	EFFECTIVITY: PROCURING ACTIVITY	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 762B	LM 12 (42)	

DRAWING CHANGE REQ'D: REVISE DWG ✓ | RECORD EO | DISPOSITION OF PAR'S: REWORK ✓ | SCRAP

PRIORITY: C

DRAWING TITLE: NEUTRON FLUX INST'L C.P. MESA D.S. — REWORK OF LDW340-60769

DRAWING NO.: LDW200-55595

EO NO.: AA

APPROVED BY	DATE	SUPPORT	REL AB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGR	PROJ ENGR
				A✓	NM		NA
				7/17/72	7/17/72		7/21/72 GAC

ISSUED BY: B. Savoie X9491 SECTION: CREW PROV GROUP NO. 0356 PL 025

ORIGINAL
THIS SIDE UP

LDW200-55597 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM 10Z	NONE	LM-12(2)	1 EA
PART NO. LDW200-55597-1-1, & -3-1		GAEC SCH NO.	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10									
REV	A	A									
SHEET	2.00	2.01									
REV	A	A									
SHEET	3.00										
REV	A										

LAST SECT LTR USED	B	GRUMMAN REL INFO							
LAST DASH NO. USED	-3-1	PRIM NO.							
		299							

ENG 77.1 12-65

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
.XX=±.03 .XXX=±.010 ±0°30'

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD5966 PKG 2	

WORK PKG FUNCTION NO. 110

CONTRACT NO. NAS9-1100 | LINE ITEM | DOCUMENTATION TYPE II

DRAWN BY	T MACAULAY	Tech. Dir.	5-2-72
LAYOUT BY	M. SALVADOR		
CHECKED BY	5-2-72		
SS ENGR			
GP LEADER	5-2-72		
STRUCT	5-2-72	PROJ ENGR	5-3-72
STRUCT	NM 5-2-72	REL GROUP	5-3-72
WEIGHTS			

GRUMMAN AEROSPACE CORPORATION
BETHPAGE, L. I., NEW YORK

SUPPORT ASSEMBLY
CREW PROVISIONS - D/S - QUAD III PALLET
REWORK OF LDW340-60740 & LDW340-60741

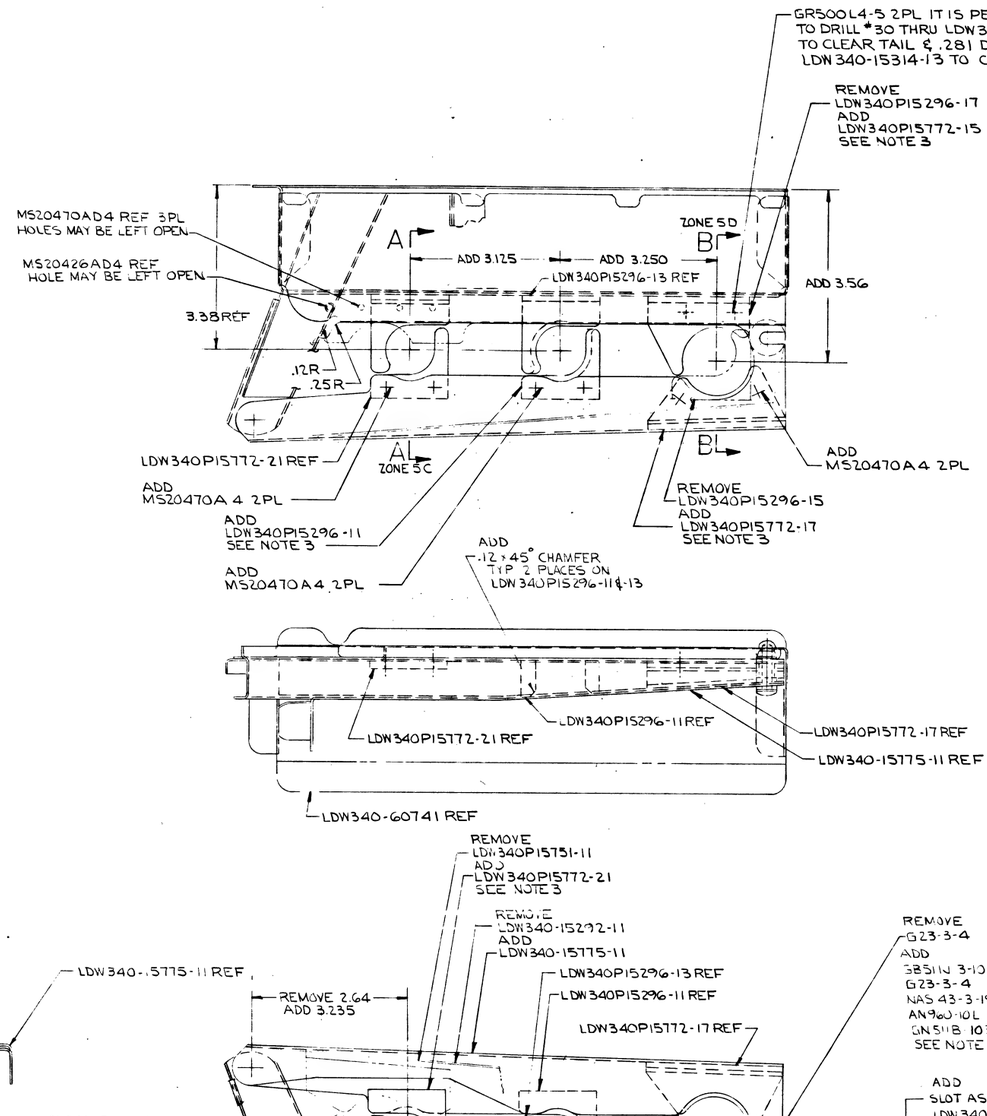
SIZE	CODE IDENT NO.		
B	26512	LDW200-55597	A

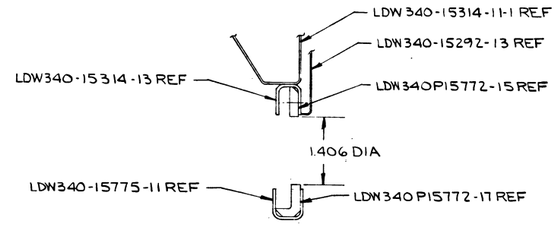
SCALE NONE | SHEET 1.00 OF 5

025-0356 Distr. List #1

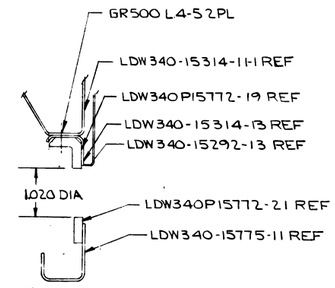
01
NAS 9-1100

SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS
MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130.
PART NL AND ALL OTHER MARKINGS IN REGION MARKED ☐ USE BOTH SIDES IF NECESSARY.
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
INSTALL RIVETS IN ACCORDANCE WITH SP14-15302, SP14-5330





SECT B-B ZONE 6D



SECT A-A ZONE 7C

01/02 NAS 9-1100

(A1)

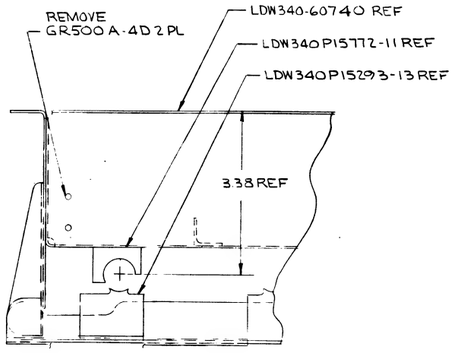
LDW200-55597-3-1 ASSY

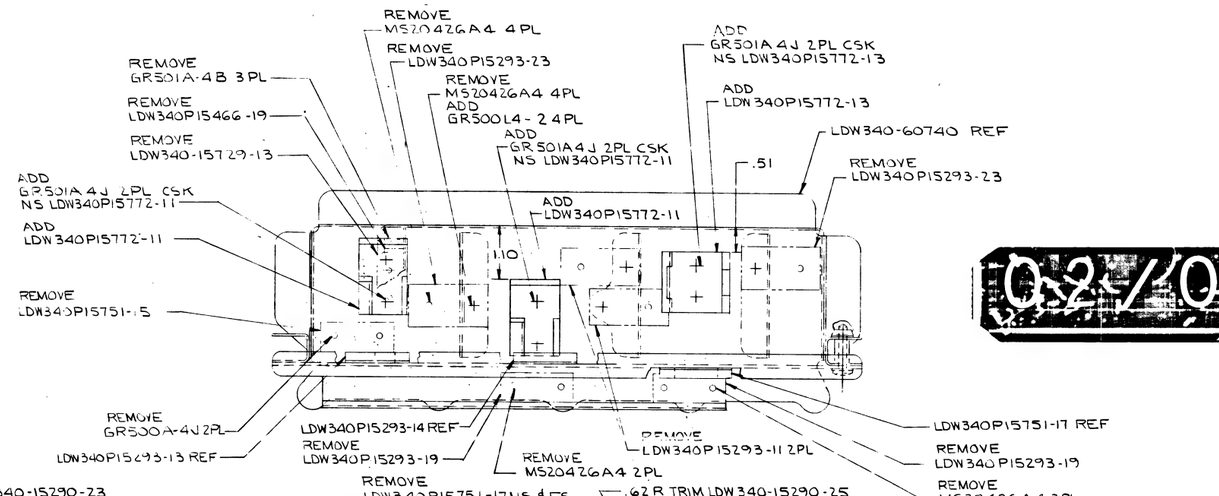
CODE IDENT NO	DWG NO	REV	SHEET
26512	LDW200-55597		2

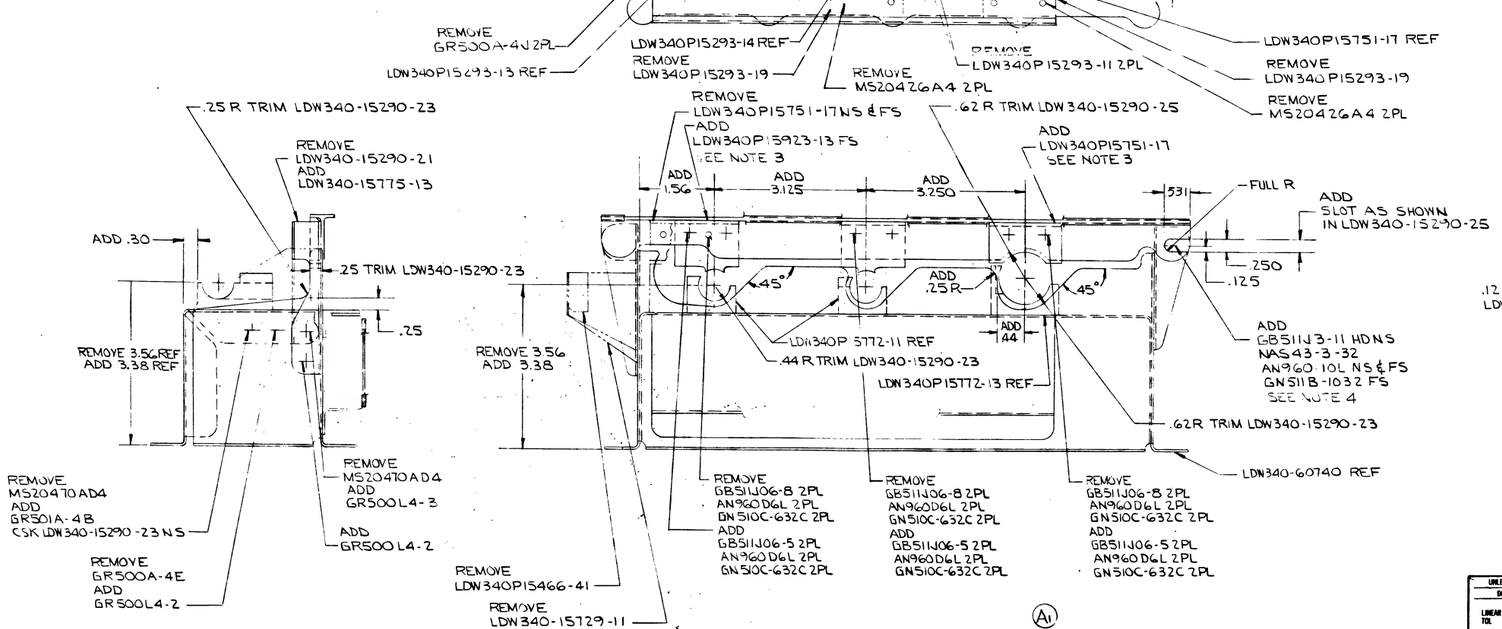
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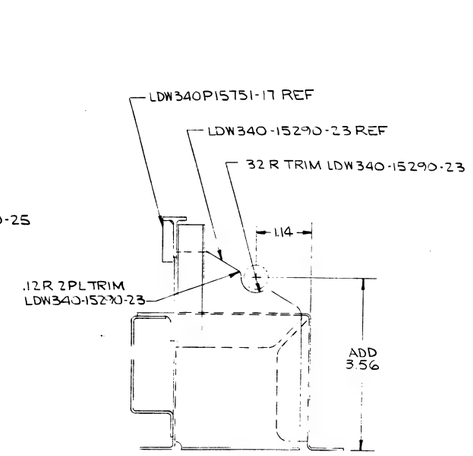
REVISIONS						
ZONE	LTR	DESCRIPTION	EFF CODE	MODEL	DATE	APPROVED

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.
2. CREW HAZARD - PARTS REQUIRE SPECIAL HANDLING TO INSURE REMOVAL OF ALL SHARP EDGES AND BURRS.
3. BOND IN PLACE USING EPON 934 PER LSP14-22500. ROOM TEMPERATURE CURE PERMITTED.
4. COAT PROTRUDING THREADS OF GB5IIN-3 FASTENERS WITH EPON 934 PER LSP14-22500. ROOM TEMPERATURE CURE PERMITTED.









LDW200-55597-1-1 ASSY

A1

082-10-21 NAS 9-1100

FOR PARTS LIST, USAGE DATA, AND DWG SH STATUS, SEE DOCUMENT SAME NUMBER PREFIXED PL

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES			CONTRACT NO.	GRUMMAN AEROSPACE CORPORATION BETHPAGE, NEW YORK 11714
LINEAR TOL	.XX	± .03	DRAWN BY	
	.XXX	± .010	LAYOUT BY	
ANGULAR TOL		± 0°30'	CHECKED BY	
TOL ON LOFTED DELINEATIONS IS			DR LEADER	
			REL GROUP	
			PROJ ENGR	
			GOVT APPD	

SIZE J | CODE IDENT NO. 26512 | LDW200-55597 | A

SCALE | SHEET 1 OF

DISTR LIST # 1

LDW200-55597 REV - SHEET -

PRINTING INFO ONLY
DWG SIZE 34 X 88
FULL SIZE SHEET AREA ON X 88 = 24.5 SQ FT
½ SIZE SHEET AREA (½ OF FULL) = 6.5 SQ FT

LDW200-55597 A

LDW200-55597

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LEM 762	NONE	LM-1242	1 EA
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW200-55597-1 & -3		GAEC SCH NO.	

WORK PKG FUNCTION NO. 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH											
SHEET	1.00										
REV											
SHEET	2.00										
REV											
SHEET	3.00										
REV											

LAST SECT LTR USED		GRUMMAN REL INFO
LAST DASH NO. USED	-3	PRIM NO. 299

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
.XX=±.03 .XXX=±.010 ±0°30'

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD5966 PKG 2	

CONTRACT NO. NAS 9-1100		LINE ITEM		DOCUMENTATION TYPE II
DRAWN BY	T MACAULAY	TECH. DIR	[signature] 5-2-72	GRUMMAN AEROSPACE CORPORATION
LAYOUT BY	M SALVADOR			BETHPAGE, L. I., NEW YORK
CHECKED BY	[signature] 5-2-72			SUPPORT ASSEMBLY
SS ENGR				CREW PROVISIONS D/S QUAD III PALLET
GP LEADER	[signature] 5-2-72			REWORK OF LDW340-60740 & LDW340-60741
STRUCT	[signature] 5-2-72	PROJ ENGR	[signature] 5-1-72	SIZE B | CODE IDENT NO. 26512 | LDW200-55597
STRUCT	NM 5-2-72	REL GROUP	[signature] 5-3-72	SCALE NONE | SHEET 1.00 OF 3
WEIGHTS				

ENG 77.1 12-65

025-0356 DISTR. LIST #1

01

NAS 9-1100

QTY PER ASSEMBLY		CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
-3	-1											
	4		GR501A-4B	E	RIVET BLIND	GRUMMAN STD						
	2		GR500A-4J		↑	↑						
	1		GR500A-4E		↓							
	2		GR500A-4D		RIVET BLIND							
	2		GN511C-632C		NUT							
1	1		GN511B-1032		NUT							
2			G23-3-4		WASHER BEVEL							
	1		GB511J-3-11		FASTENER							
1			GB511N-3-10		FASTENER	↓						
	2		GB51NJ06-8		FASTENER	GRUMMAN STD						
A/R			MS20426AD4		RIVET	GOVT STD						
1			NAS-43-3-19		SPACER	IND STD						
	1		NAS43-3-32		SPACER	IND STD						
A/R	A/R		MS20470AD4		RIVET	GOVT STD						
2	2		AN960-10L		WASHER	GOVT STD						
	2		AN960D6L		WASHER	GOVT STD						
A/R			MS20470A4		RIVET	GOVT STD						
	2		LDW340P15751-17		SUPPORT	SEE DWG						
	1		↑ -15		↑	↑						
1			↓ -13		↓	↓						
1			LDW340P15751-11		SUPPORT							
	1		LDW340P15466-41		PAD							
	1		LDW340P15466-19		PAD							
	1		LDW340-15729-13		ANGLE	↓						
	1		LDW340-15729-11		BRACKET	SEE DWG						
			LDW200-55597-3		SUPPORT ASSY					NONE	NONE	
			LDW200-55597-1	E	SUPPORT ASSY					NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

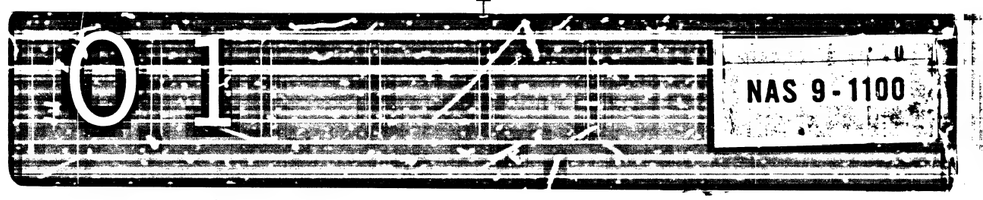
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

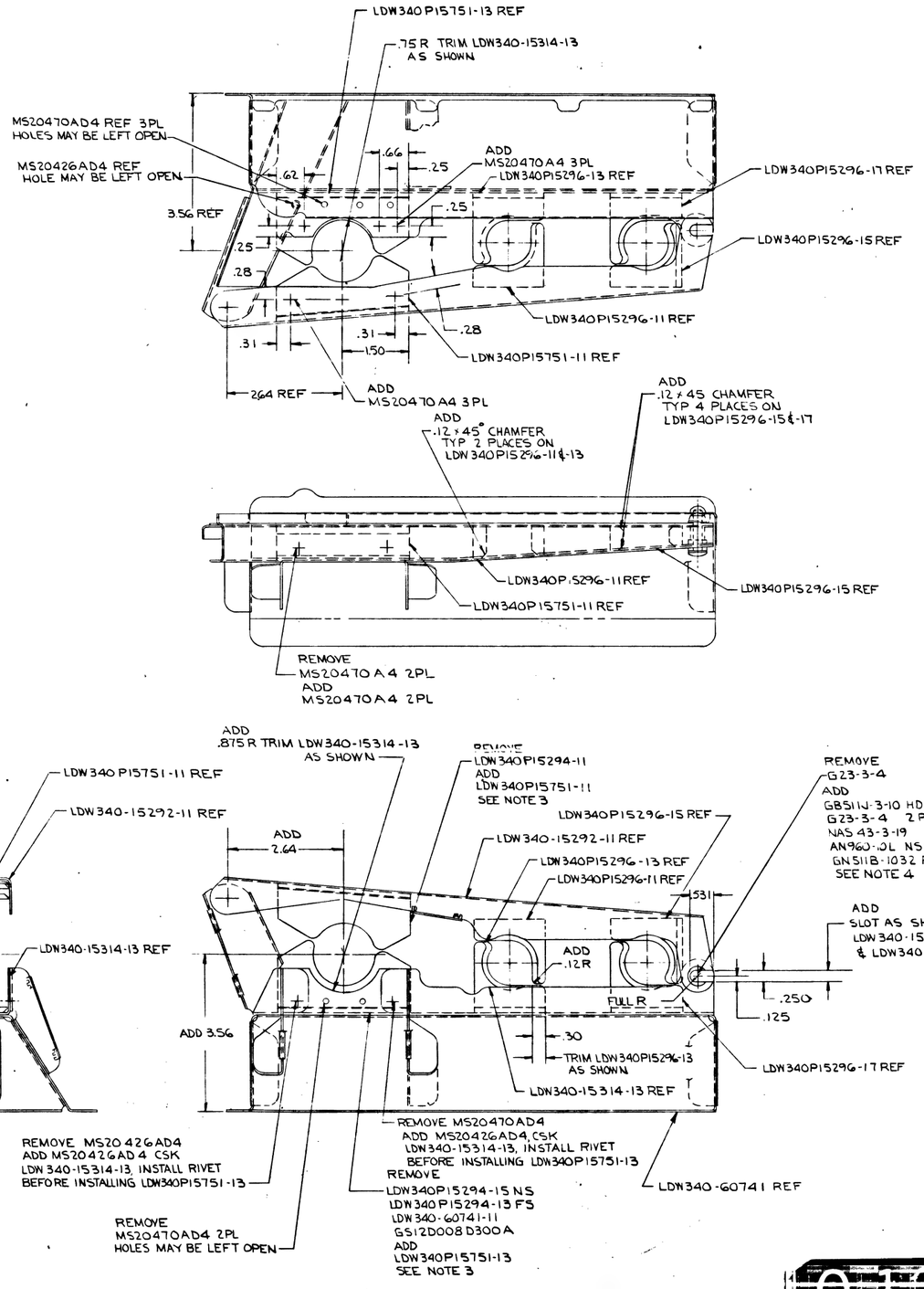
SIZE	CODE IDENT NO.	
B	26512	LDW200-55597

SCALE NONE SHEET 2.00

ENG 77.2 7-64



SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130.	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED CHKD USE BOTH SIDES IF NECESSARY.	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
INSTALL RIVETS IN ACCORDANCE WITH SP14-15302, SP4-5303	



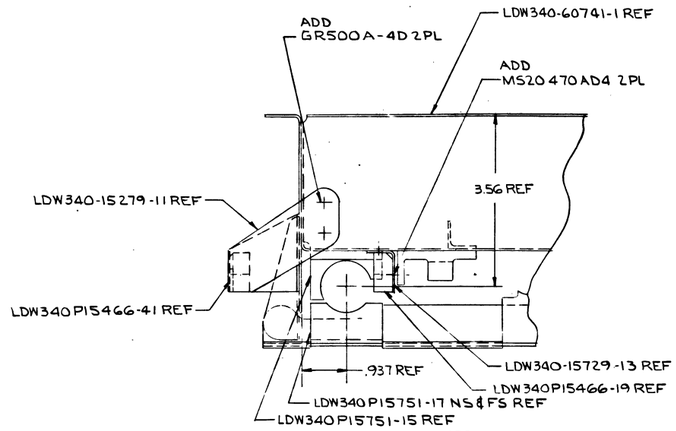
LDW200-55597-3 ASSY

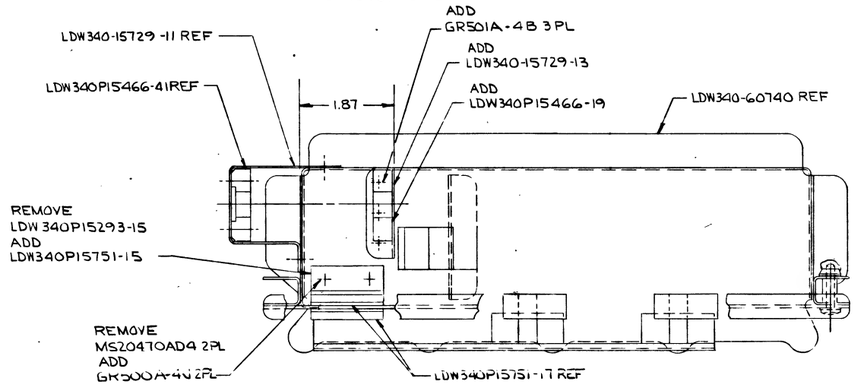
01702 NAS 9-1100

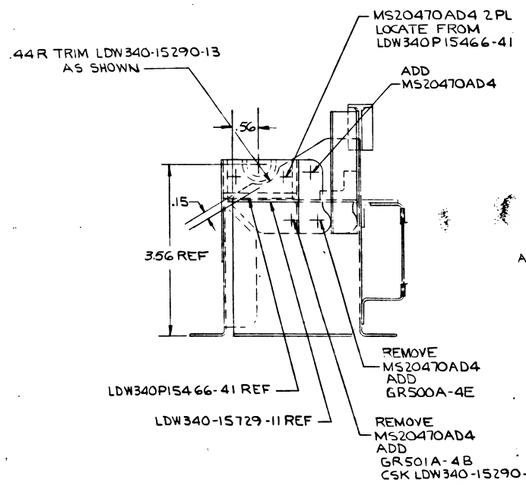
CODE IDENT NO.	DWG NO.	REV	SHEET
26512	LDW200-55597		3

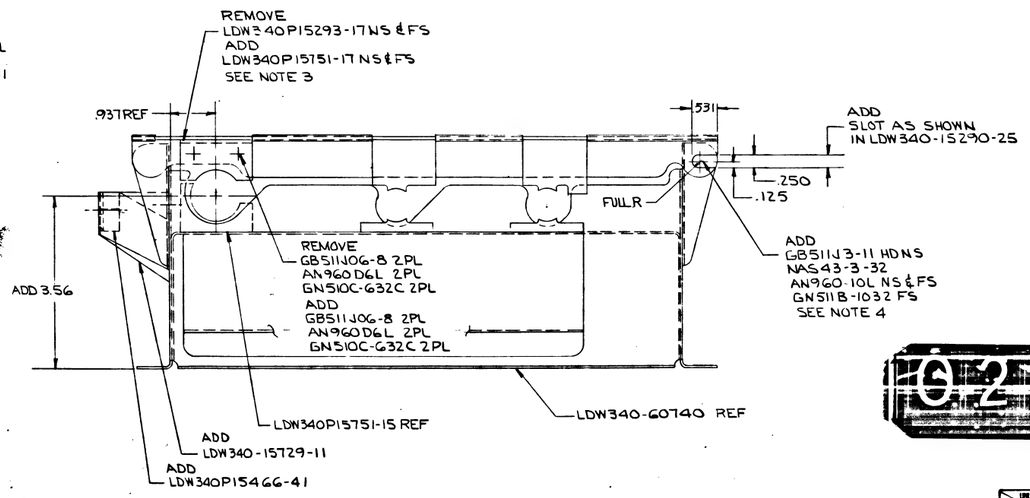
REVISIONS						
ZONE	LTR	DESCRIPTION	CPP CODE	MODEL	DATE	APPROVED

NOTES:
1. NO TOOLING HOLES PERMITTED IN PARTS.
2. CREW HAZARD - PARTS REQUIRE SPECIAL HANDLING TO INSURE REMOVAL OF ALL SHARP EDGES AND BURRS.
3. BOND IN PLACE USING EPON 934 PER LSP14-22500. ROOM TEMPERATURE CURE PERMITTED.
4. COAT PROTRUDING THREADS OF GB5IIJ-3 FASTENERS WITH EPON 934 PER LSP14-22500. ROOM TEMPERATURE CURE PERMITTED.









LDW200-55597-1 ASSY

GS 702 NAS 9-1100

FOR PARTS LIST, USAGE DATA, AND DWG SH STATUS, SEE DOCUMENT SAME NUMBER PREFIXED PL

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES			CONTRACT NO.	GRUMMAN AEROSPACE CORPORATION BETHPAGE, NEW YORK 11714
LINEAR TOL	.XX	± .03	DRAWN BY	
	.XXX	± .010	LAYOUT BY	
ANGULAR TOL		± 0°30'	CHECKED BY	
TOL ON LOFTED DELINEATIONS IS			TM LEADER	
			REL GROUP	
			PROJ ENGR	SIZE J | CODE IDENT NO. 26512 | LDW200-55597
			GOVT APPD	SCALE FULL | SHEET 3 OF 3

DISTR LIST #

PRINTING INFO ONLY
DWG SIZE 24 X 36
FULL SIZE SHEET AREA (IN SQ IN)= 24.5 SQ FT
½ SIZE SHEET AREA (½ OF FULL)= 6.5 SQ FT

GRUMMAN AEROSPACE CORPORATION

ENG 12.1 REV 3-65

CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LDW200-55597 | EO NO. B2

CONTROL INFO NO. LDW340-10162

ON-1-1 IN F/D & B/M

LDW340P15293-13 WAS LDW340P15923-13

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCD5978 PKG 1

REASON FOR EO

CORRECTION OF CALLOUT

DESCRIPTION OF EO

ON-1-1 IN F/D & B/M LDW340P15293-13
WAS LDW340P15923-13

GAEC EO RELEASE

EFFECTIVITY				DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY									
PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.		REVISE DWG	RECORD EO	REWORK	SCRAP	DATE		SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
LM	LEM 7628	LM-12(42)		✓		NOT REQ'D				—	—	6-19-74	NM	—	6-19-74	GAC

PRIORITY C

DRAWING TITLE: SUPPORT ASSY CREW PROVISIONS ~D/S~ QUAD III PALLET REWORK OF LDW340-60740 & LDW340-60741

DRAWING NO. LDW200-55597

EO NO. B2

ISSUED BY M. SALVADOR

SECTION CREW PROVISIONS GROUP NO. 0356 PL 025

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

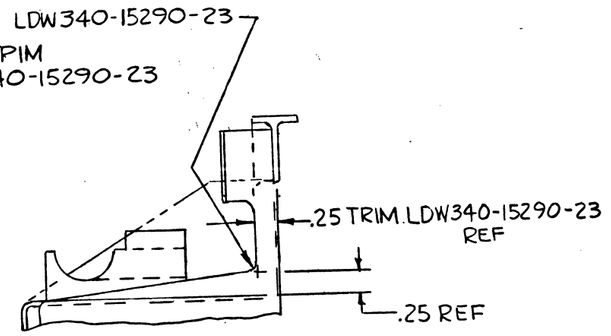
ENG 32.1 REV 3-68 **ENGINEERING ORDER**

DWG. NO. LDW200-55597 | EO NO. B3

CONTROL INFO NO. LM52-2709

IN F/D ON -1-1

S/B
.06R TRIM LDW340-15290-23
WAS .25R TPIM
LDW340-15290-23



DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD 5966

REASON FOR EO
TRIM LINES INTERSECT EXISTING RIVET HOLE

DESCRIPTION OF EO
.06R TRIM OF LDW340-15290-23 WAS .25R TRIM

EFFECTIVITY

PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 7628	LM12 (42)

DRAWING CHANGE REQD: ✓ REVISE DWG | RECORD EO
DISPOSITION OF PARTS: ✓ REWORK | SCRAP

APPROVED BY / DATE: NM 4/24/66 | GROUP LEADER | STRESS GROUP | LIAISON ENGRG | PROJ ENGRG

SUPPORT | RELIAB GROUP

PRIORITY: C

DRAWING TITLE: SUPPORT ASSY, CREW PROV. D/S QUAD III PALLET

DRAWING NO.: LDW200-55597

EO RELEASE: NM 4/24/66 | GAEC

EO NO.: B3

ISSUED BY G. EPSTEIN 713-333-4428 SECTION LIAISON GROUP NO. 087 PL 052

01

NAS 9-1100

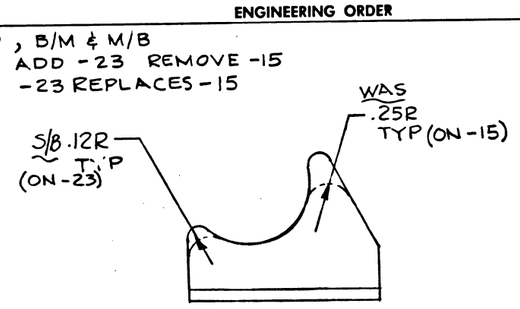
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 22.1 REV 3-65

ENGINEERING ORDER

DWG. NO.	NOTED		EO NO.	—
CONTROL INFO NO.	LM52-2708			

IN F/D , B/M & M/B
ADD -23 REMOVE -15
-23 REPLACES -15



-23 SAME AS -15
EXCEPT AS SHOWN

DWG NO	EO NO
LDW340P15772	A 2 ✓

NHA DESCRIPTION	NHA TITLE	NHA DWG NO	EO NO
ON -3-1 IN F/D & B/M LDW340P15772-23 WAS -15	SUPPORT ASSY CREW PROV D/S QUAD III PALLET	LDW200-55597	B 4 ✓

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD5966

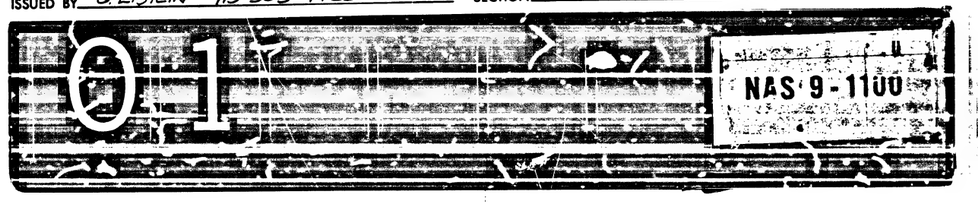
REASON FOR EO: ADDITIONAL SUPPORT REQD

DESCRIPTION OF EO: ADDED -23 DELETED -15

GAEC EO RELEASE

EFFECTIVITY				DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY										
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	REVISE DWG	RECORD EO	REWORK	-15 SCRAP	DATE				SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ. ENGRG	GAC
LM	LFM 767A	LM12 (42)		✓														
				PRIORITY	DRAWING TITLE									DRAWING NO.				EO NO.
				C	SUPPORT PALLET QUAD III TONGS & EXT HANDLE C.P. D.S. LEV									NOTED				—

ISSUED BY G. EPSTEIN 713-333-4428 SECTION LIAISON GROUP NO. 0827 PL 052



GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

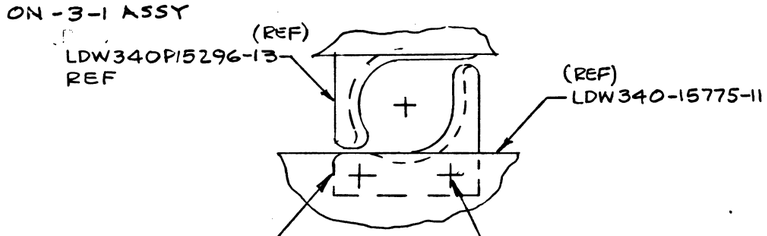
ENG 22.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200-55597 | EO NO. B5

CONTROL INFO NO. LM52-2713

ON-3-1 ASSY



DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD 5966

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
TO IMPROVE FIT OF MATING PARTS	ON -3-1 ASSY ADDED SHIM .09 MAX.	

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY / DATE: SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
LM	LFM762B	LM12(42)				✓								

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SUPPORT ASSY C/P D/S QUAD III PALLET REWORK OF LDW340-60790 & LDW340-60791	LDW200-55597	B5

ISSUED BY G. EPSTEIN 713-333-4428 SECTION LIAISON GROUP NO. 0827 PL 052

01

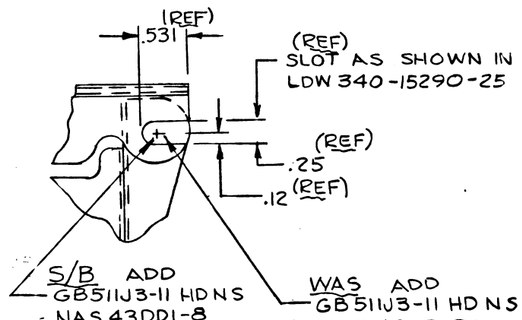
NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW200-55597 | EO NO. B6
CONTROL INFO NO. LM52-2714

ENG 32.2 REV 3-65

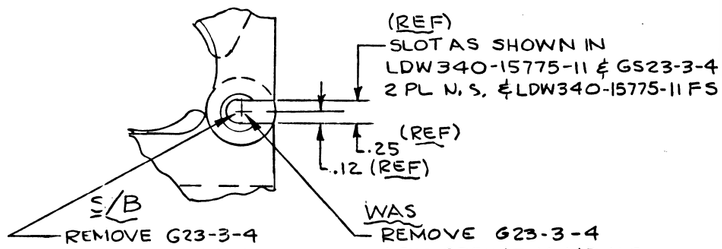
ON -1-1 ASSY IN F/D & B/M
ADD NAS43DD1-8
AS SHOWN



S/B ADD
GB511J3-11 HD NS
NAS43DD1-8
(OPEN 1D TO .192 THRU .198)
NAS43-3-32
AN960-10L NS & FS
GN511B-1032 FS
SEE NOTE 4

WAS ADD
GB511J3-11 HD NS
NAS43-3-32
AN960-10L NS & FS
GN511B-1032 FS
SEE NOTE 4

ON -3-1 ASSY IN F/D & B/M
ADD NAS43DD1-8 (2) & GB511J3-12 WAS GB511J3-10



S/B
REMOVE G23-3-4
ADD GB511J3-12 HD NS
GS23-3-4 2PL SEE NOTE 3
NAS43-3-19
NAS43DD1-8 NS & FS
(OPEN 1D TO .192 THRU .198)
AN960-10L NS & FS
GN511B1032 FS
SEE NOTE 4

WAS
REMOVE G23-3-4
ADD GB511J3-10 HD NS
GS23-3-4 2PL SEE NOTE 3
NAS43-3-19
AN960-10L NS & FS
GN511B-1032 FS
SEE NOTE 4

NAS 9-1100

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	LCD5966

REASON FOR EO: TO IMPROVE OPERATION

DESCRIPTION OF EO: ON -1-1 ADDED NAS43DD1-8
ON -3-1 ADDED NAS43DD1-8 (2) & GB511J3-12 WAS GB511J3-10

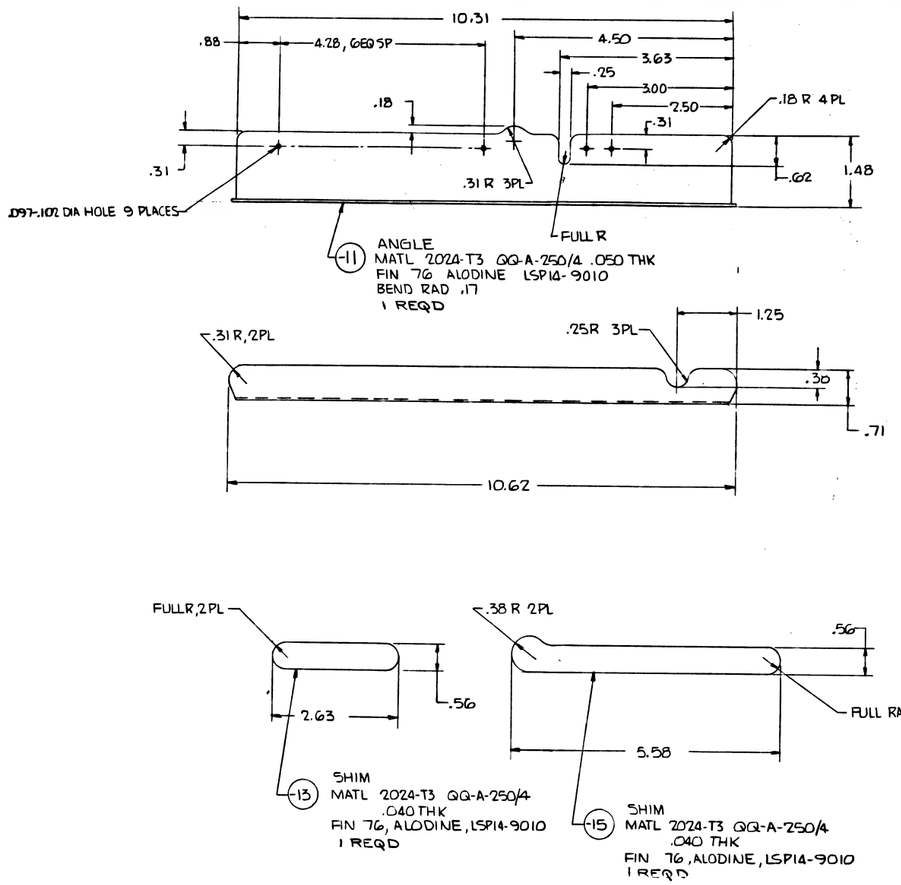
GAEC EO RELEASE: 6/27/72

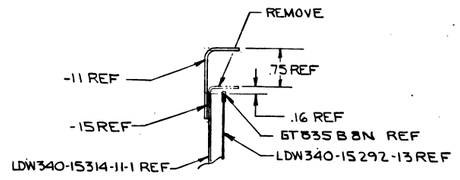
MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
LM	LFM762B	LM12 (42		✓		✓	

APPROVED BY / DATE: SUPPORT | RELIAB. GROUP | GROUP LEADER | STRESS GROUP | LIAISON ENGRG | PROJ ENGRG | GOVT

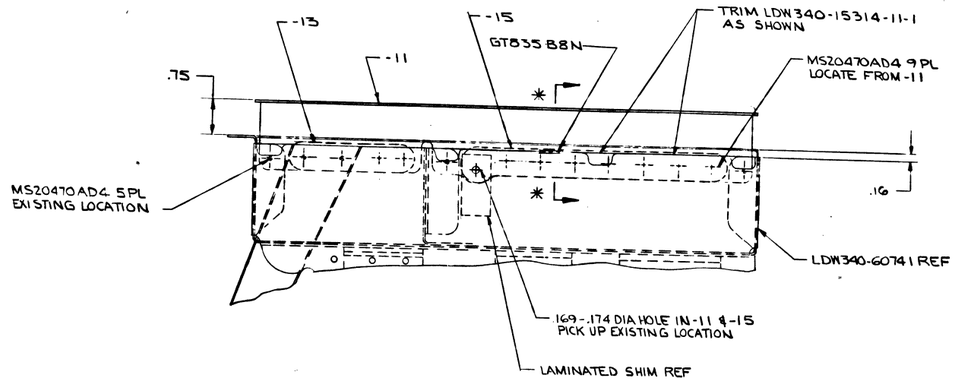
PRIORITY: C
DRAWING TITLE: SUPPORT ASSY C/P-D/S-QUAD III PALLET REWORK OF LDW340-60740 & LDW340-60741
DRAWING NO.: LDW200-55597
EO NO.: B6

ISSUED BY G. EPSTEIN 713-333-4128 SECTION LIAISON GROUP NO. 0827 PL 052

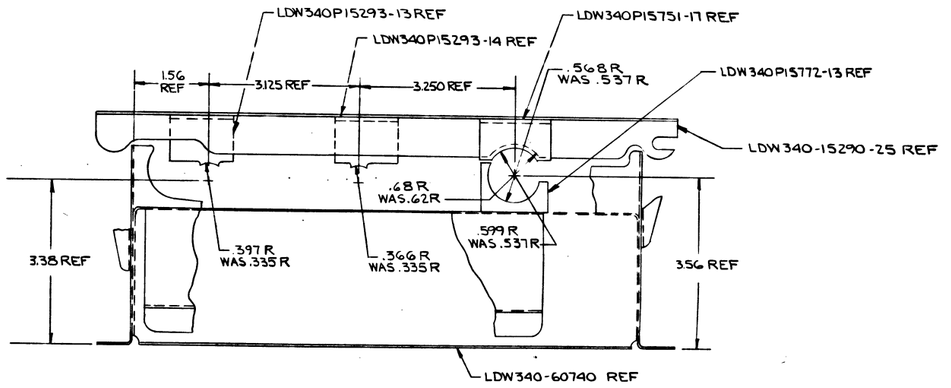




SECT * - *



LDW200-55597-3-2 ASSY



LDW200-55597-1-2 ASSY

DESCRIPTION OF
ADDED .397R TO
ADDED .366R TO
ADDED .599 R T
ADDED .568R T
ADDED .68 R
TRIMMED VERTI
.16
ADDED MS2047
ADDED SECT
AVAILABLE SP
ADDED GT83

GRUMMAN AEROSP
CODE IDE
ENGINEERI

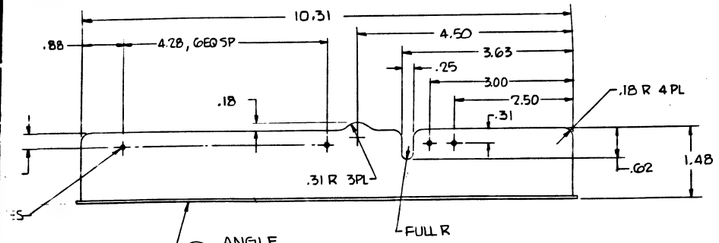
NAS 9-1100

			V1.0
			IN FLD. SY
			-11-16 S-1
			ADDED -11
To Eliminate Interference Between Six Hammer Pull			
LM	LDW 767	LM-12 (42)	
			C

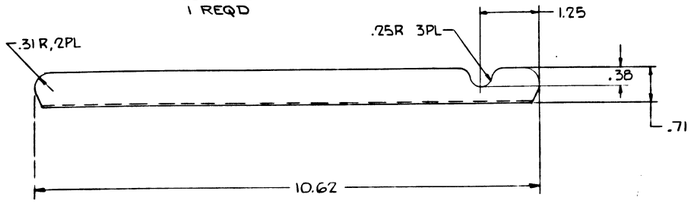
ISSUED BY A. VARVARO

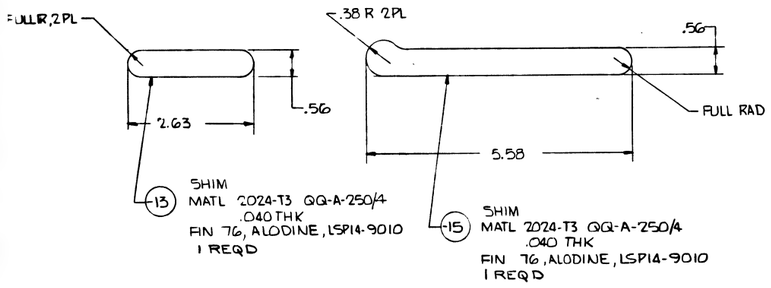
GRUMMAN AEROSPACE CORPORATION
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LDW200-55597 REV
CONTRACT INTO NO. LDW340-10188



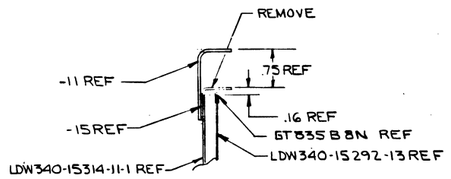
(-11) ANGLE
MATL 2024-T3 QQ-A-250/4 .050 THK
FIN 76 ALODINE LSP14-9010
BEND RAD .17
1 REQD



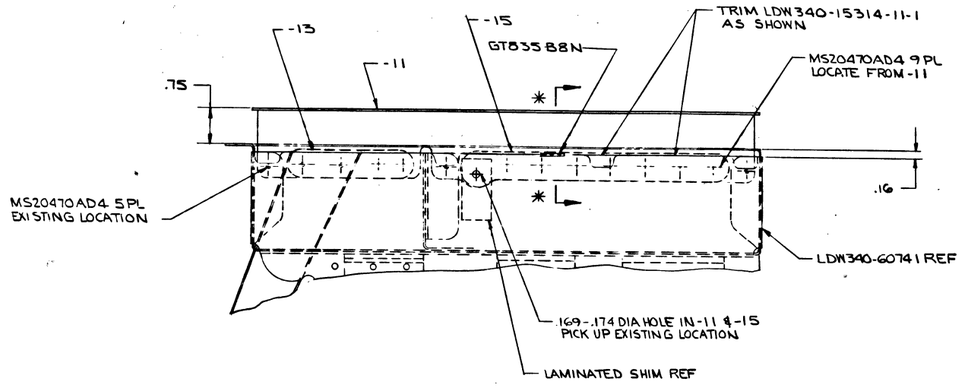


(-13) SHIM
MATL 2024-T3 QQ-A-250/4
.040 THK
FIN 76, ALODINE, LSP14-9010
1 REQD

(-15) SHIM
MATL 2024-T3 QQ-A-250/4
.040 THK
FIN 76, ALODINE, LSP14-9010
1 REQD



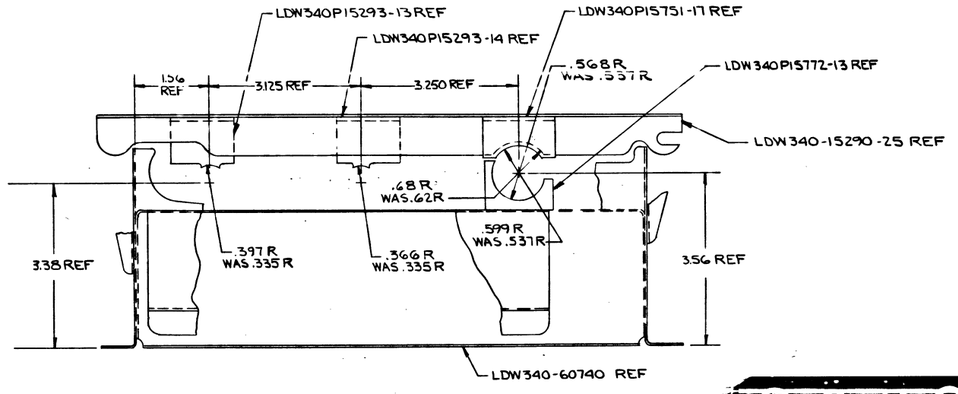
SECT * - *



LDW200-55597-3-2 ASSY

DESCRIPTION OF EO CONTD.

ADDED .397R TO LDW340P15293-13
ADDED .366R TO LDW340P15293-14
ADDED .599R TO LDW340P15751-17
ADDED .568R TO LDW340P15772-13
ADDED .68R TO LDW340-15290-25
TRIMMED VERTICAL LEG OF LDW340-15314-11-1 .16
ADDED MS20470AD4 RIVETS.
ADDED SECT *-* USE NEXT AVAILABLE SECT LETTER
ADDED GT835 B8N



LDW200-55597-1-2 ASSY

NAS 9-1100

M.C.D. LDW340-10188
IN FLD, BAM 4 MOD BLK REVISED
-1-1 & -3-1 ADDED -1-2 & -3-2, IN FLD & BAM
ADDED -11, -13 & -15 QTY 1 EA "UNIT ABOVE"

To Eliminate Interference Between GSE & Handling Rails

LM | LFM 76 | LM-12 (42)

SUPPORT ASSY (USED IN PALLET REMOVES LDW340-60740 AND LDW340-60741)
LDW200-55597

ISSUED BY A. VARVARO
SECTION CREW REVISIONS GROUP NO. 0350

GRUMMAN AEROSPACE CORPORATION

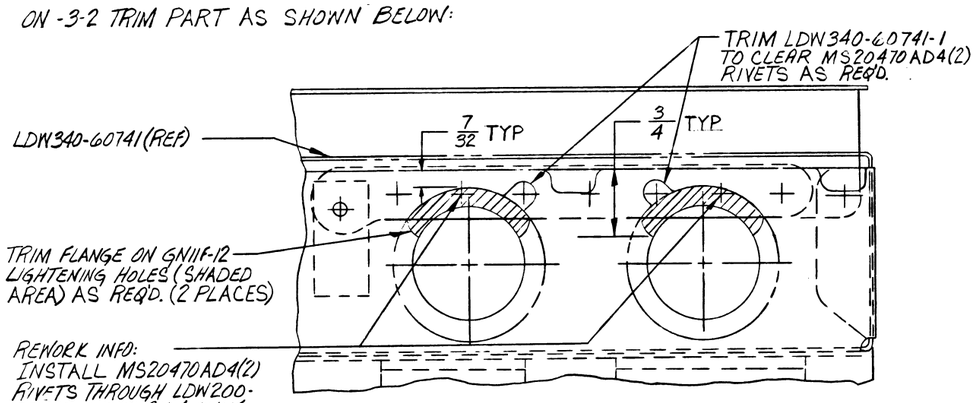
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW200-55597		EO NO. B8
CONTROL INFO NO. LDW340-10208		

ON -3-2 TRIM PART AS SHOWN BELOW:



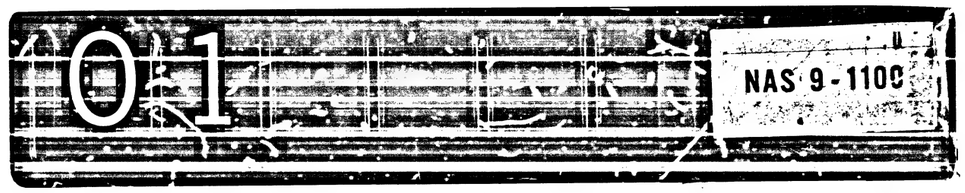
LDW200-55597-3-2 ASSY

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	LCO# 5978 (PKG #1)

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE (2)
TO ALLOW FOR INSTALLATION OF SUPPORT REF. DR#49	ON-3-2 IN F/D TRIMMED FLANGES ON LIGHTENING HOLES & TRIMMED LDW340-60741-1 TO CLEAR RIVETS.	

EFFECTIVITY			DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	REVISE DWG	RECORD EO	REWORK	SCRAP	DATE			SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
LM	LEM#767A	LM-12(42)	✓		✓		7-18-72	7/18/72				AV	NM		NH 7-18-72
			PRIORITY C	DRAWING TITLE: SUPPORT ASSY C.P. QUAD III PALLET								DRAWING NO. LDW200-55597			ED NO B8

ISSUED BY J. BEVILACQUA, X9481 SECTION CREW PROV GROUP NO. 0356 PL 025



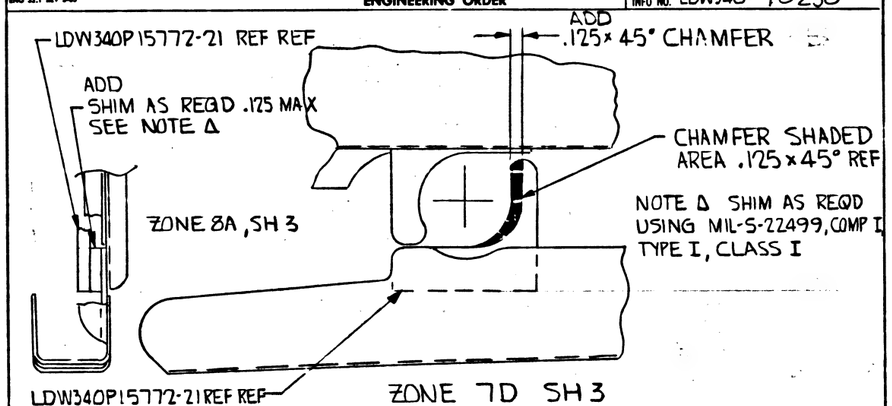
GRUMMAN AEROSPACE CORPORATION

CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LDW200-55597 | EO NO. 89

CONTROL INFO NO. LDW340-10230



DETAIL SPEC REQ | CL II ENGRG CNG | CL I ENGRG CNG | ✓ LCD 5727 PKG 1

REASON FOR EO: FACILITATE ASSY

DESCRIPTION OF EO: IN FLD ADDED NOTE Δ CHAMFERED LDW340P15772-21 .125 x 45°

GAEC EO RELEASE (a)

EFFECTIVITY			DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	REVISE DWG	RECORD EO	REWORK	SCRAP	DATE			SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
LM	LFM 751A	LM-12 42										OK 7-25-72	NM 7/25/72		DM 7-25-72
			✓		✓										GAC

PRIORITY: C

DRAWING TITLE: SUPPORT ASSY C/P-D/S QUAD III REWORK

DRAWING NO.: LDW200-55597

EO NO.: 89

ISSUED BY: A. VARVARO X9481

SECTION: CREW PROVISIONS

GROUP NO.: 0356 PL: 025

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.2 REV 3-65

DWG. NO. LEO 340 | EO NO. 868
CONTROL INFO NO. LDW 340-10148

IN M00/BLK ON INDICATED DRAWINGS & THEIR EO'S
REVISE LCD AS SHOWN BELOW

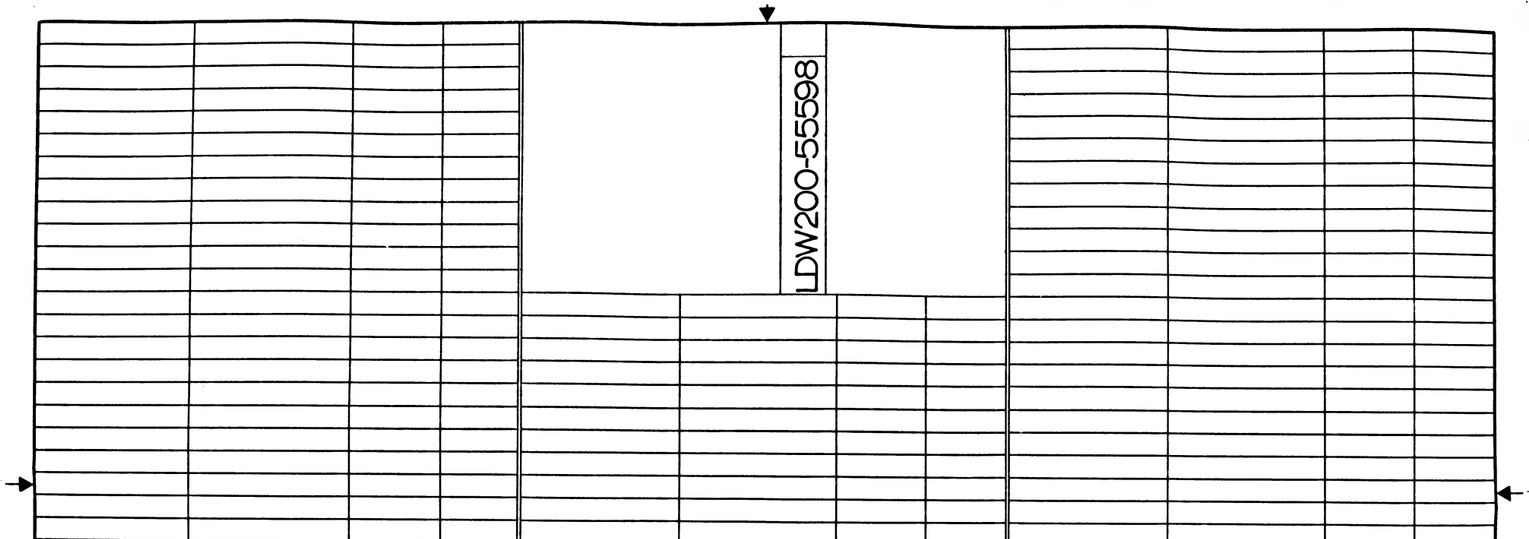
	DWG NO * EO NO		CONTROL NO.	LCD# WAS **	LCD# IS ***	EO#
✓	LDW340 P15429	B5	LDW340-10027	5966	5703 LFM657	B6
✓	LDW 340-60719	C2	LDW340-10026	5966	5703 LFM657	
	LDW 340-60719	C4	LDW 340-10129	5966	5703 LFM657	C5
	LDW 340-60719	C3	LDW 340-10098	5927	5703 LFM657	
✓	LDW 340P15466	B3	LDW340-10070	5927	5966 LFM762	
	LDW 340P15466	B4	LDW340-10065	5927	5966 LFM762	B7
✓	LDW 340-60721	D7	LDW340-10080	5927	5986 LFM771	E1
✓	LDW 340 M15375	A3	LDW 340-10088	5966	5986 LFM 771	A4
✓	LDW 340 60643	DDC*B	———	5966	5986 LFM 771	C3
✓	LDW 340-60794	A7	LDW 340-10087	5966	5986 LFM 771	A9
✓	LDW 340 M15737	ND	———	5966	5986 LFM 771	A1
✓	LDW 340-60784	DDC*A	———	5966	5986 LFM 771	B3
✓	LDW 340-P15744	ND	———	5966	5986 LFM 771	A1
✓	LDW 340 P15747	A2	LDW340-10102	5963	5986 LFM 771	A3
✓	LDW 340-15727	A1	LDW340-10118	5966	5986 LFM 771	A3
✓	LDW 340-60626	H7	LDW 340-10121	5966	5986 LFM 771	
	LDW 340-60626	H6	LDW 340-10083	5966	5986 LFM 771	H9
✓	LDW 200-55397	ND	———	5966	5986 LFM 771	B1

NAS 9-1100
LEO

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓ LCO NOTED ABOVE
REASON FOR EO: IDENTIFY PROPER LCD.					DESCRIPTION OF EO: IN M00/BLK FOR DWG EO# * REMOVED LCD# ** AND ADDED LCD# ***

EFFECTIVITY				DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								GAEC EO RELEASE
PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.		REVISE DWG	RECORD EO	REWORK	SCRAP	DATE		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
LM	LEM NOTED ABOVE	LM 12 (42)		✓		NOT REQ'D		4.2.72				4/5/72			4-7-72	6-9-72
				PRIORITY C		DRAWING TITLE: NOTED						DRAWING NO.: LEO 340				EO NO. 868

ISSUED BY B. R. Savine X9481 SECTION CREW PROV GROUP NO. 0356 PL 025



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM 770	NONE	LM-1Z (4'4)	1
PART NO. LDW200-55598-1		GAEC SCH NO.	

WORK PKG FUNCTION NO. 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00									
REV										
SHEET	2.00	2.01								
REV										
SHEET	3.00	4.00								
REV										

LAST SECT LTR USED	M	GRUMMAN REL INFO
LAST DASH NO. USED	-15	PRIM NO. 299

ENG 77.1 12-65

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
~~FRACTIONS~~ - DECIMALS – ANGLES
.XX=±.03, .XXX=±.010, ±0° 30'

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 5985, PKG 1	

CONTRACT NO. NAS9-1100		LINE ITEM	DOCUMENTATION TYPE II
DRAWN BY	J. BIANCHINO P. CARSTENSEN	TECH DIR	
LAYOUT BY	B. SAVOIE		
CHECKED BY	6-12-72		
GP LEADER	6-13-72		
SUBSYS MGR			
STRUCTURES	R.K. 6-14-72	PROJ ENGR	6/13/72
STRUCTURES	C.W. 6-14-72	REL GROUP	6/15/72
MATERIALS			

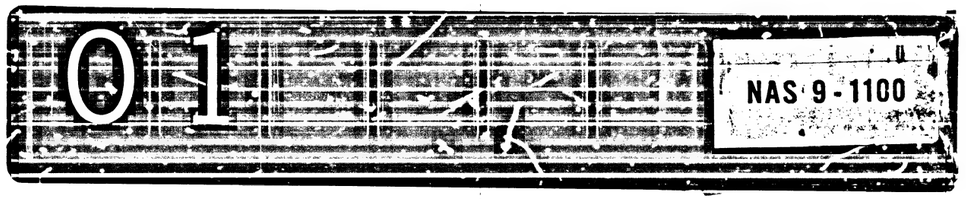
© GRUMMAN AEROSPACE CORPORATION
BETHPAGE, L. I., NEW YORK

SUPPORT INSTALLATION
CREW PROVISIONS ~ DESCENT STAGE
MESA ~ REWORK OF LDW340-60769

SIZE	CODE IDENT NO.	
B	26512	LDW200-55598

SCALE NONE SHEET 1.00 OF 5

025 0356 Distri. List #2



QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
1		LDW340M15351-11	E	FITTING							13B
1		LDW340M15350-11		FITTING							16B
4		LDW340-11679-13		MOUNT							10, 13B, 16B
4		LDW200-55598-15		SHIM	MAKE FROM	GS12D015E	015A		NONE	76	10, 13A, 16A
1		-13		ANGLE	AL ALLOY SH	QQ-A-250/4	2024	.080 x 3 x 20	T42	76	13B/17D
1		-11		ANGLE	AL ALLOY SH	QQ-A-250/4	2024	.080 x 2 x 20	T42	76	13B/17D
		LDW200-55598-1	E	SUPPORT INSTL					NONE	NONE	
-1											

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
76	ALODINE	LSP14-9010
T42	AL HEAT TREAT	MIL-H-6088

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55598

SCALE NONE SHEET 2.00

ENG 77.2 7-64

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
AR		MS20470AD5	E	RIVET	GOVT STD						
AR		MS20470AD4									
AR		MS20470AD3									
AR		MS20426AD4		RIVET							
4		MS21042L08		NUT							
8		MS21042L06		NUT							
5		MS21042C6		NUT							
4		AN960D8		WASHER							
5		AN960D6L		WASHER							
8		AN960D6		WASHER	GOVT STD						
3		GS12D008D202A		SHIM	GRUMMAN STD						
2		GR500L5-6		RIVET							
34		GR500L4-4									
21		GR500L4-3									
76		GR500L4-2		RIVET							
2		GB511J06-12		BOLT							
2		GB511J06-10		BOLT							
4		GB511J08-21		BOLT							
2		GB511J06-7									
2		GB511J06-5									
2		GB511J06-4									
3		GB511J06-3	E	BOLT	GRUMMAN STD						
-1											

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

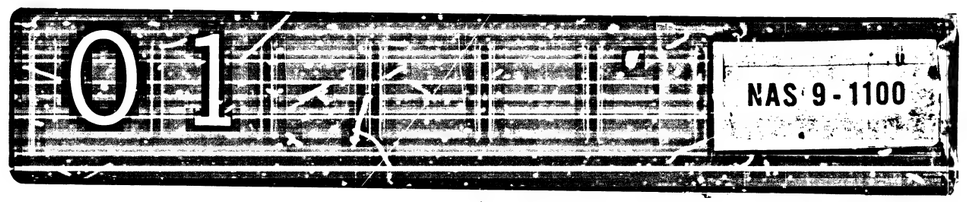
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55598

SCALE NONE SHEET 2.01

ENG 77.2 7-64



REMOVE GR500L5-8
ADD GR500L5-6

REMOVE MS20470AD4,6PC
ADD MS20470AD4,6PC

REMOVE MS27983-8N
GB510F08-3
MS21042L08
GN510CT832

REMOVE LDW340P15073-13

REMOVE LDW340-60626-7

REMOVE GB511J08-3
AN960D8L,2PC
MS21042L08
GN510CT832

REMOVE GR500L5-8
ADD GR500L5-6

LDW340-60769 REF

REMOVE LDW340-60626-5

REMOVE MS27983-8N
GB510F08-5
MS21042L08
GN510CT832

REMOVE GB511J08-5
AN960D8L,2PC
MS21042L08
GN510CT832

VIEW B-B ZONE 1A,SH3

REMOVE MS20470AD4,2PC
ADD MS20470AD4,2PC

REMOVE LDW340P15073-19

REMOVE LDW340-11679-13,4PC

REMOVE MS20470AD4 7PC
ADD MS20470AD4,7PC

LDW340-60769 REF

SECTION A-A ZONE 1A,SH3

REMOVE MS20470AD4,2PC
ADD MS20470AD4,2PC

REMOVE MS20470DD4,2PC
ADD MS20470AD4,2PC

REMOVE MS20470DD4,3PC
ADD MS20470AD4,3PC

LDW340-60769 REF

REMOVE MS20470AD4,2PC
ADD MS20470AD4,2PC

REMOVE GR500L4-3
ADD GR500L4-2

REMOVE LDW340-60602-7

REMOVE LDW340P10973-23

REMOVE MS20470DD4,2PC
ADD MS20470AD4,2PC

REMOVE MS20470DD4,3PC
ADD MS20470AD4,3PC

REMOVE MS20470AD4,2PC
ADD MS20470AD4,2PC

REMOVE MS20470AD3,2PC
ADD MS20470AD3,2PC

REMOVE LDW340P10973-23

DETAIL C ZONE 1A,SH3

REMOVE LDW340-15122-17

REMOVE LDW340M15090-11

REMOVE LDW340-15122-11

REMOVE LDW340-15122-15

REMOVE LDW340-15122-13

REMOVE LDW340-15157-17

REMOVE GS830G-25C3,2PC

REMOVE LDW340-11999-29

REMOVE GS830G-25C3

REMOVE LDW340-15157-19

REMOVE GL10B2-19

REMOVE GS531B-2,4PC

REMOVE LDW340-11999-29

REMOVE GS830G-25C3

REMOVE GL10B2-19

REMOVE GS830CF5-4

VIEW F-F ZONE 4C,SH3

01702 NAS 9-1100

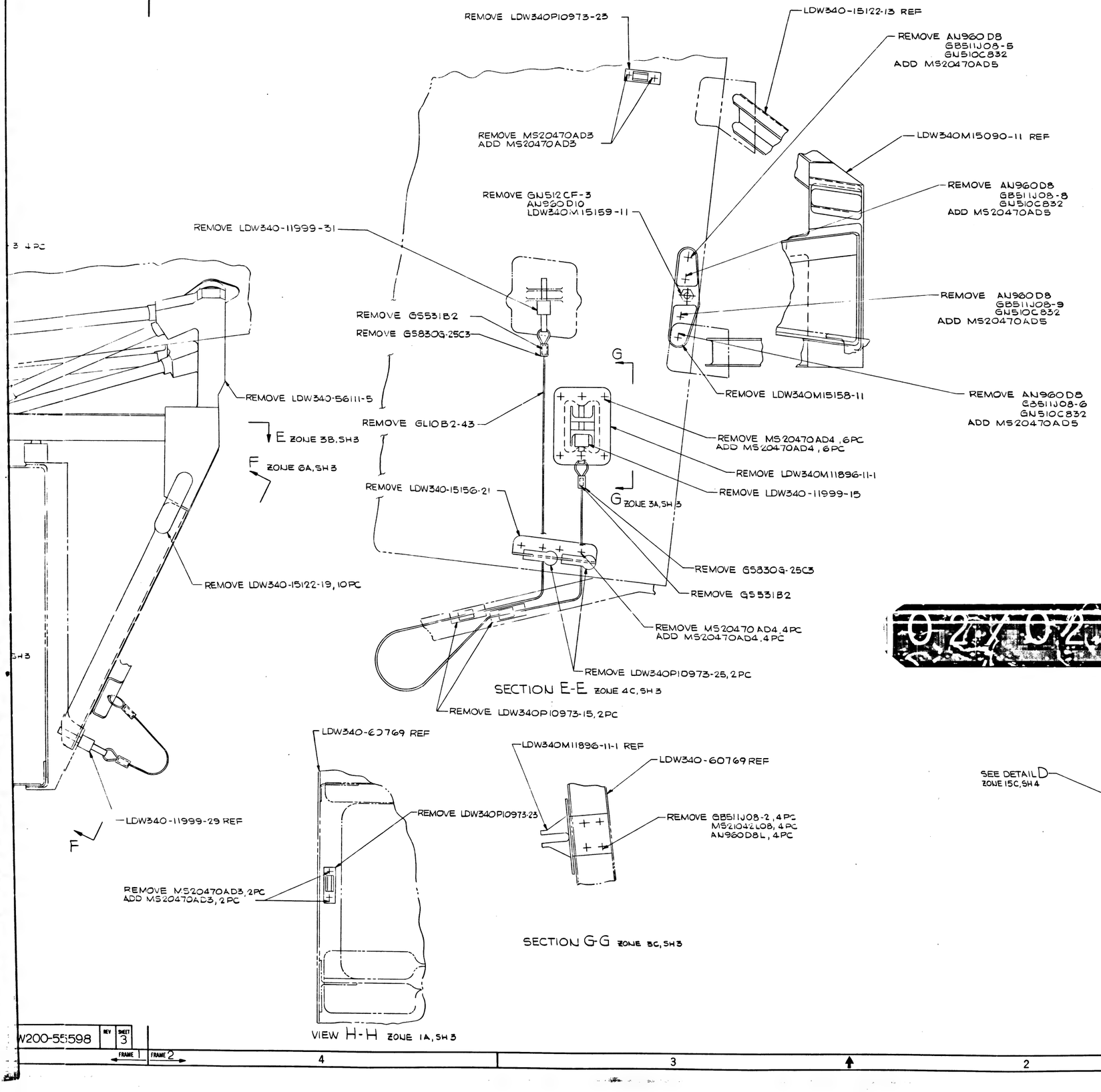
CODE IDENT NO	DWG NO	REV	SHEET
26512	LDW200-55598		3

ENG 770-12 REV 11-70

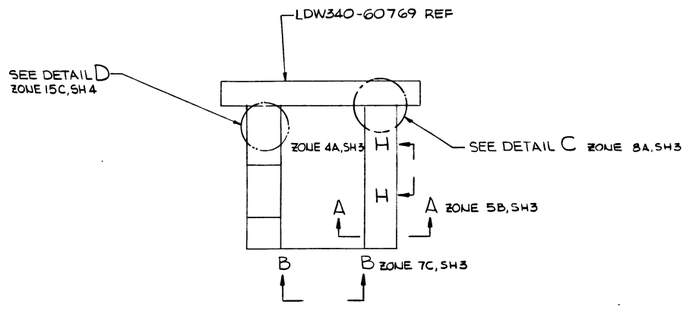
REVISIONS						
ZONE	LTR	DESCRIPTION	BY/ CODE	MODEL	DATE	APPROVED

NOTES

1. CREW HAZARD - PARTS REQUIRE SPECIAL HANDLING TO INSURE REMOVAL OF ALL SHARP EDGES AND BURRS.
2. NO TOOLING HOLES PERMITTED IN PARTS.
3. INSTALL FASTENERS PER LSP14-15302 AND LSP14-15303.
4. DIMENSIONS TO COORDINATE WITH GAC TOOL.



NAS 9-1100



FOR ENGINEERING REF ONLY
SCALE: NONE

USE PARTS LIST, STOCK DATA, AND BILL OF MATERIAL AS DOCUMENT SOURCE INFORMATION.

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES			CONTRACT NO.	GRUMMAN AEROSPACE CORPORATION BETHPAGE, NEW YORK 11714
LINEAR TOL	XX	± .03	DRAWN BY	
	.XXX	± .010	LAYOUT BY	
ANGULAR TOL		± 0° 30'	CHECKED BY	
TOL ON LOFTED DELINEATIONS IS			SA-LEADER	
			REL GRDWR	
			PROJ ENGR	
			GOVT APPD	

SIZE	CODE IDENT NO.	
J	26512	LDW200-55598

SCALE FULL UNITED | SHEET 3 OF

DISTR LIST #

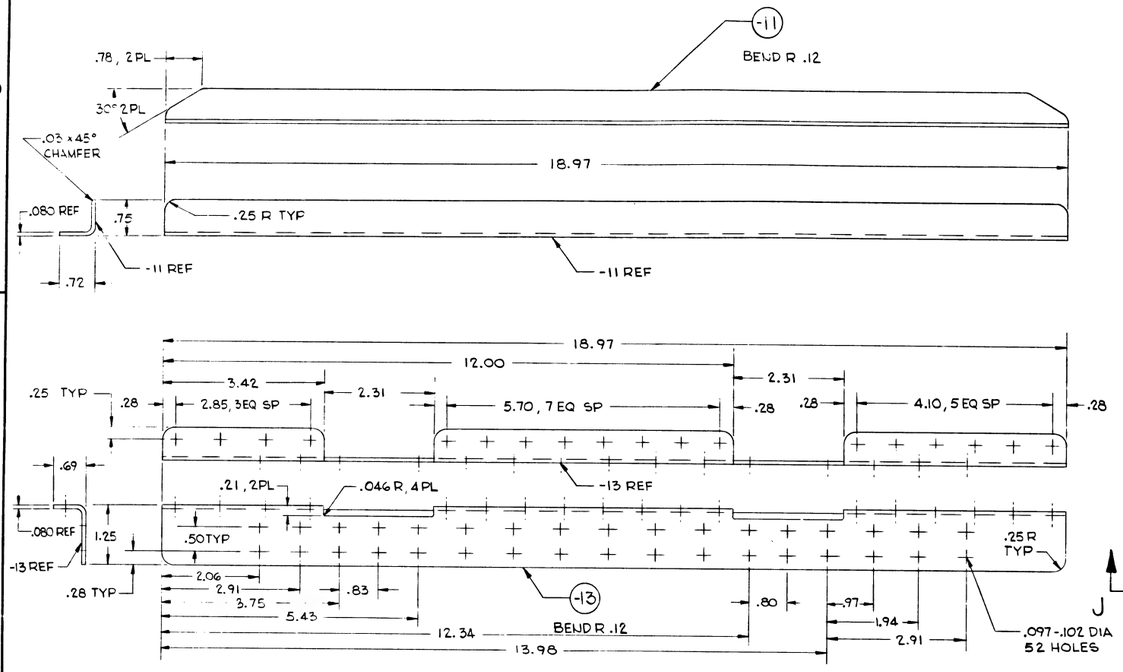
PRINTING INFO ONLY
DWG SIZE 34 X 88
FULL SIZE SHEET AREA (36 X 34)= 23.5 SQ FT
½ SIZE SHEET AREA (½ OF FULL)= 5.50 FT

LDW200-55598 | REV | SHEET 3

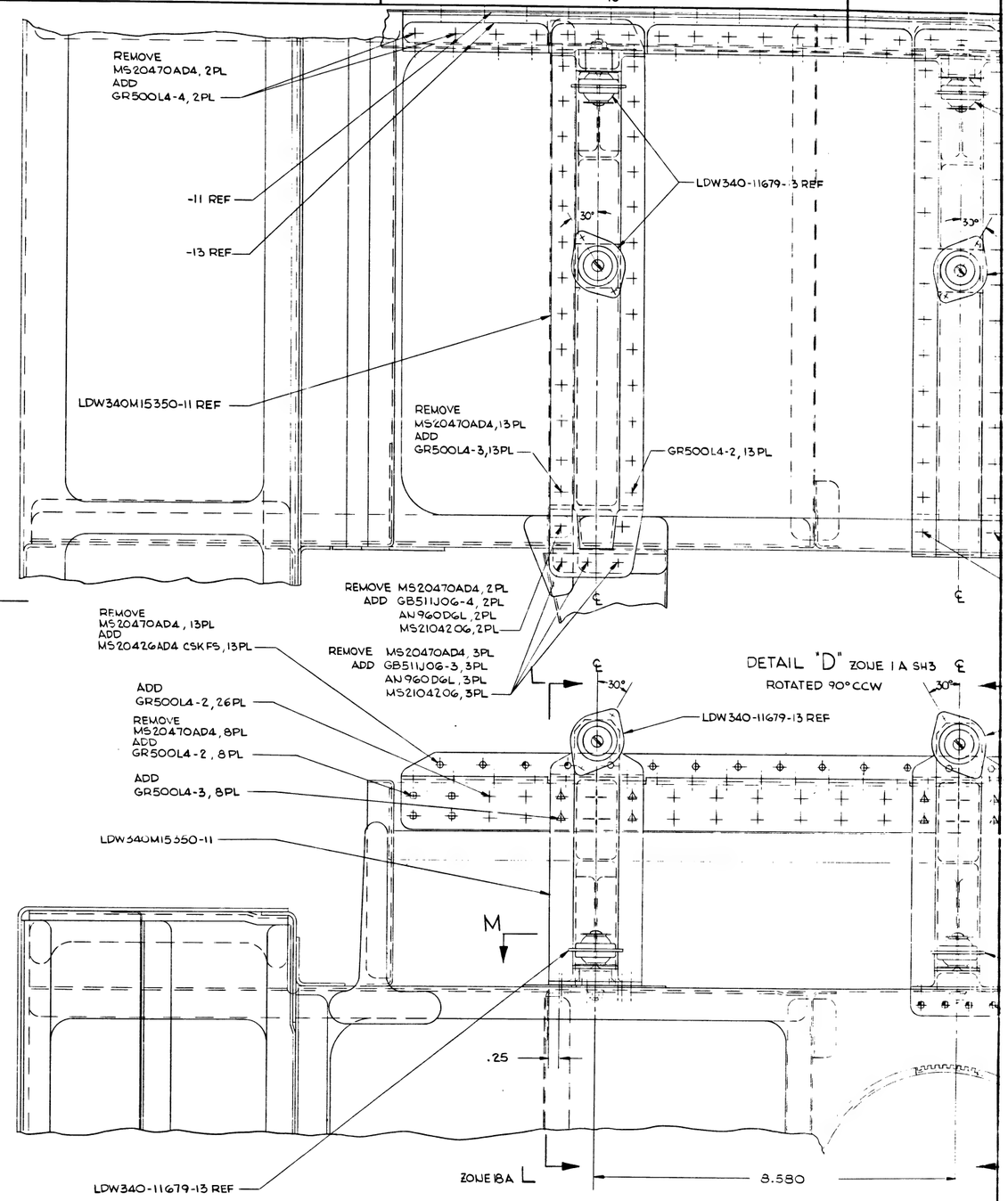
FRAME 1 | FRAME 2

LDW200-55598 | LDW200-55598 | LDW200-55598

TM3000-22298 | 3 OF 3 SHTS | 2 OF 2 SHTS

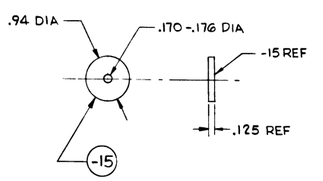


SECTION L-L ZONE 15A



DETAIL "D" ZONE 1A SH3
ROTATED 90° CCW

VIEW J-J ZONE 14C



01/02 NAS 9-1100

LDW200-55598-1 INSTL

CODE IDENT NO.	DWG NO.	REV	SHEET
26512	LDW200-55598		4

FRAME FRAME

ENG 770.12 REV 11-70

REVISIONS						
ZONE	LTR	DESCRIPTION	EFF CODE	MODEL	DATE	APPROVED

REMOVE
MS20470AD4,2PL
ADD
GR500L4-4,2PL

ADD
GR500L4-4,20PL

LDW340-11679-13 REF

LDW340-60769-5 REF

GR500L4-2, 28 PL

J ZONE 15A

DETAIL "D" ZONE 1A SH3
ROTATED 90°CCW

LDW340-11679-13 REF

REMOVE
MS20426AD4, 5PL
ADD
MS20426AD4, 5PL

LDW200-55598-11

LDW200-55598-13

M ZONE 12C

LDW340M15351-11

LDW340-11679-13 REF

ADD
GR500L4-4, 4PL

LDW340-60769-5 REF

6.580

K ZONE 12A

ZONE 14C

598-1 INSTL

REMOVE
MS20470AD4
ADD
GR501L4-2

ADD
GR500L4-4

REMOVE
MS20470AD4,2PL
ADD
GR500L4-4,2PL

.50

LDW340-60769-5 REF

REMOVE
MS20470AD4,2PL
ADD
GR500L4-4,2PL

.48

ADD
GR500L4-4

LDW340M15351-11 REF

LDW340M15351-11 REF

SECTION M-M ZONE 14B

4.548
SEE NOTE 4

ADD
LDW340-11679-13

ADD
GB511J06-12, 2PL
AN960D6, 2PL
MS21042L06, 2PL

ADD
LDW200-55598-15, SHIM AS REQ'D

ADD
.1640-.1660 DIA
GB511J08-21
AN960D8, NS
MS21042L08
TORQUE TO 20-24 IN-LBS

-11 REF

ADD
GS12D008D202A
SHIM AS REQ'D

REMOVE
LDW340M11476-11-1
LDW340M11902-13

-13 REF

5.232
SEE NOTE 4

ADD
LDW340-11679-13

ADD
GB511J06-7, 2PL
AN960D6, 2PL
MS21042L06, 2PL

LDW340M15351-11 REF

LDW340-60769-5 REF

ADD
GS12D008D202A
SHIM AS REQ'D

ADD
.1640-.1660 DIA
GB511J08-21
AN960D8, NS
MS21042L08
TORQUE TO 20-24 IN-LBS

ADD
LDW200-55598-15
SHIM AS REQ'D

2265261 REF
STOWAGE MOUNT ASSY

SECTION K-K ZONE 4A

SYMBOL LEGEND

SYMBOLS ARE FOR LOCATION AND QUANTITIES ONLY

02/02 NAS 9-1100

FOR PARTS LIST, USAGE DATA, AND DWG SH STATUS, SEE DOCUMENT SHAE NUMBER PREFIXED PL

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES			CONTRACT NO.	GRUMMAN AEROSPACE CORPORATION BETHPAGE, NEW YORK 11714
LINEAR TOL	.XX	± .03	DRAWN BY	
	.XXX	± .010	LAYOUT BY	
ANGULAR TOL		± 0°30'	CHECKED BY	
TOL ON LOFTED DELINEATIONS IS			SR. LEADER	
			REL GROUP	
			PROJ ENGR	
			GOVT APP'D	

SIZE J | CODE IDENT NO 26512 | LDW200-55598

SCALE FULL | SHEET 1 OF

DISTR LIST # 1

PRINTING INFO ONLY
DWG SIZE 34 x 88
FULL SIZE SHEET AREA (IN. x IN.)= 23.5 SQ FT
½ SIZE SHEET AREA (IN. OF FULL)= 6 SQ FT

LDW200-55598 REV SHEET 4

FRAME ← FRAME →

D
C
B
A

LDW200-55598 ←
LDW200-55598
LDW200-55598

DWG NO 80228-00MSOO-LDW200 ON FICHE 3002 | SIZE J | SHEET NO 4

GRUMMAN AEROSPACE CORPORATION
CODE IDENT NO. 26512
ENGINEERING ORDER

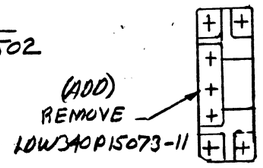
DWG. NO. LDW200-55598 | EO NO. A1
CONTROL INFO NO. LDW340-10175

ENG 22.1 REV 3-65

- IN FLO OF DWG ZONE C 7

  REMOVE LDW340-60626-7 S/B REMOVE LDW340-60626-7-3
  REMOVE LDW340-60626-5 S/B REMOVE LDW340-60626-5-3

- (ADD) REMOVE LDW340P15073-11
- IN FLO OF DWG ZONE A11
  2265261 REF S/B 2265261-502



DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	LCN #5985 PAGE 1

REASON FOR EO: FACILITATE REMOVAL OF PARTS

DESCRIPTION OF EO: IN FLO OF DWG SHEET 3 ADDED REMOVE LDW340-60626-5-3 & -7-3 WAS LDW340-60626-5 & -7 ADDED REMOVE LDW340P15073-11 ADDED 2265261-502

GAEC EO RELEASE

EFFECTIVITY				DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								GAEC EO RELEASE
PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.		REVISE DWG	RECORD EO	REWORK	SCRAP	DATE			SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
LM	LEM 770	LM 12(42)		✓		✓		6-20-72					NM			GAC
				PRIORITY C		DRAWING TITLE: SUPPORT INST'L CREW PROV - O.S. MESA - REWORK OF LDW340-60769							DRAWING NO. LDW200-55598			EO NO. A1

ISSUED BY B.R. SAVOIE SECTION CREW PROV GROUP NO 2356 PL 025

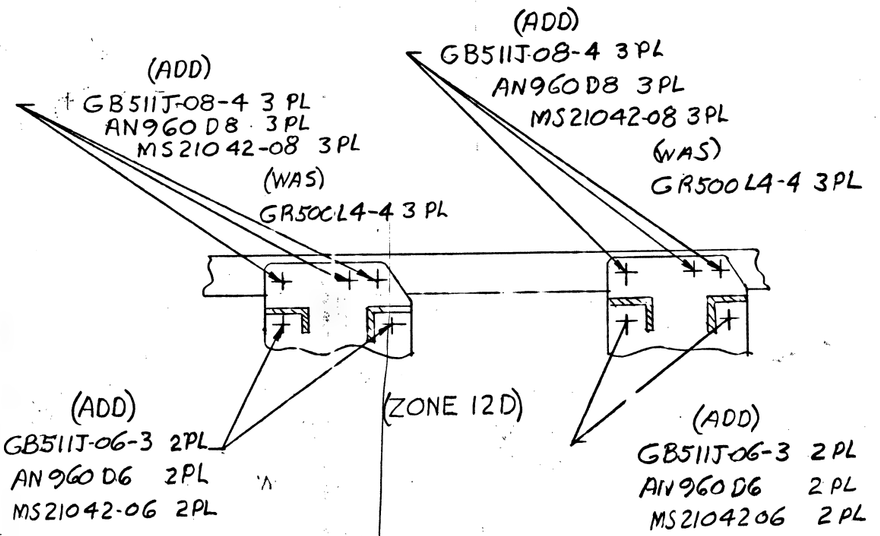
01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW200-55598 | EO NO. A2
CONTROL INFO NO. LDW340-10217

ENO 32.2 REV 3-65



- IN FLD & B/M ON-1 REVISE AS SHOWN ABOVE
- IN FLD & B/M ON-1 ZONE 15C 2 PL - GR500L4-3, 13 PL S/B GR500L4-3, 12 PL
- IN FLD & B/M ON-1 ZONE 14C GR500L4-2, 28 PL S/B GR500L4-2 26 PL
- IN FLD ZONE 15A ADD SEE NOTE *4 TO 8.850 DIM
- IN FLD ADD NOTE *

NOTE * APPLY GAC 1013 TO-1 INST'L PER LSP 14-4511
* USE NEXT AVAILABLE NOTE NO

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	LCO 5985 PKG 1

REASON FOR EO: FACILITATE INST'L

DESCRIPTION OF EO: IN FLD & B/M ON-1 ADDED GB511J-08-4 6 PL, AN960D8, 6PL & MS21042-08 6PL, GB511J-06-3 4PL, AN960-D6 4PL, MS21042-06 4 PL ADDED SEE NOTE 4 ZONE 15A & NOTE * REMOVED GB500L4-4 6PL & GR500L4-4 4PL

GAEC EO RELEASE

EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LFM 770A	LM 12(42)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: REWORK ✓ | SCRAP | SUPPORT | REPLAB OR SUP

APPROVED BY	GROUP LEADER	STRESS GRP SUP	LIAISON ENGRG	PROJ ENGRG
DATE	AV 7/20/72	NM 7/20/72		GAC 7-20-72

PRIORITY: C
DRAWING TITLE: SUPPORT INST'L C/P - O/S MESA - REWORK
DRAWING NO.: LDW 200-55598
EO NO.: A2

ISSUED BY: B. SAVOIE X9481 SECTION: CREW PROV GROUP NO. 0256 PL 025

GRUMMAN AEROSPACE CORPORATION
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO LDW 200-55598 | EO NO. A3
CONTROL INFO NO. LDW340-10231

THIS IS A REVISION OF EO A2

(15) NOTE * APPLY GAC1013 TO -1 INST'L PER LSP 14-4511,
NO PRIME REQ'D. DO NOT PAINT FOLLOWING PARTS;
2265261-502 & LDW340-11679-13 4 PL

(WAS) NOTE * APPLY GAC1013 TO -1 INST'L PER LSP-14-4511

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD 5985 PKG 1

REASON FOR EO: CLARIFY INTENT OF EO A2

DESCRIPTION OF EO: IN FLD ON -1 REVISED NOTE * REF EO A2

EFFECTIVITY

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SHIP CONTR UNIT NO.
LM	LFM 770A	LM 12 (42)	

DRAWING CHANGE REQD: ✓ REVISE DWG | RECORD EO
DISPOSITION OF PARTS: ✓ REWORK | SCRAP
APPROVED BY / DATE: SUPPORT | RELIAB GROUP | GROUP LEADER | STRESS GROUP | LIAISON ENGRG | PROJ ENGRG
NM 7/27/72 | 7/26/72 | 7/27/72 | 7/28/72 | GAC

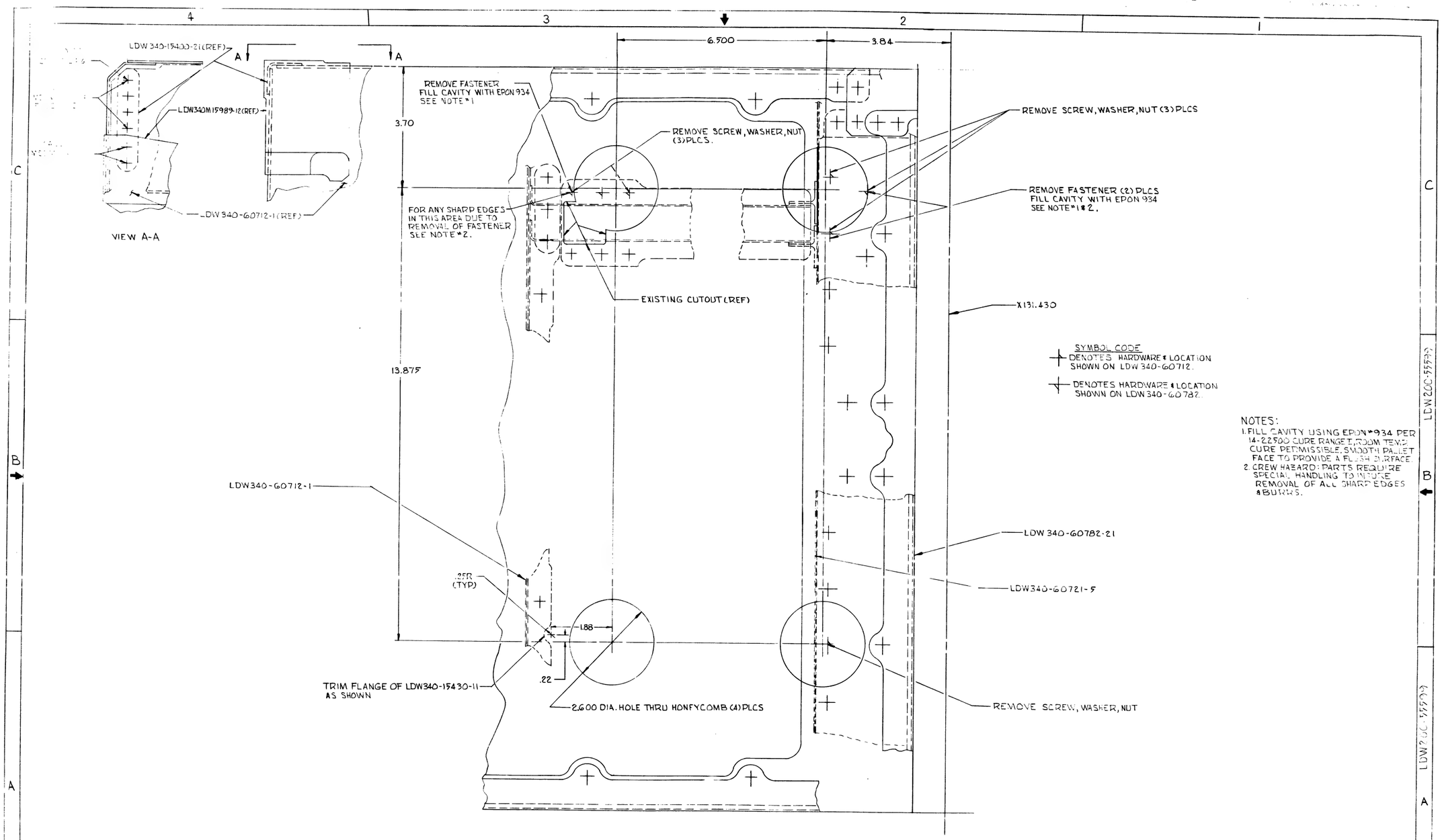
EO RELEASE

PRIORITY C
DRAWING TITLE: SUPPORT INST'L C/P-D/S MESA REWORK
DRAWING NO. LDW 200-55598
EO NO. A3

ISSUED BY R. SaVoie X9481 SECTION CREW PROV GROUP NO. 0356 PL 025

01

NAS 9-1100


LDW340-15400-21(REF)
A
A
LDW340M15989-12(REF)
LDW340-60712-1(REF)
VIEW A-A
REMOVE FASTENER FILL CAVITY WITH EPON 934 SEE NOTE*1
3.70
6.500
3.84
REMOVE SCREW, WASHER, NUT (3)PLCS.
REMOVE SCREW, WASHER, NUT (3)PLCS
REMOVE FASTENER (2) PLCS FILL CAVITY WITH EPON 934 SEE NOTE*1&2.
FOR ANY SHARP EDGES IN THIS AREA DUE TO REMOVAL OF FASTENER SEE NOTE*2.
EXISTING CUTOUT(REF)
X131.430
13.875
SYMBOL CODE
DENOTES HARDWARE & LOCATION SHOWN ON LDW340-60712.
DENOTES HARDWARE & LOCATION SHOWN ON LDW340-60782.
NOTES:
1. FILL CAVITY USING EPON*934 PER 14-22500 CURE RANGE I, ROOM TEMP CURE PERMISSIBLE, SMOOTH PALLET FACE TO PROVIDE A FLUSH SURFACE.
2. CREW HAZARD: PARTS REQUIRE SPECIAL HANDLING TO INSURE REMOVAL OF ALL SHARP EDGES & BURRS.
LDW340-60712-1
LDW340-60782-21
LDW340-60721-5
.25R (TYP)
1.88
.22
TRIM FLANGE OF LDW340-15430-11 AS SHOWN
2.600 DIA. HOLE THRU HONEYCOMB (4)PLCS
REMOVE SCREW, WASHER, NUT
LDW200-55599-1 INSTL.
NAS 9-1100
GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK
SIZE D
CODE IDENT NO. 26512
LDW200-55599
SCALE FULL
SHEET 3 OF
Instl List #1

LDW 200-55599

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM #7	NONE	LM 10 (LEM)	1
PART NO. LDW200-55599-1		GAEC SCH NO.	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00									
REV										
SHEET	2.00									
REV										
SHEET	3.00									
REV										

LAST SECT LTR USED	A	GRUMMAN REL INFO	
LAST DASH NO. USED	-1	PRIM NO.	299

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± XX=±.03 ± XXX=±.010 ±0°30'

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 5978, PKG #1	

CONTRACT NO. NAS 9-1100 LINE ITEM — DOCUMENTATION TYPE II

WORK PACKAGE FUNCTION NO. 110

DRAWN BY	J. McMANUS	Tech. Qa.	Pmanino 5-25-72 (2)
LAYOUT BY	J. McMANUS		
CHECKED BY	5-25-72		
GRPLDR.	5-24-72		
SUB. SYS. ENG.			
STRUCT.		PROJ ENGR	5-25-72
STRUCT.	NM 5-25-72	REL GROUP	5-25-72

GRUMMAN AEROSPACE CORPORATION
BETHPAGE, L. I., NEW YORK

GRAVIMETER INSTL.
CREW PROV. - LRV PALLET REWORK OF
LDW340-60712 LDW340-60721 & LDW340-60782

SIZE	CODE IDENT NO.	
B	26512	LDW200-55599

SCALE NONE SHEET 1.00 OF 3

ENG 77.1 12-65

DISTR. LIST # 1

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
✓		MS20426AD4		RIVET	STD. PART						
A/R		EPON*934		ADHESIVE							
1		LDW340-60782-21	E	PALLET ASSY							B2
1		LDW340-60721-5	E	TOOL CARRIER INSTL.							B2
1		LDW340-60712-1	E	PALLET ASSY							B4
-1		LDW200-55799-1	E	GRAVIMETER [illegible]							A3

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

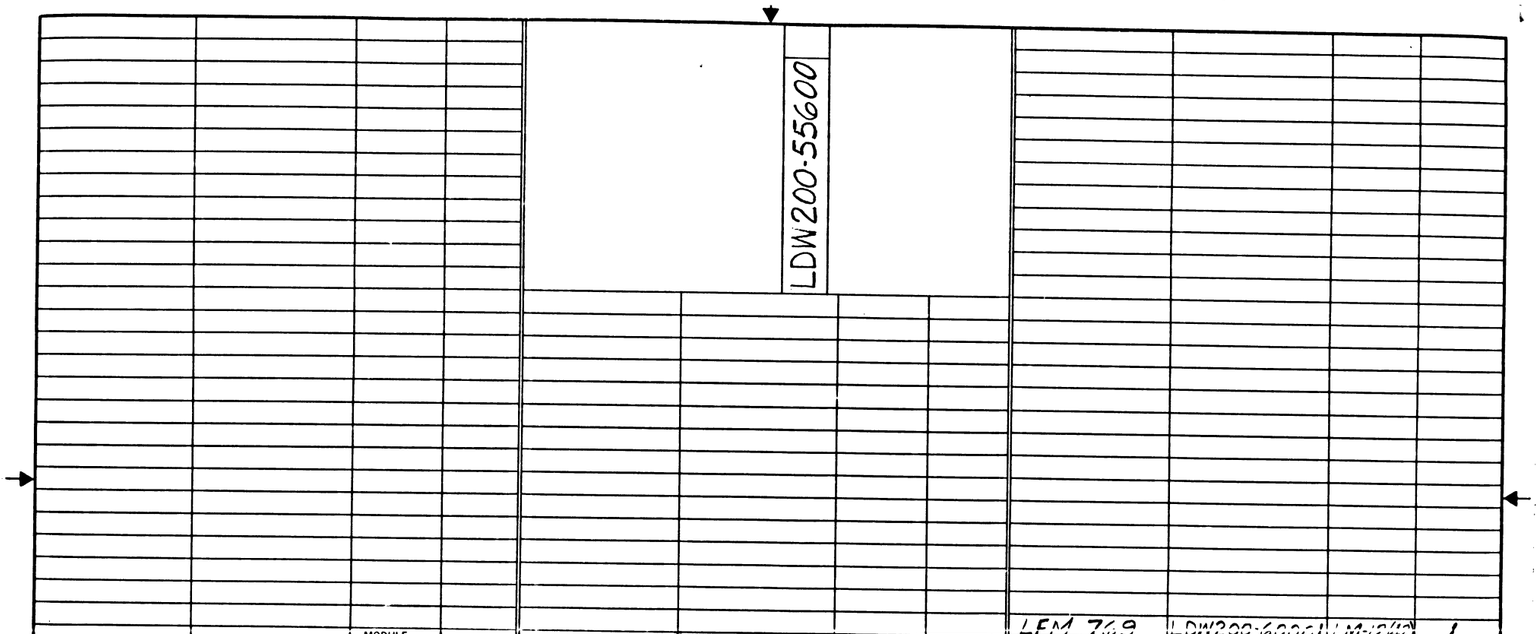
GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55799

SCALE NONE SHEET 2.00

ENG 77.2 7-64

Q1
NAS 9-1100



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LEM 769	LDW200-60001	LM-1 (1/2)	1
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW200-55600-1		GAEC SCH NO.	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET		1.00		2.00		3.00			
REV									
SHEET									
REV									
SHEET									
REV									

		GRUMMAN REL INFO
LAST SECT LTR USED	E	PRIM NO.
LAST DASH NO. USED	-11	215

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
XX±.030 XXX±.010 ± 1/2°

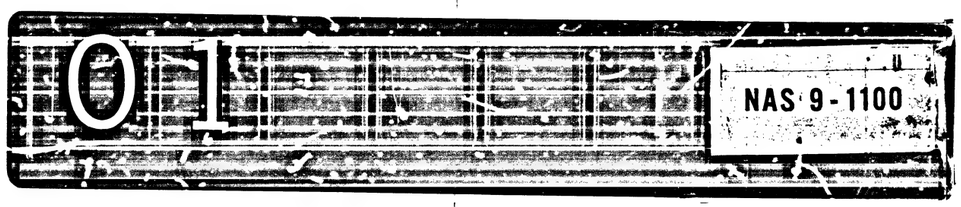
ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
	LCD5984 PKG 10

CONTRACT NO. NAS9-1100 | LINE ITEM | DOCUMENTATION TYPE

DRAWN BY	R. CLARK 5/26/72	Tech. Dir.	J. Manno 5-31-72	GRUMMAN AEROSPACE CORPORATION BETHPAGE, L. I., NEW YORK
LAYOUT BY				
CHECKED BY				COVER INSTALLATION +Z 27 BULKHEAD REWORK OF LDW280-60001 LFM 769
GRP LDR	P Thorjussen 5-30-72			
STRUCTURES				
STRUCTURES	C.N. 5-31-72	PROJ ENGR	[illegible] 5/30/72	SIZE B | CODE IDENT NO. 26512 | LDW200-55600
		REL GROUP	[illegible] 5-31-72	SCALE NONE | SHEET 1.00 OF 3

ENG 77.1 12-66

LIST 1. LIST # 1



QTY PER ASSEMBLY			CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
	1			LDW340-10324-35		NAME PLATE							
	1			LDW200-55600-11		COVER PLATE	AL ALLOY SH.	QQ-A-250/4	2024-T3/T42	.016 X 18.8 X 21.4		76	
		1		-3		COVER ASSY							
				LDW200-55600-1		COVER INSTL							
-3	-1												

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
76	ALODINE	LSP14-9010

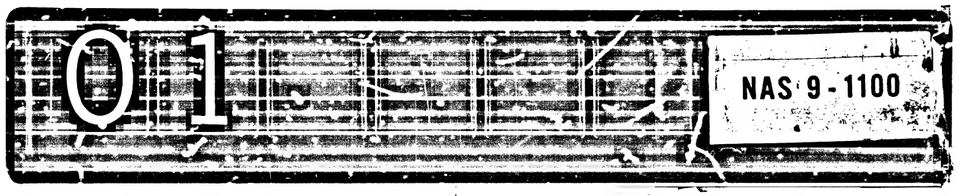
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

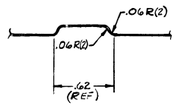
SIZE	CODE IDENT NO.	
B	26512	LDW200-55600

SCALE NONE SHEET 2.00

ENG 77.2 7-64



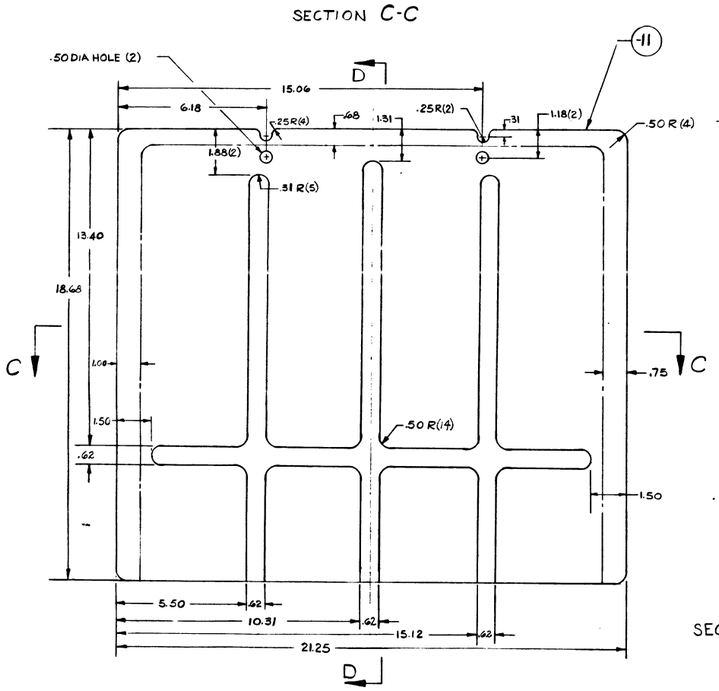
SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
VERY PART NUMBER IN ACCORDANCE WITH MIL STD 130	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY	
LENGTHS OF AN NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL RIVETS IN ACCORDANCE WITH	



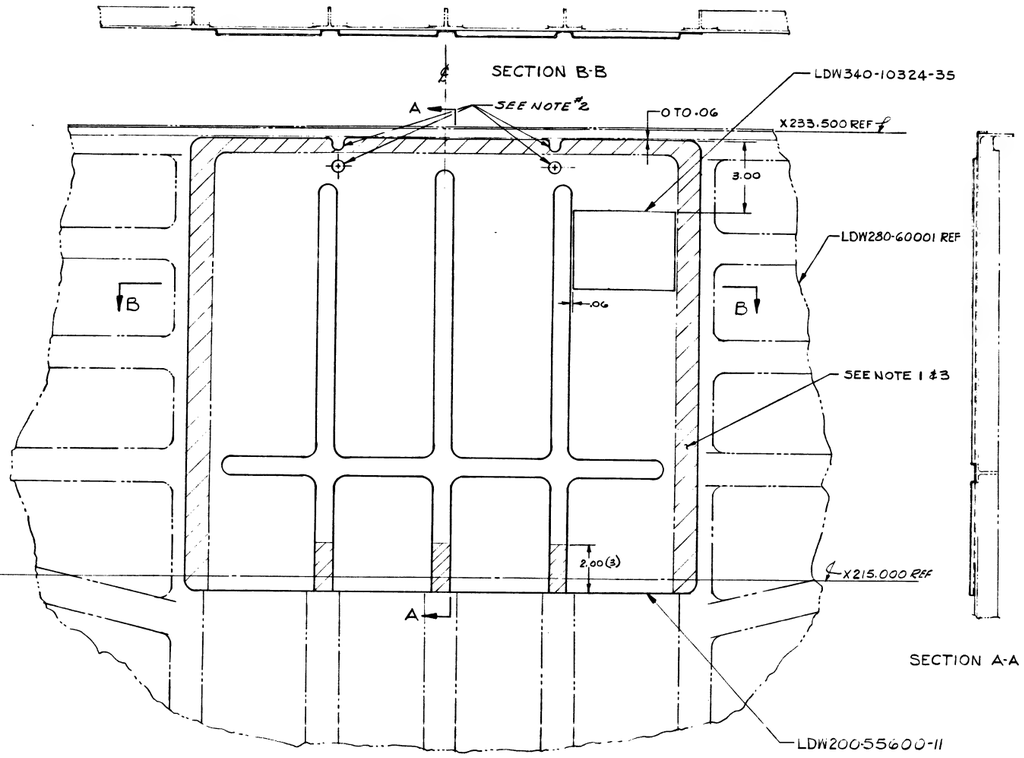
DETAIL E



SECTION C-C



SECTION D-D



SECTION A-A

LDW200-55600-1 INSTL.
LDW200-55600-3 ASSY
VIEW LOOKING AFT

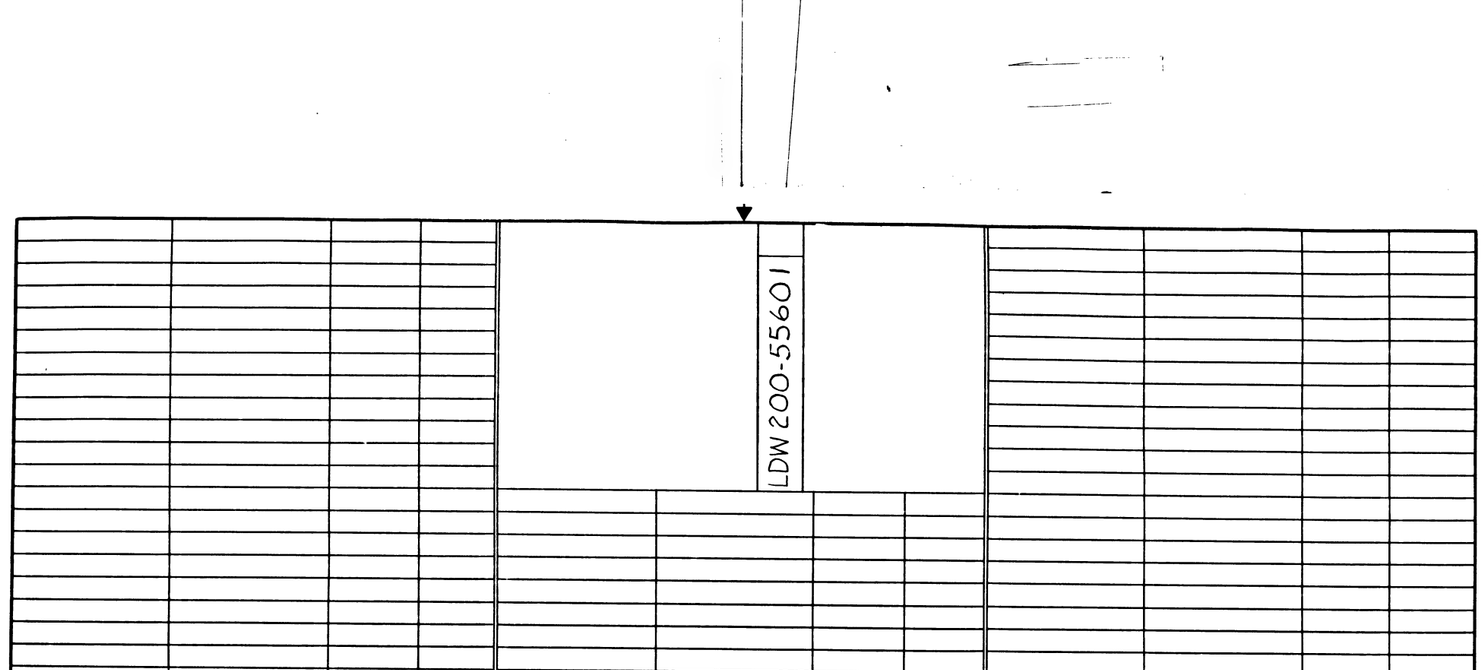
NOTE:
1. BOND AREA INDICATED USING EPON 934 PER LSP14-22500 CURE RANGE I, ROOM TEMP CURE PERMITTED.
2. HOLES MAY BE ENLARGED FOR ALIGNMENT AND FIT PURPOSES.
3. DURING BONDING A MEANS OF APPLYING A POSITIVE PRESSURE TO THE BOND SURFACES SHOULD BE PROVIDED.

01 NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714		
SIZE E	CODE IDENT NO 26512	LDW200-55600
SCALE		SHEET 3

ENG 73-4 REV 5-67

LDW200-55600



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM 774	LDW280-60001	LM1(4C)	1
PART NO. LDW200-55601-1		GAEC SCH NO.	

WORK PACKAGE FUNCTION NO. 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00		2.00		3.00				
REV									
SHEET									
REV									
SHEET									
REV									

		GRUMMAN REL INFO
LAST SECT LTR USED	B	PRIM NO.
LAST DASH NO. USED	-1	215

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
~~FRACTIONS~~ - DECIMALS – ANGLES
XX ±.03, XXX ±.010, ±0-30'
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE ✓
LCD 5992 PK10

CONTRACT NO. NAS9-1100 | LINE ITEM | DOCUMENTATION TYPE II

DRAWN BY	D. RAGAS		
LAYOUT BY	D. RAGAS		
CHECKED BY		TECH DIR	6-13-72
VEH DES INTG	6-12-72		
		PROJ ENGR	6/13/72
STRUCTURE		REL GROUP	6-14-72
STRUCTURE	CW 6-13-72		

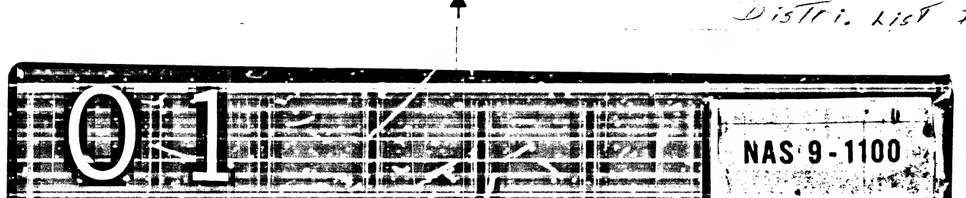
GRUMMAN AEROSPACE CORPORATION
BETHPAGE, L. I., NEW YORK

BOLT INSTALLATION
ASCENT STAGE-FWD HATCH
REWORK OF LDW280-60001 LFM774

SIZE	CODE IDENT NO.	
B	26512	LDW200-55601
SCALE	NONE	SHEET 1.00 OF 3

ENG 77.1 12-65

Distri. List # 1



QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
2		GW10G-3	E	WASHER	GRUMMAN STD						
2		GS570P-3	E	SEAL	GRUMMAN STD						
AR		MS20995C41	E	WIRE	STD. PART						
2		LDW280M11562-11	E	BOLT	SEE DWG.						
-1		LDW200-55601-1	E	BOLT INSTL							

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

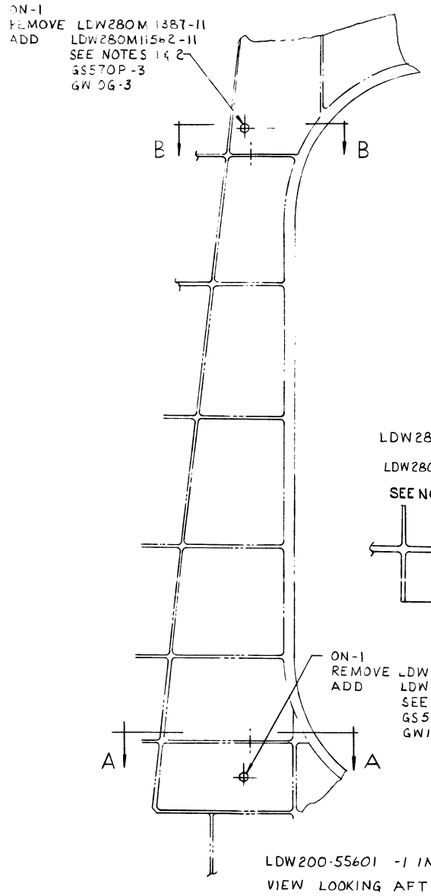
GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55601

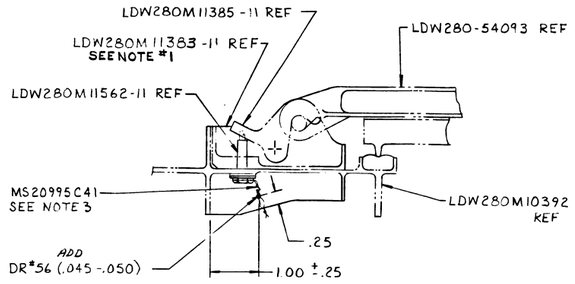
SCALE NONE SHEET 2.00

ENG 77.2 7-64

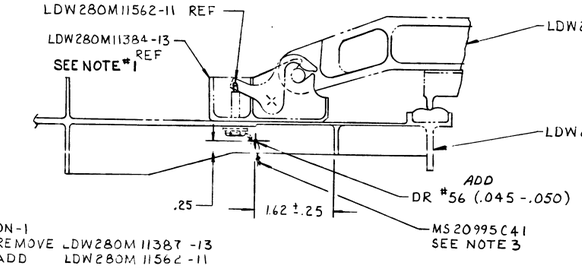
01 NAS 9-1100



ON-1
REMOVE LDW280M11387-11
ADD LDW280M11562-11
SEE NOTES 1 & 2
GS570P-3
GW10G-3



VIEW B-B



ON-1
REMOVE LDW280M11387-13
ADD LDW280M11562-11
SEE NOTES 1 & 2
GS570P-3
GW10G-3

VIEW A-A

LDW200-55601 -1 INSTL
VIEW LOOKING AFT ~ FWD HATCH

REVISIONS						
ZONE	LTR	DESCRIPTION	EFF CODE	MODEL	DATE	APPROVED

NOTES
1. THERE SHALL BE NO SEALANT ON THE THREADS OF LDW280M11562-11 BOLTS NOR ON THE THREADS OF LDW280M11383-11 AND LDW280M11384-13 FITTINGS.
2. TORQUE LDW280M11562-11 BOLTS (16 IN ± MAX).
3. SAFETY WIRE PER MS33540.

NAS 9-1100

FOR PARTS LIST, USAGE DATA, AND DWG SH STATUS, SEE DOCUMENT SAME NUMBER PREFIXED PL

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES			CONTRACT NO.	GRUMMAN AEROSPACE CORPORATION BETHPAGE, NEW YORK 11714
LINEAR TOL	.XX	± .03	DRAWN BY	
	.XXX	± .010	LAYOUT BY	
ANGULAR TOL		± 0°30'	CHECKED BY	
TOL ON LOFTED DELINEATIONS IS			GR LEADER	
			REL GR&AE	
			PROJ ENGR	SIZE D | CODE IDENT NO. 26512 | LDW200-55601
			GOVT APPD	SCALE NONE | SHEET 3 OF 3

8 7 6 5 4 3 2 1 DISTR LIST #

LDW 200-55602

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.			LFM 775	LDW280-60001	LM17 (42)	1
								PART NO. LDW200-55602-1		GAEC SCH NO.	

WORK PACKAGE FUNCTION NO. 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH											
SHEET	1.00		2.00		2.01		3.00				
REV											
SHEET											
REV											
SHEET											
REV											
LAST SECT LTR USED	P		GRUMMAN REL INFO								
LAST DASH NO. USED	-15		PRIM NO. 215								

ENG 77.1 12-65

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
~~FRACTIONS~~ - DECIMALS – ANGLES
.XX=±.03, .XXX=±.010, ±0°30'
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE ✓
LCDE991 PK10

CONTRACT NO. NAS9-1100 LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	D.RAGAS/R.CLARK	THERMO	N. Pendleton 6-22-72
LAYOUT BY	D RAGAS/R.CLARK	TEC. DIR	T. Minnis 6-22-72
CHECKED BY	G. March 6-22-72		
VEH DES INT	R. Thorjussen 6-22-72		
		PROJ ENGR	C. Hull 6/22/72
		REL GROUP	G. Smith 6-22-72
STRUCT			
STRUCT	CW 6-22-72		

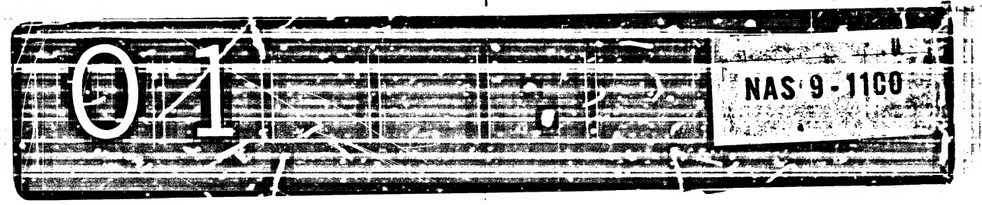
GRUMMAN AEROSPACE CORPORATION
BETHPAGE, L. I., NEW YORK

SHIELD INSTALLATION
ASCENT STAGE · AFT EQUIPMENT BAY-THERMAL
REWORK OF LDW280-60001 LFM 775

SIZE	CODE IDENT NO.	
B	26512	LDW200-55602

SCALE NONE SHEET 1.00 OF 6.00

025 0335 Distri. List # 1



QTY PER ASSEMBLY			CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
- 5	-3	-1											
1				LDW280P11586-3	E	COVER	SEE DWG						8B
1				LDW280-60113-21		CHANNEL							5B
1				-19		CHANNEL							8C
1				-3		SKIN ASSY							5A
1				LDW280-60113-1		SKIN ASSY							3C
1				LDN280-60112-24		SPLICE							E7
1				-23		SPLICE							E7
1				-22		BRACKET							6C
1				-21		BRACKET							6C
1				-19		SPLICE							E4
1				-3		SKIN ASSY							F6
1				LDW280-60112-1		SKIN ASSY	SEE DWG.						8D
AR				LDW200-55602-15		INSULATION	SEE NOTES 1 & 5						3C
AR				-13		INSULATION	SEE NOTES 1 & 3						3C
AR				-11		INSULATION	SEE NOTES 1 & 2						3C
				-5		BLANKET ASSY	(REWORK OF LDW280-54444-9)						5A
				-3		STANDOFF INSTL							5A
				LDW200-55602-1	E	SHIELD INSTL							5A

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

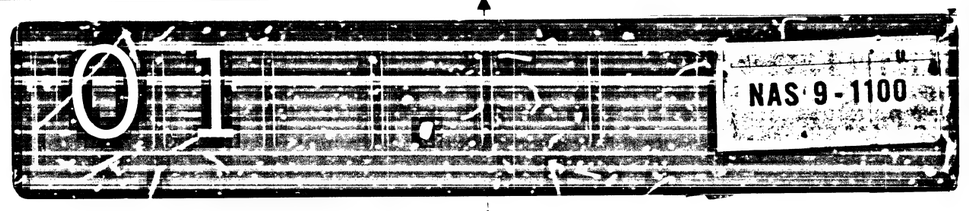
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55602

SCALE NONE SHEET 2.00

ENG 77.2 7-64



QTY PER ASSEMBLY -5	-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
				MS20470B4	E	RIVET	STD PART						
				MS20470B3		RIVET	STD PART						
	8			GR500L-4-2		RIVET	GRUMMAN STD						
	67			GR500L-4-1		RIVET	GRUMMAN STD						
	16			AN960D10L		WASHER	STD PART						
	4			AN960D4L		WASHER	↑						
	4			NAS1133V6		BOLT	↕						
	2			NAS1133V4		BOLT	STD PART						
	6			GB511J-3-7		BOLT	GRUMMAN STD						
	2			GB511J-3-5		BOLT	↑						
	2			GB511J-3-4		BOLT							
	19			GR11C-7		RETAINER							
	43			GW10S10KS-1C		WASHER							
	43			GS550K-04-7		SCREW							
15				GP15B-10-5		PATCH							
12				GP15B-6-5		PATCH							
12				GW10H-1		WASHER							
AR				GS577A-1		STAPLE							
AR		AR		GTG35P-8		TAPE							
12				GB10J-3		BUSHING							
	4			GNS12C-04-110		NUT	↕						
		20		GNS12C-04-06		NUT	GRUMMAN STD						
					↓								
				LDW280-51456-7	E	STANDOFF	SEE DWG						7C
	1			LDW280-51456-3		STANDOFF	↕						1C
	1			LDW280-51456-1		STANDOFF							6C
	2												
													9A
	4			LDW280M11563-11	E	FITTING	SEE DWG						

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :

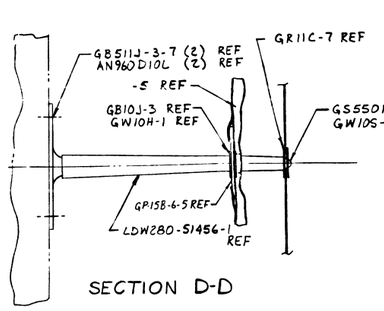
GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55602

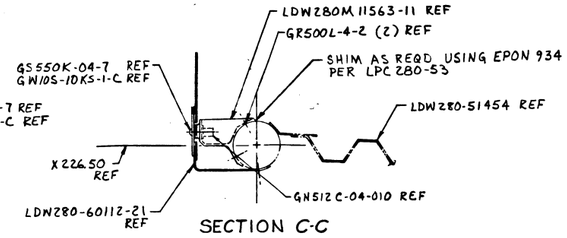
SCALE NONE SHEET 2.01

ENG 77.2 7-64

SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH MIL STD 130	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☐ TO USE BOTH SIDES IF NECESSARY	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL RIVETS IN ACCORDANCE WITH	



SECTION D-D



SECTION C-C

NOTES:
1. APPLICABLE PROCEDURE.
LPC 280-1 FABRICATION
-2 VENTING CONFIGURATION II
-3 SEAMS
-6 CUTTING
-8 REPAIR PROCEDURE
-20 PERMISSIBLE DEVIATION & REPAIR PROCEDURE.

2. ALUMINIZED MYLAR FILM PER LSM145302,-11 TO BE .00015

3. ALUMINIZED POLYIMIDE FILM PER LSM14-5301,-13 TO BE.0005

4. ALUMINIZED POLYIMIDE FILM PER LSM14-5301 TYPE IIA CL1 -15 TO BE .00025.

5. FINAL SIZE (WITH FOLD, BLANKET VENTS & SEAM LOCATIONS OF BLANKET ASSEMBLIES SHALL BE DETERMINED FROM APPROVED MASTER TEMPLATE. (NEW STANDOFF LOCATIONS TO BE PICKUP ON INSTL. UNDER DIRECTION OF COG ENGR AS NOTED ON TEMPLATE)

6. SEAL PERIPHERY OF BLANKET WITH GT835P-8

7. -5 BLANKET ASSY MAY BE MADE BY REWORKING LDW280-54444-9 BLANKET ASSY.

8. SHIM AS REQ'D USING 2024-T3 AL. ALY SH QQ-A-250/4 FIN. 76.

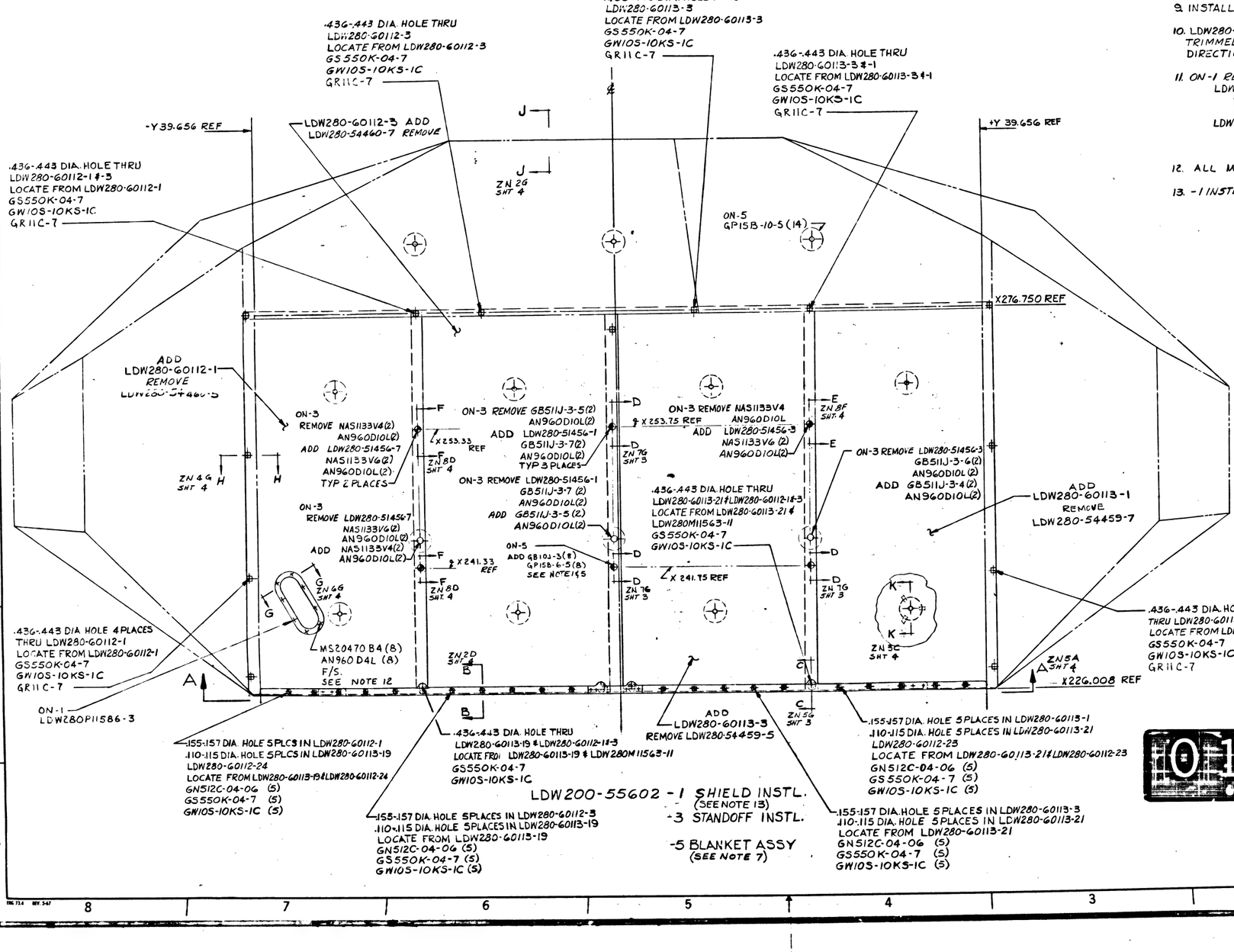
9. INSTALL FASTENERS PER LSP14-15302

10. LDW280-60112-19,21,23&24 & LDW280-60113-19,-21,-22 MAY BE TRIMMED ON INSTL. TO INSURE PROPER FIT UNDER DIRECTION OF COG ENGR.

11. ON-1 REMOVE THE FOLLOWING PARTS AS NOTED
LDW280-54459-5&7
-54460-5,-7&-9
-5145E-25 (4)
LDW280-54444-9

12. ALL MS20470B" " RIVETS TO BE SQUEEZED

13. -1 INSTL MAY BE MADE BY REWORKING LDW280-56453-13



LDW200-55602 -1 SHIELD INSTL. (SEE NOTE 13)
-3 STANDOFF INSTL.
-5 BLANKET ASSY (SEE NOTE 7)

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714			
SIZE E	CODE IDENT NO. 26512	LDW200-55602	
SCALE		SHEET 3.00	

WITH LISTEL 1

ENG 73.4 REV. 5-67

SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH MIL STD-130	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL RIVETS IN ACCORDANCE WITH	

GT835P-8 TAPE CONTINUOUSLY AROUND PERIPHERY OF CUTOUT & OVER RIVET TAILS

LDW280P11586 -3 REF

LDW280-54447 REF

-5 REF

GT15C-2 REF

LDW280-60112-1 REF

SECTION H-H
ZONE 7D SH3

LDW280-54443 REF

-5 REF

LDW280-54470 REF

GT15C-2 REF

SECTION J-J
ZONE 6F SH3

ATCA REF

NAS1133V6 (2) REF
AN960D10L (2) REF

LDW280-51456-3 REF

SHIM AS REQD (.13 MAX) SEE NOTE 8

SECTION E-E

SECTION G-G
ZONE 7B SH3

LDW280-60112-3 REF

LDW280-60113-19 REF

LDW280-60113-3 REF

LDW280-60113-21 REF

1.00 REF

X226.008 REF

.436-.443 DIA HOLE THRU LDW280-60112-19, -3, & LDW280-60113-19 LOCATE FROM LDW280-60113-19 & LDW280M11563-11

2.00

.38 REF

1.31 REF

LDW280-51454 REF

MS20470B3(4) LOCATE FROM LDW280-60112-19

ON-1 LDW280-60112-19

.436-.443 DIA. HOLE THRU LDW280-60112-19, & LDW280-60113-3,21 LOCATE FROM LDW280-60112-19 & LDW280M11563-11 GS550K-04-7 GW10S-10KS-1-C SEE SECT C-C ZONE 5G SH3

DETAIL P
ZONE 5B SH3

-5 REF

GT15C-2 REF

LDW280-54444 REF

LDW280-60112-3 REF

GN512C-04-060 REF

GS550K-04-7 REF
GW10S-10KS-1-C REF

X226.008 REF

LDW280-60113-19 REF

GR500L-4-1 REF

SECTION B-B
ZONE 6B SH3

SCEA REF

LDW280-51456-7 REF

NAS1133V6 (2) REF
AN960D10L (2) REF

LDW280-60112-24 SHN REF
-23 OPP REF

3.25 3EQ. SPACES

.62

.32

GS550K-04-7
GW10S-10KS-1-C
SEE SECT. C-C ZONE 5G SH3

MS20470AD3(4)

GR500L-4-1(4)

MS20470AD3(6) PICK UP EXISTING LOCATIONS

LDW280-60112-21 REF

LDW280-51454 REF

SHIM AS REQD (.080 MAX.) SEE NOTE 8

SECTION P-P

P

L

.25

3.12
3 EQ. SPACES

.31

LDW280-60112-21 REF

LDW280-51454 REF

SHIM AS REQ (.12 MAX) SEE NOTE 8

LDW280-60112-21 SHN -22 OPP

SECTION L-L

DETAIL M SHOWN
DETAIL N OPP

(-13) 1 LAYER 2 PLACES

(-15) 8 LAYERS

GT835P-8 REF

GP15B-10-5 REF

INBD

(-11) 16 LAYERS

SECTION K-K
ZONE 4B SH3

LDW280-60113-19

LDW280-60112-24

LDW280M11563-11 REF

22.90

LDW280-60112-19 REF

LDW280M11563-11 REF

3.28

1.31

1.00

.38

19.84

+Y 39.50 REF

3.00

GR500L-4-1 (26) LOCATE FROM LDW280-60113-19

GR500L-4-1 (4) LOCATE FROM LDW280-60112-24

MS20470B3(5) SEE NOTE 12 LOCATE FROM LDW280-60112-24

LDW280-60112-21 REF SEE DETAIL M ZONE 7C SH4

GR500L-4-1 (6) LOCATE FROM LDW280-60112-19

LDW280-60113-21

MS20470B3(4) LOCATE FROM LDW280-60112-19

ON-3: REMOVE LDW280-51458-25 4 PLACES
(ADD) LDW280M11563-11 4 PLACES
GR500L-4-2 (2)
GN512C-04-110
LOCATE FROM LDW280M11563-11 SEE SECT C-C ZONE 5G SH3

LDW280M11563-11 REF

MS20470B3(5) LOCATE FROM LDW280-60112-23

GR500L-4-1(4) LOCATE FROM LDW280-60112-23

LDW280-60112-23

3.00

+Y 39.50 REF

GR500L-4-1 (27) LOCATE FROM LDW280-60113-21

LDW280-60112-22 REF SEE DETAIL N ZONE 7C SH4

VIEW A-A
ZONE 3A SH3

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORPORATION
BETHPAGE, NEW YORK 11714

SIZE	CODE IDENT NO.	LDW200-55602
E	26512	

SCALE NONE SHEET 4.00

Distr List #2

LDW200-55602

GRUMMAN AEROSPACE CORPORATION
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW200-55602 | FO NO. A1
CONTROL INFO NO. LDW280 C1503

IN ZN 8B, & B/M LDW280P11586-3 S/B LDW280P11586-13

IN ZN 5D: REVISE CALLOUT: ON-S GP15B-10-5 (14) S/B ON-S: 1/2 DIA HOLE (11) GP15B-10-5 (14) SEE NOTE 5

REVISE NOTE 10: (NOW) LDW280-60112-1, -3, -19, -21, -22, -23 & -24 & LDW280-60113--1, -3, -19 & -21 MAY BE TRIMMED ON INSTL TO INSURE PROPER FIT UNDER DIRECTION OF COG ENGR.
(WAS) LDW280-60112 -19, -21, -23 & -24 & LDW280-60113 -19, -21 & -22 MAY BE TRIMMED _____ ETC.

REVISE NOTE 1 LPC 280-2 [VENT CONF. I & II] WAS [VENT CONF. II]

IN ZN 6C & B/M: ON-5 GB10J-3 (6) WAS GB10J-3 (8) ADD GW10H-1 (6); GP15B-6-5 (6) WAS GP15B-6-5 (8)

DESCRIP OF EO CONT. ADDED GW10H-1 (6) GP15B-6-5 (6) WAS GP15B-6-5 (8) REVISED NOTE 10: LDW280-60112-1, -3, -19, -21, -22, -23 & -24, LDW280-60113--1, -3, -19 & -21 MAY BE TRIMMED ____ (WAS) LDW280-60112-19, -21, -23 & -24 & LDW280-60113-19, -21 & -22 MAY BE TRIMMED ____ ETC.

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD 5991 PKG 10

REASON FOR EO: INCORRECT PAINT CALLOUT TRIMMING OF DETAIL PARTS & BLANKET VENT CONFIG.

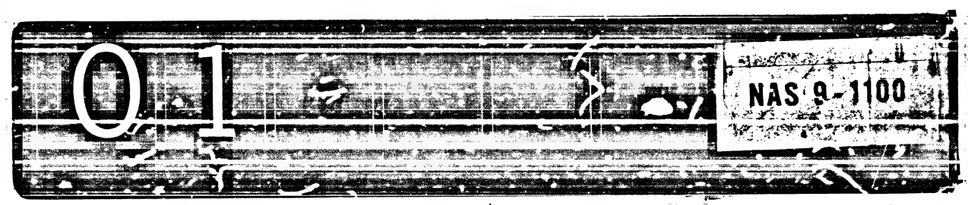
DESCRIPTION OF EO: ON-1 IN F/D & B/M CALLOUT P11586-13 WAS P11586-3; ON-5 ADDED CALLOUT 1/2 DIA, (11) & SEE NOTE 5; REVISED NOTE 1 LPC 280-2 VENT CONFIG I & II WAS VENT CONFIG II ON-5 GB10J-3(6) WAS GB10J-3(8) (6 WT)

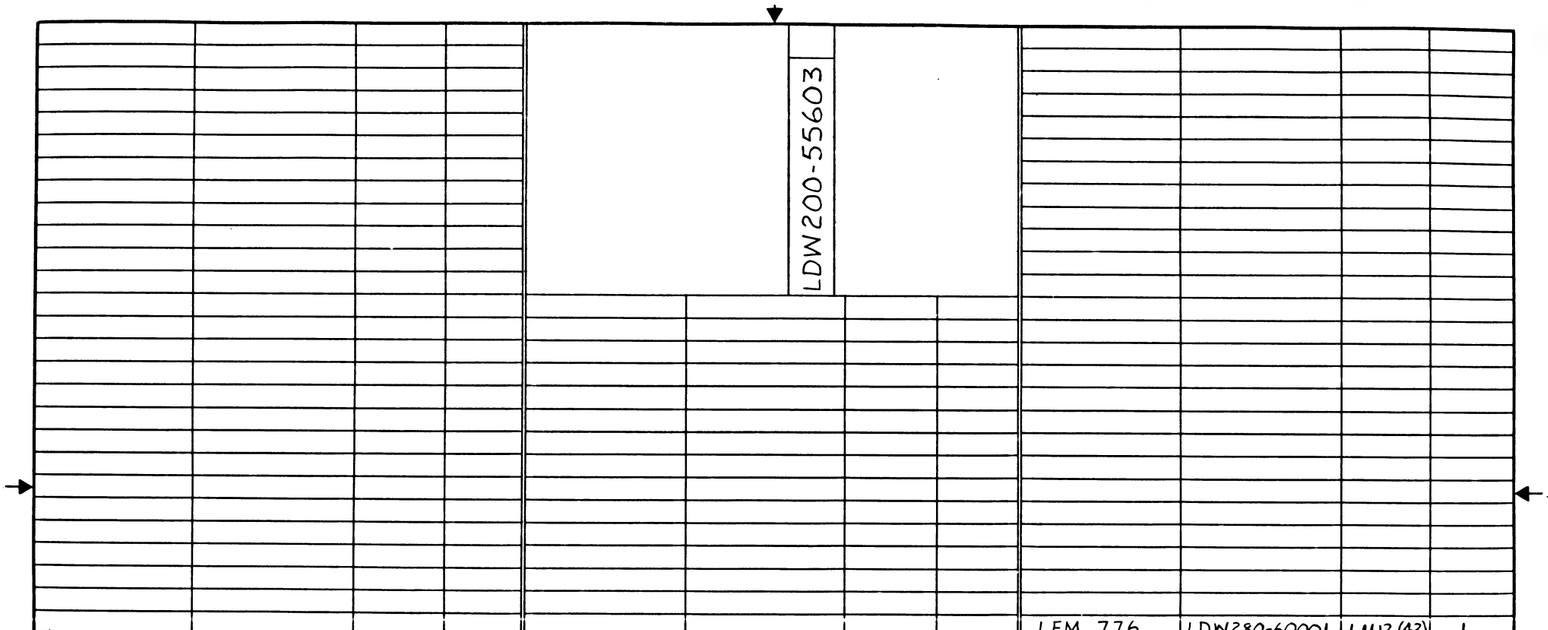
GAEC EO RELEASE: 7-19-72 | 7-20-72

EFFECTIVITY				DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY	DATE							
PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.		REVISE DWG	RECORD EO	REWORK	SCRAP			THERMO ENGRG	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGR	PROJ ENGR	GAC
LM LFM 775A	LM12(42)								7-19-72			7/19/72	7/19/72		7/19/72	7-20-72

PRIORITY C | DRAWING TITLE: SHIELD INSTL A/S-AEB THERM. RENK OF LDW280 -6001 LFM 775 | DRAWING NO. LDW200-55602 | EO NO. A1

ISSUED BY DON RAGAS X2410 SECTION VD1 GROUP NO. 0335 PL 025





MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

LFM 776	LDW280-60001	LM12(42)	1
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW200-55603-1		GAEC SCH NO.	

WORK PACKAGE FUNCTION NO 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00		2.00		3.00					
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED	
LAST DASH NO. USED	-1

GRUMMAN REL INFO
PRIM NO. 215

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
xx ±.030 xxx ±.010 ± ½°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 5990 PKG 10	

CONTRACT NO. NAS 9-1100 | LINE ITEM | DOCUMENTATION TYPE II

DRAWN BY	D. RAGAS	THERMO	M Swan 6-7-72
LAYOUT BY	D. RAGAS	Tech. Dir.	M Mann 6-7-72
CHECKED BY			
Veh Des Int	R Thorjusen 6-7-72		
Structure		PROJ ENGR	D Kelly 6/7/72
Structure	CW 7-72	REL GROUP	C Batt 6-7-72

GRUMMAN AEROSPACE CORPORATION
BETHPAGE, L. I., NEW YORK

SHIELD INSTALLATION
ASCENT STAGE-MID SECTION-THERMAL
REWORK OF LDW280-60001 (LFM 776)

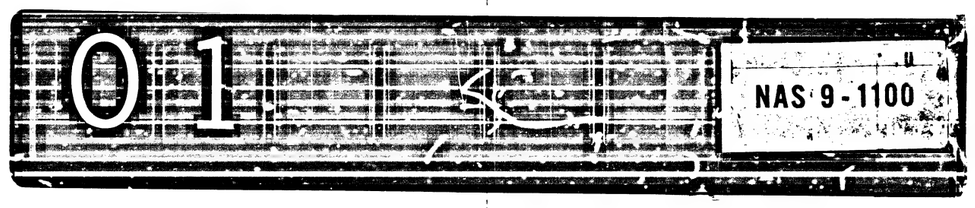
SIZE	CODE IDENT NO.	
B	26512	LDW200-55603

SCALE NONE | SHEET 1 OF 3

ENG 77.1 12-65

Distri. List # 1

CDR 6-9-72



QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
AR		MS20426B3		RIVET	STD PART						
8		AN960C4		WASHER	STD PART						
8		NAS697C04L		NUT	STD PART						
64		GW10S-10KSIC		WASHER	GRUMMAN STD						
64		GS550K-04-7		SCREW	↑						
8		GS550K-04-5		SCREW							
12		GR11C-9		RETAINER							
52		GR11C-7		RETAINER	GRUMMAN STD						
1		LDW280-54949-33		PANEL ASSY	SEE DWG.						
1		↑ -28		↑	↑						
1		-27									
1		↓ -9									
1		LDW280-54949-7									
1		LDW280-54948-8-1									
1		LDW280-54948-7-1									
1		LDW280-54946-5									
1		LDW280-54945-8									
1		↑ -7									
1		↓ -6		↓	↓						
1		LDW280-54945-5-1		PANEL ASSY	SEE DWG.						
		LDW200-55603-1	E	SHIELD INSTL	(REWORK OF LDW280-54163 & LDW280-54164)						

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55603

SCALE NONE SHEET 2.0

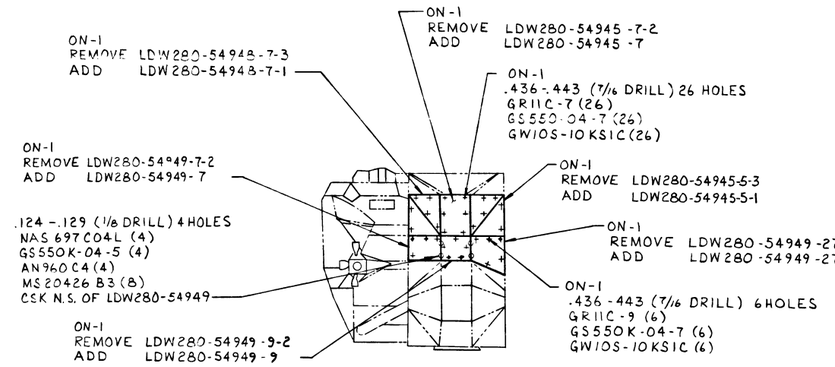
ENG 77.2 7-64

01 NAS 9-1100

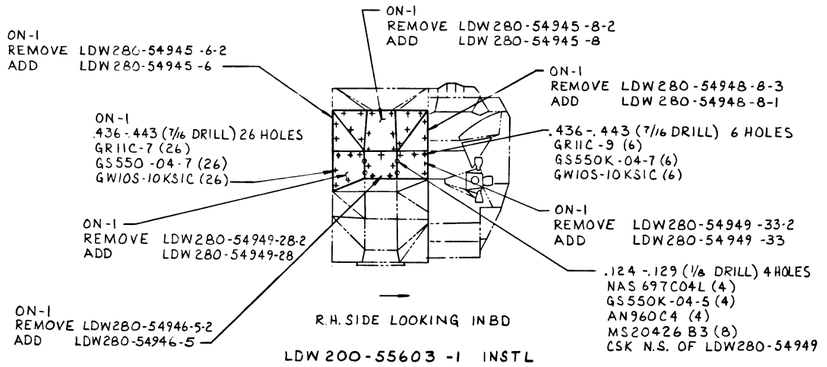
LDW200-55603

REVISIONS						
ZONE	LTR	DESCRIPTION	EFF CODE	MODEL	DATE	APPROVED

NOTES
1- INSTALL FASTENERS PER LSP 14-15302.



L.H. SIDE LOOKING INBD



R.H. SIDE LOOKING INBD

LDW200-55603-1 INSTL

NAS 9-1100

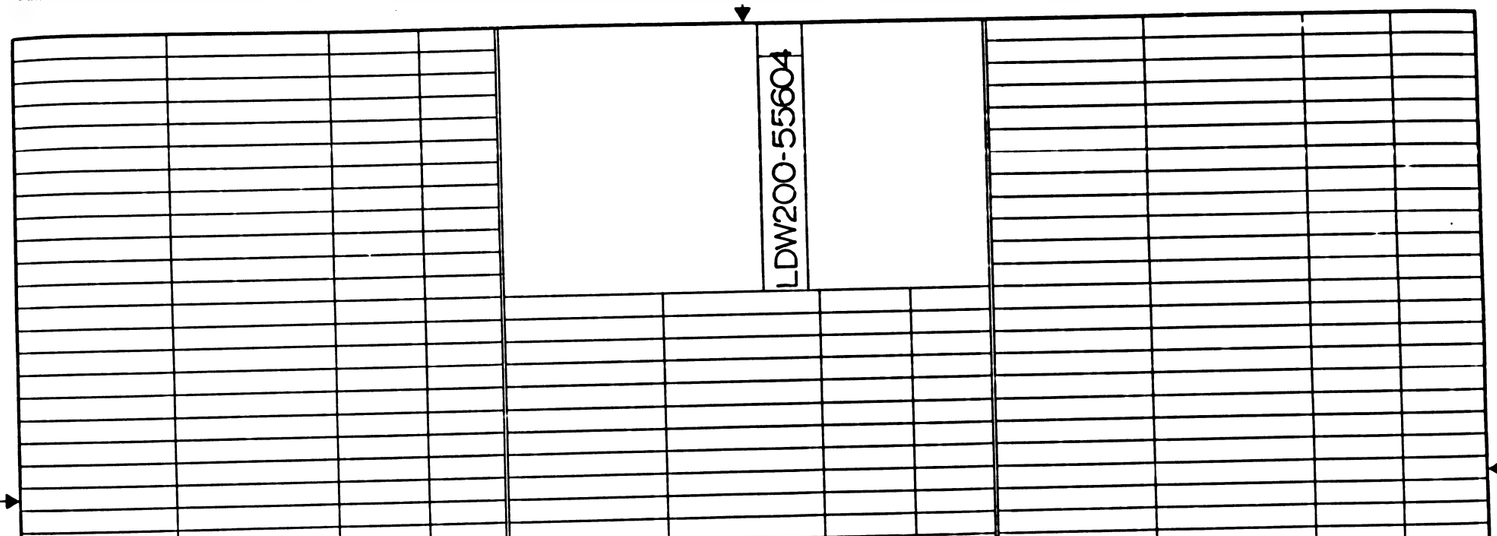
FOR PARTS LIST, USAGE DATA, AND DWG SH STATUS, SEE DOCUMENT SAME NUMBER PREFIXED PL

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES			CONTRACT NO.	GRUMMAN AEROSPACE CORPORATION BETHPAGE, NEW YORK 11714		
LINEAR TOL	.XX	± .03	DRAWN BY			
	.XXX	± .010	LAYOUT BY			
ANGULAR TOL		± 0°30'	CHECKED BY			
TOL ON LOFTED DELINEATIONS IS			GR. LEADER			
			REL GROUP			
			PROJ ENGR	SIZE D	CODE IDENT NO. 26512	LDW200-55603
			GOVT APPD	SCALE		SHEET 3 OF 3

ENG. FORM REV. 5-66

DISTR LIST # 4

LDW200-55603



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LFM 767A	NONE	LM-12(42)	1
PART NO. LDW200-55604-1		GAEC SCH NO.	

WORK PKG FUNCTION NO. 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH											
SHEET	1.00										
REV											
SHEET	2.00										
REV											
SHEET	3.00										
REV											

LAST SECT LTR USED	A	GRUMMAN REL INFO									
LAST DASH NO. USED	-11	PRIM NO.	299								

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
~~FRACTIONS~~ - DECIMALS – ANGLES
.XX±.03, .XXX±.010, ±0°30'

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 5978, PKG 1	

CONTRACT NO. NAS9-1100		LINE ITEM	DOCUMENTATION TYPE II
DRAWN BY	L.BIALCHINO P.CARSTENSEN	TECH DIR	
LAYOUT BY	A.VARVARO		
CHECKED BY			
GP LEADER	A VARVARO		
S.S.MGR			
STRUCTURES		PROJ ENGR	
STRUCTURES	N.M 6/29/72	REL GROUP	
MATERIALS			

GRUMMAN AEROSPACE CORPORATION
BETHPAGE, L. I., NEW YORK

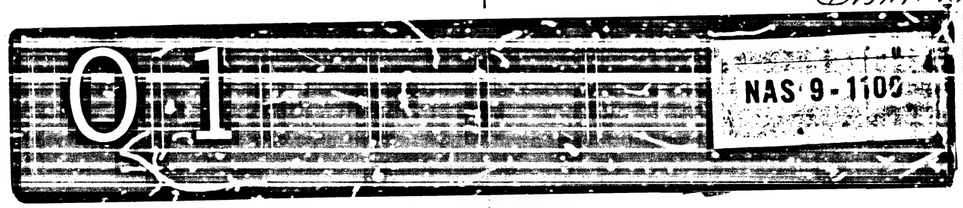
SUPPORT INSTALLATION
CREW PROVISIONS ~ DESCENT STAGE
QUAD III ~ REWORK OF LDW340-60782

SIZE	CODE IDENT NO.	
B	26512	LDW200-55604

SCALE NONE SHEET 1.00 OF 3

ENG 77.1 12-65

025 0356 DISTR. LIST #1



QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
1		MS27983-9N	E	FASTENER	GOVT STD						
1		MS27983-8N		FASTENER	GOVT STD						
14		AN960D8L		WASHER	GOVT STD						
9		GN510C-T832		NUT	GRUMMAN STD						
5		GN512H08		NUT	GRUMMAN STD						
1		GB511J08-6		BOLT	GRUMMAN STD						
1		GB511J08-25		BOLT	GRUMMAN STD						
8		GB511J08 D21		BOLT	GRUMMAN STD						
5		GB511K08-9		BOLT	GRUMMAN STD						
1		LDW200-55604-11		DOUBLER	PLASTIC, PCTFE	AMS 3650	SEE NOTE 2	.750 x 2.75 x 11.25	NONE	NONE	
-1		LDW200-55604-1	E	SUPPORT INSTL					NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

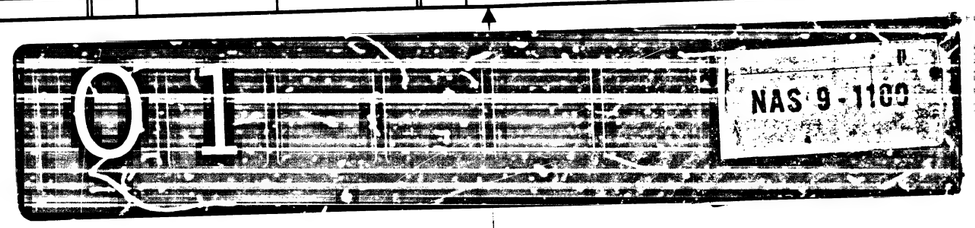
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55604

SCALE NONE SHEET 2.00

ENG 77.2 7-64



SUPPLEMENTARY DATA
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG

- MARK PART NUMBER IN ACCORDANCE WITH MIL STD-130
- AND ALL OTHER MARKINGS IN REGION MARKED ☐ PART NUMBER
- USE BOTH SIDES IF NECESSARY
- LENGTHS OF MS NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED
- INSTALL RIVETS IN ACCORDANCE WITH

NOTES:

1. PULL STRAP TAUT AGAINST COLLECTION BAGS OR ITS MASS REPRESENTATION, BEFORE INSTALLING SNAPS IN LDW340-60626-167-1 AND LDW340-60626-91-1 TO INSURE SNUG FIT.
2. KEL-F-81 PER LSM14-4044
3. CREW HAZARD-PART REQUIRES SPECIAL HANDLING TO INSURE REMOVAL OF ALL SHARP EDGES & BURRS

REMOVE GB511J08-6
GN510C T832
ADD GB511J08-6
GN510C T832
LOCATE FROM
LDW340-60741-1-1

LDW340-60741-1REF

VIEW A-A

REMOVE GB511K08-9 5PL
AN960D8L , 5PL
GN512H08 , 5PL
ADD GB511K08-9,5PL,NS
AN960D8L ,5PL
GN512H08 ,5PL
LOCATE FROM LDW340-60782

LDW340-60782REF

LDW340-60741-1-1

REMOVE M5279B3-8N
M5279B3-9N
IN LDW340-60626-91-1
ADD M5279B3-8N
M5279B3-9N
IN LDW340-60626-91-1
SEE NOTE 1

REMOVE GB511K08-13
GN512H08
AN960D8L
ADD GB511J08-25
GN510C-T832
AN960D8L
LOCATE FROM
LDW340-60782

REMOVE AN960D8L, 8PL
GB511K08-9, 8PL
GN512H08, 8PL
ADD GB511J08 D21, 8PL
GN510C-T832, 8PL
AN960D8L, 8PL
LOCATE FROM
LDW340-60782

LDW200-55604-11 REF

ADD LDW200-55604-11

LDW340-60782 REF

LDW340-60741-1-1 REF

.750 REF

-11 REF

2.53
1.79
.79
.50
.39
.625 TYP
.25 R
4 EQ SP
TYP 4 PL
10.53
8.03
11.13
5.53
3.06
.59
.30
.31
.40
-11
.249-.255 DIA, 16 HOLES
.097-.102 DIA, 9 HOLES
.31 R TYP
51°30'
.77
.76
.67
.31
2.10
2.41

LDW 200-55604-1 INSTL

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714		
SIZE E	CODE IDENT NO 26512	LDW200-55604
SCALE FULL		SHEET 3.00

DISTRIBUTION #1

DWG 73.4 REV 547

LDW200-55604 B

GRUMMAN AEROSPACE CORPORATION
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LDW200-55604 | EO NO. A1
CONTROL INFO NO. LDW340-10211

REVISE F/D IN ZONE 5E AS SHOWN:-

WAS	NOW
REMOVE MS27983-8N	ADD MS27983-8N
MS27983-9N	MS27983-9N
IN LDW340-60626-91-1	SEE NOTE 1
ADD MS27983-8N	
MS27983-9N	
IN LDW340-60626-91-1	
SEE NOTE 1.	

REVISE NOTE 1- PULL ~~LDW340-60626-167-1 & LDW340-60626-91-1 (WAS)~~
LDW340-60626-167-1 & LDW340-60626-161-1 (NOW)

DETAIL SPEC REQ | CL II ENGRG CHG | ✓ CL I ENGRG CHG

REASON FOR EO: TO CORRECT & CLARIFY DRAWING. (DR 52 REF)

DESCRIPTION OF EO: REVISED CALLOUT IN F/D, ZONE 5E. IN NOTE 1 LDW340-60626-161-1 WAS -91-1.

GAEC EO: (2)

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		NONE	

DRAWING CHANGE REQD: ✓ REVISE DWG | RECORD EO | DISPOSITION OF PARTS: NOT REQD REWORK | SCRAP

PRIORITY: C

SUPPORT INST D/S QUAD II, RWK LDW340-60782 — DRAWING TITLE: CREW PROV

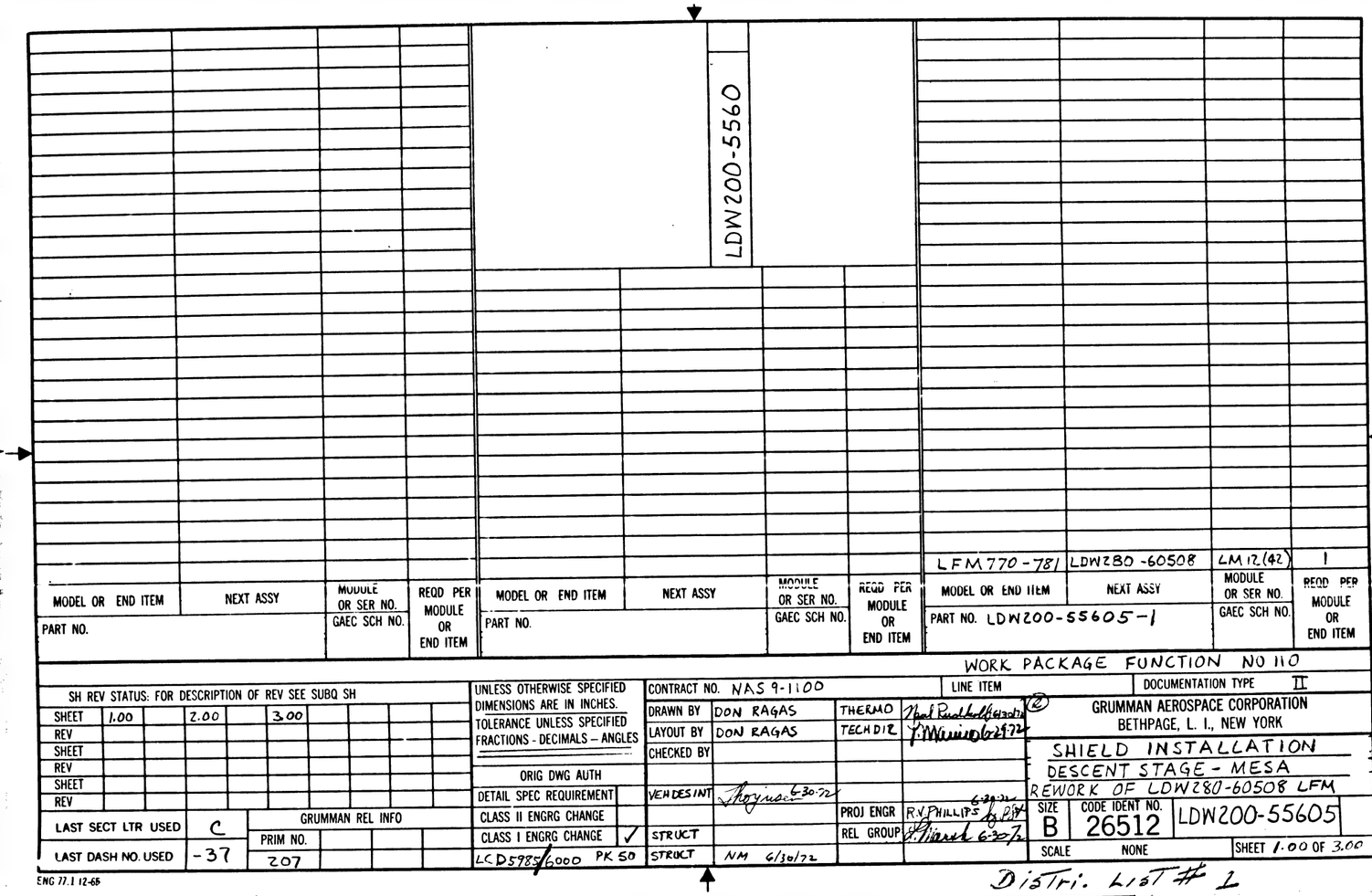
DRAWING NO.: LDW200-55604 — EO NO.: A1

APPROVED BY	DATE	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
				A✓	NM		NH
				7/19/72	7/19/72		7/19/72

ISSUED BY: SALVADOR X9481 — SECTION: CREW PROVISIONS — GROUP NO. 0343 — PL 025

01

NAS 9-1100



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.					
								LFM770-781	LDW280-60508	LM12(42)	1
								PART NO. LDW200-55605-1		GAEC SCH NO.	

WORK PACKAGE FUNCTION NO 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00		2.00		3.00					
REV										
SHEET										
REV										
SHEET										
REV										

		GRUMMAN REL INFO				
LAST SECT LTR USED	C	PRIM NO.				
LAST DASH NO. USED	-37	207				

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE ✓

LCD5985/6000 PK 50

CONTRACT NO. NAS 9-1100 LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	DON RAGAS	THERMO	Neal Rudolph 6/30/72
LAYOUT BY	DON RAGAS	TECH DIR	J. Winnie 6/29/72
CHECKED BY			
VEH DES INT	Shojnacki 6-30-72		
		PROJ ENGR	R.V. PHILLIPS 6/29/72
STRUCT		REL GROUP	D. Ward 6-30-72
STRUCT	NM 6/30/72		

GRUMMAN AEROSPACE CORPORATION
BETHPAGE, L. I., NEW YORK

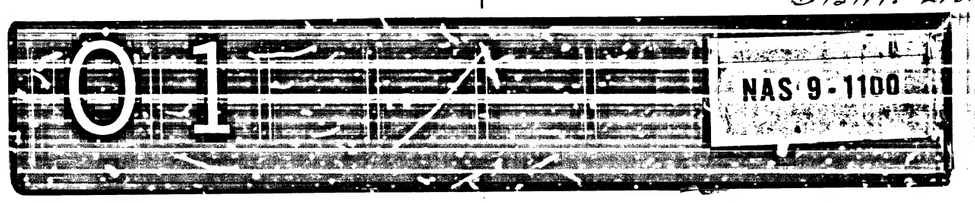
SHIELD INSTALLATION
DESCENT STAGE - MESA
REWORK OF LDW280-60508 LFM

SIZE	CODE IDENT NO.	
B	26512	LDW200-55605

SCALE NONE SHEET 1.00 OF 3.00

ENG 77.1 12-65

Distri. List # 1



-37	-35	-33	-31	-29	-27	-25	-23	-21	-5	-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
QTY PER ASSEMBLY																						
AR	AR												GS577A-1	E	STAPLE	GRUMMAN STD				NONE	NONE	
AR	AR	AR											GTB35P-8		TAPE					NONE	NONE	
AR	AR	AR											GW10H-1		WASHER					NONE	NONE	
AR	AR	AR											GR11B-1		RETAINER					NONE	NONE	
	4												GP15A-10-10-3		PATCH	GRUMMAN STD						
	1												LDW280P14391-3		RETAINER	SEE DWG						
	2												LDW280P14391-1		VENT	SEE DWG						
													LDW200-55605 -37		BLANKET							
													-35									
													-33									
													-31									
													-29									
													-27									
													-25									
													-23									
													-21		BLANKET							
AR													-17		INSULATION	SEE NOTE 4						
	AR	AR											-15									
AR			AR										-13									
AR						AR	AR	AR					-11		INSULATION	SEE NOTE 4						
												1	-5		DOOR ASSY					NONE	NONE	
												1	-3		BLANKET ASSY					NONE	NONE	
													LDW200-55605-1	E	SHIELD INSTL					NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55605

SCALE NONE SHEET 2.00

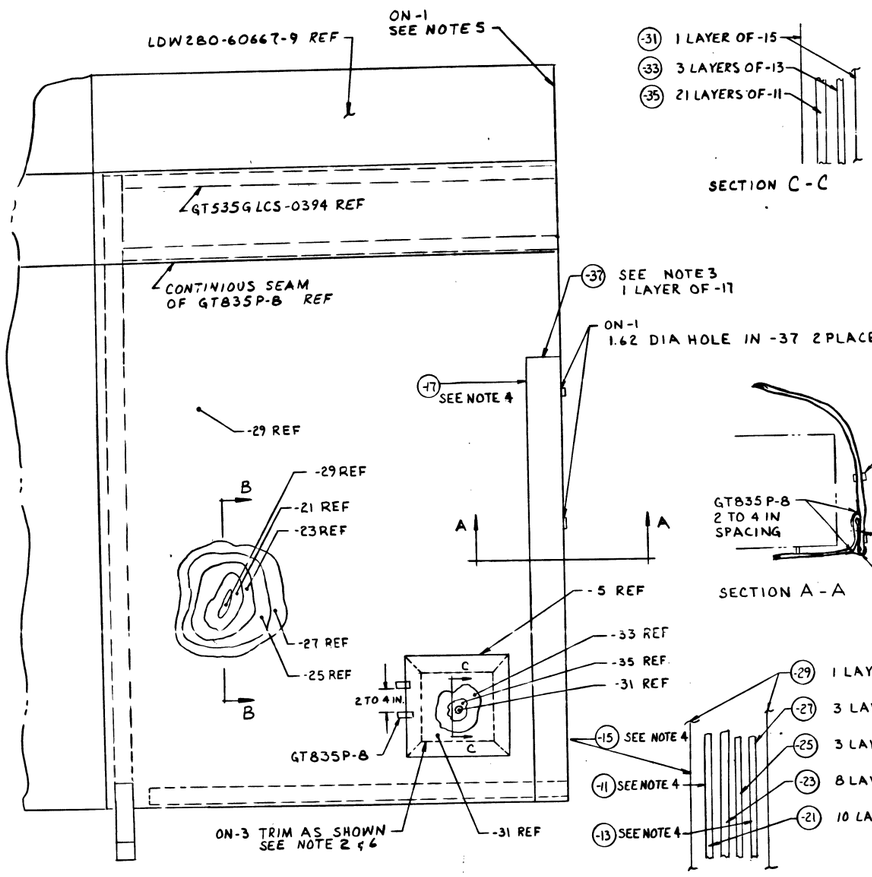
ENG 77.2 7-64

01

NAS 9-1100

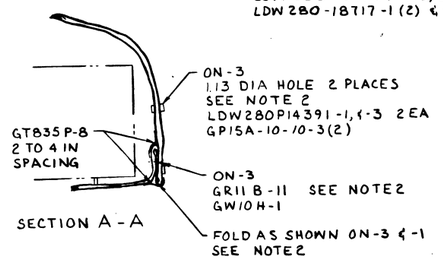
LDW200-55605

REVISIONS						
ZONE	LTR	DESCRIPTION	CHG CODE	MODEL	DATE	APPROVED



LDW200-55605 -1 INSTL (SEE NOTE 3)
-3 ASSY (SEE NOTE 3)
-5 ASSY

SECTION C-C



SECTION A-A

SECTION B-B

NOTES:
1 APPLICABLE PROCEDURE
LPC 280-1 FABRICATION
-2 VENTING
-3 SEAMS
LPC 280-6 CUTTING
-8 REPAIR PROCEDURE
-9 BAY VENT

2- FINAL SIZE (WITH FOLD, VENTS, & SEAM LOCATIONS OF BLANKET ASSEMBLIES SHALL BE DETERMINED FROM APPROVE MASTER TEMPLATE

3- -3 BLANKET ASSY MAY BE MADE BY REWORKING LDW280-60667-5
-37 BLANKET LDW280-60667-33
-1 INSTL LDW280-60667-1

4- -11 ALUMINIZED MYLAR (.00015) PER LSM14-5302
-13 ALUMINIZED POLYIMIDE (.00025) PER LSM14-5301 TYPE IA, CL1
-15 ALUMINIZED POLYIMIDE (.0005) PER LSM14-5301 TYPE IA, CL1
-17 ALUMINIZED POLYIMIDE (.005) PER LSM14-5304 TYPE IV CL2

5- TUCK & FOLD AS REQD USING GT835P-8 TAPE TO INSURE A MIN. CLEARANCE OF 2" WITH LANDING GEAR DOWN LOCK FITTING UNDER DIRECTION OF COG. ENGR

6 ON-1 REMOVE THE FOLLOWING PARTS
LDW 280-60667-83, 85 & 87
LDW 280-18717-1 (2) & -3

FOR PARTS LIST, USAGE DATA, AND DWG SH STATUS, SEE DOCUMENT SAME NUMBER PREFIXED PL

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES			CONTRACT NO.	GRUMMAN AEROSPACE CORPORATION BETHPAGE, NEW YORK 11714		
LINEAR TOL	XX ± .03 XXX ± .010		DRAWN BY			
ANGULAR TOL	± 1°		LAYOUT BY			
TOL ON LOFTED DELINEATIONS IS			CHECKED BY			
			ENGR LEADER			
			REL ENGNR			
			PROJ ENGR			
			PROJ APPD	SIZE D	CODE IDENT NO. 26512	LDW200-55605
				SCALE NONE		SHEET 3 OF 3

DISTR LIST # 2

NAS 9-1100

GRUMMAN AEROSPACE CORPORATION
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW200-55605 | EO NO. A1
GRUMMAN INFO NO. LDW280C1504

IN B/M: ADD QTY REQMTS AS NOTED:
ON -1: FOR -37 ADD 1 REQD
ON -3 FOR-21 THRU-29 ADD 1 REQD
ON -5 FOR-31 THRU-35 ADD 1 REQD

RETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD 5985 PAG50 LFM770 / LCO 6000 PAG50 LFM771

REASON FOR EO
QTY REQMTS FOR DETAIL PARTS REQD, TO COMPLETE ASSYS

IN B/M ADDED QTY REQMTS-DESCRIPTION OF EO
ON -1; -37 - 1 REQD
ON -3; -21 THRU-29 --- 1EA REQD
ON -5; -31 THRU-35 --- 1 EA REQD

GAEC EO WITHIN (2)

EFFECTIVITY				DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.		REVISE DWG	RECORD ED	REWORK	SCRAP	DATE								
LM	LFM770,781	LM12(42)		✓		✓			DAR		NM					
								7-19-74		7/19/74						
				PRIORITY		DRAWING TITLE				RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GAC	ED NO.
				C		SHIELD INSTL D/S-MESA - REWK OF LDW280-6050									DRAWING NO. LDW200-55605	A1

ISSUED BY DON RAGAS X2410 SECTION VD1 GROUP NO. 0335 PL 025

Q1

NAS 9-1100

A

GRUMMAN AEROSPACE CORPORATION
CODE IDENT NO. 26512
ENG 27.1 REV 3-65
ENGINEERING ORDER

DWG. NO. LDW200 55605 | EO NO. A2
CONTROL INFO NO. LDW280C1510

REVISE NOTE #6

ON-1 REMOVE THE FOLLOWING PARTS

LDW280-18717-3 (1) & LDW280-18717-5(1), MS27980-1N(1),

& MS27890-6N, LDW280-60667-141

WAS

ON-1 REMOVE THE FOLLOWING PARTS

LDW280-60667-83,85 &87

LDW280-18717-1(2), LDW280-18717-3

DETAIL SPEC REQ | CL II ENGRG CNG | CL I ENGRG CNG | ✓ LCD 5935 PKG 50 LFM 770/LCD6000 PKG50 LFM780

REASON FOR EO: INCORRECT ASSY REMOVAL CALL OUT

DESCRIPTION OF EO: REVISED NOTE #6 REMOVED LDW280-18717-3), LDW280-18717-5, MS27981-1N, & MS27890-6N & LDW280-60667-141 WAS REMOVED LDW280-18717-1(2), LDW280-18717-3, LDW280-60667-83,-85 & -87

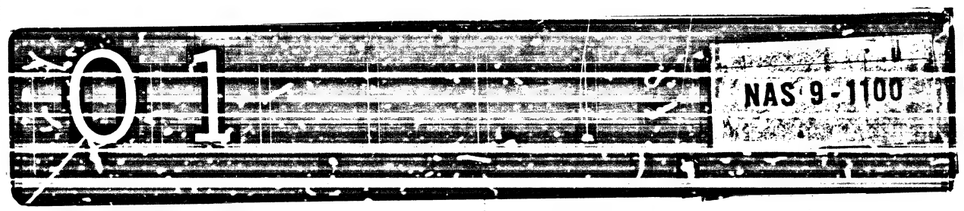
GAC EO RELEASE (2)

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 770A	LM12(42)	
Lm	LFM 781	LM12(42)	

DRAWING CHANGE REQD: ✓ REVISE DWG | RECORD EO
DISPOSITION OF PARTS: ✓ REWORK | SCRAP
APPROVED BY / DATE: OSH 8-4-72; NM 8-4-72; BLW 8-4-72; [illegible] 8-4-72
SUPPORT | RELIAB GROUP | GROUP LEADER | STRESS GROUP | LIAISON ENGRG | PROJ ENGRG | GAC

PRIORITY: C
DRAWING TITLE: SHIELD INSTL. D/S - MESA REWORK OF LDW280 60508
DRAWING NO.: LDW200-55605
EO NO.: A2

ISSUED BY DON RAGAS X7410 SECTION VD1 GROUP NO. 0335 PL 025



LDW200-55606

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM 784	LDW280-60508	(M12/A2)	1
PART NO. LDW200-55606-1		GAEC SCH NO.	

WORK PACKAGE FUNCTION NO 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	2.00	3.00
REV			
SHEET			
REV			
SHEET			
REV			

LAST SECT LTR USED	A
LAST DASH NO. USED	-3

GRUMMAN REL INFO: PRIM NO. 207

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
XX ±.03, .XXX ±.010, ±0°30'

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 6006 PK50	

CONTRACT NO. NAS9-1100 LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	DON RAGAS	THERMO	7-13-72
LAYOUT BY	DON RAGAS	TECH DIR	7-13-72
CHECKED BY	7-13-72		
VEH DES INT	7-12-72		
STRUCTURE	NM 7-12-72	PROJ ENGR	7/13/72
		REL GROUP	7-13-72

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SHIELD INSTALLATION
DESCENT STAGE - MESA THERMAL
REWORK OF LDW280-60508 LFM 784

SIZE B | CODE IDENT NO. 26512 | LDW200-55606 | G

SCALE NONE | SHEET 1 OF 3

ENG 77.1 12-68

Distri. LIST #1

01

NAS 9-1100

QTY PER ASSEMBLY -3	QTY PER ASSEMBLY -1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
	1		LDW200-55606-3	E	BLANKET ASSY					NONE	NONE	5A
	1		LDW200-55606-1	E	SHIELD INSTL					NONE	NONE	5A
AR			GTB35P-8	E	TAPE	GRUMMAN STD						
	8		GB 511J-06-3	E	BOLT	GRUMMAN STD						
8			MS20230B20	E	GROMMET ASSY	STD PART						
	8		AN960C6L	E	WASHER	STD PART						

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW200-55606

SCALE NONE SHEET 2.00

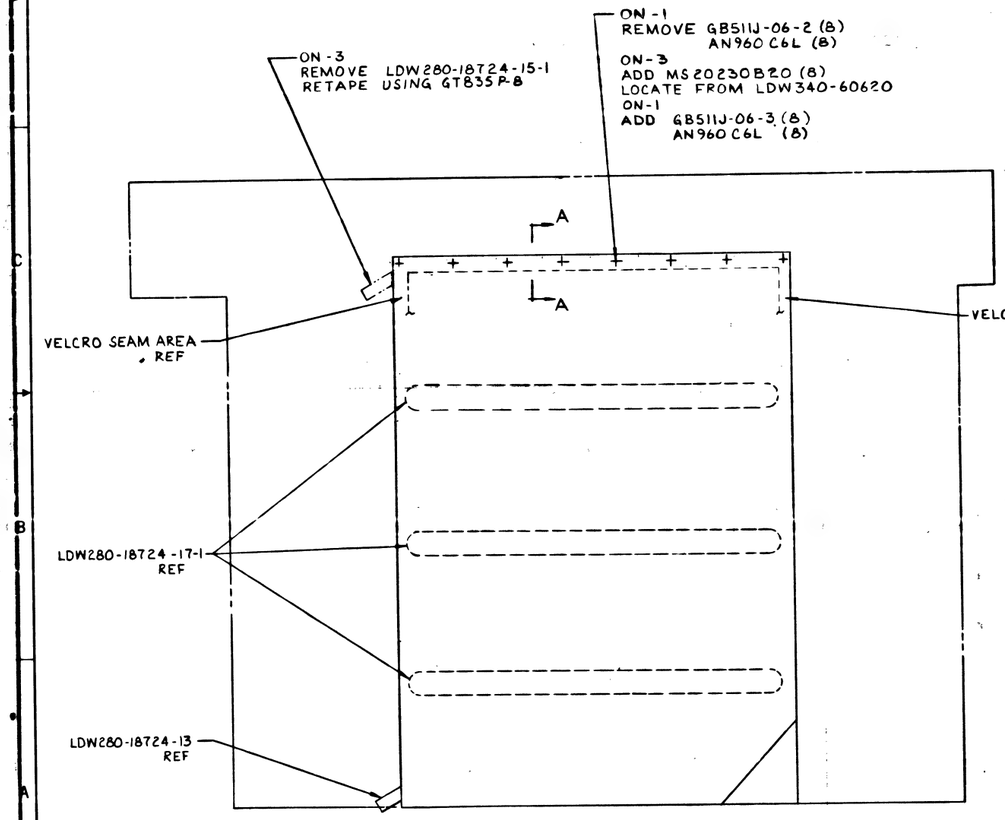
ENG 77.2 7-64

NAS 9-1100

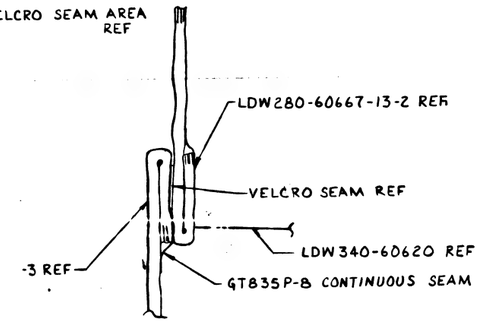
LDW200-55606

REVISIONS						
ZONE	LTR	DESCRIPTION	EFF CODE	MODEL	DATE	APPROVED

NOTES
1. -3 ASSY IS MADE BY REWORKING LDW280-60667-192



LDW200-55606 -1 SHIELD INSTL
-3 BLANKET ASSY (SEE NOTE 1)



SECTION A-A

FOR PARTS LIST, USAGE DATA, AND DWG SH STATUS, SEE DOCUMENT SAME NUMBER PREFIXED PL

UNLESS OTHERWISE SPECIFIED	CONTRACT NO.	GRUMMAN AEROSPACE CORPORATION
DIMENSIONS IN INCHES		BETHPAGE, NEW YORK 11714
DRAWN BY		
LAYOUT BY		
CHECKED BY		
PROJ ENGR		
GOVT APPD		

SIZE	CODE IDENT NO.	LDW200-55606
D	26512	

SCALE NONE SHEET 3 OF 3

1 DISTR LIST # 1

NAS 8-1100

LDW200-55606 -1

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-28763		EO NO. A6
CONTROL INFO NO. LM 29-1102		

ON-3 & -5

LDW280-17932-11(14)S/13 LDW280-17932-13 (14)

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG ✓	

REASON FOR EO
ADDITIONAL WASHER THKNESS REQD FOR THERMAL CONTROL

DESCRIPTION OF EO
ON-3 & -5 ASSY
LDW280-17932-13 WAS LDW280-17932-11

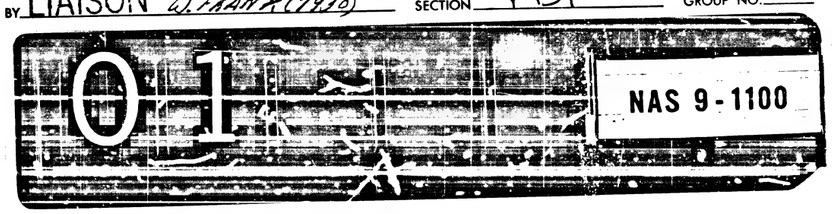
GAEC EO RELEASE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM	NOT REQ'D		

DRAWING CHANGE REQD	DISPOSITION OF PARTS	APPROVED BY							
		DATE							
REVISE DWG	RECORD EO	REWORK	SCRAP		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
✓		NOT REQ'D		9/6/67	VDI						

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
E29	SHIELD ASSY-D/S-QUAD I-PUMP IMPINGEMENT SHIELD-SIDE REMOVABLE	LDW280-28763	A6

ISSUED BY LIAISON W. FRANK (7930) SECTION YD1 GROUP NO. 335 PL 25



GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG NO. LDW210-53950		EO NO. D2
CONTROL INFO NO. LDW210 B-4207		

THIS EO CANCELS EO D1

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	V	LCD 3/27	PKG # 9	CCB # 5 (5)

REASON FOR EO: REDESIGN OF PROP TANKS

DESCRIPTION OF EO: THIS EO CANCELS EO D1

GAEC EO RELEASE: V 4/27/68

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
LM		LM-6(36)		V			V	DATE 4/26/68 A VD1			4/26/68	4/26/68	4/26/68	4/27/68

PRIORITY: C

DRAWING TITLE: TANK INSTL ~A/S PROPELLANT

DRAWING NO.: LDW210-53950

EO NO.: D2

6 26 68
ISSUED BY Louis Berunquette x3352 SECTION VD1 GROUP NO. 335 PL 25

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NAS 9-1100

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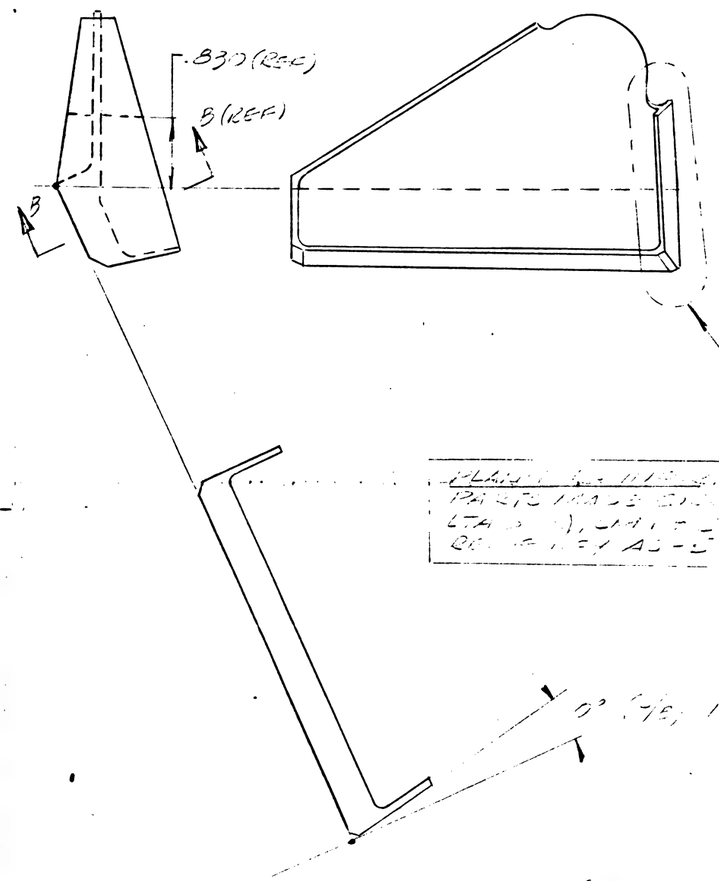
40 32.2 REV 3.65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

EHF-A

DWG. NO. LW12-7141 (-3) | EO NO. B1
CONTROL INFO NO. LM-5-12711

IN FLD, B/H, & INSTL
CREATE -5 SAME AS # TO REPLACE -3 EXCEPT AS SHOWN
SCRAP -3
I&T = E



RELEASED BY LIAISON

Rec'd on F# LM15-12711

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG

REASON FOR EO: REVISE FITTING TO INSTL CORRECTLY ON INSTL

DESCRIPTION OF EO: IN FLD, B/H & INSTL -5, ADDED -5, DELETED -3

GAEC EO RELEASE: DV 1/5/66 | 1/6/66 | 1/7/66

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO	SUB CONTR UNIT NO
LM		LM1(ITA2)	
		LM15(B2) -7A3(13)	

DRWG. CHECKING AFGD: REVISE DWG ✓; RECORD EO

DISPOSITION OF PARTS: REWORK; SCRAP -3

APPROVED BY: DATE; SUPPORT; RELIAB GROUP; GROUP LEADER; STRESS GROUP; LIAISON ENGR; PROJ ENGR

PRIORITY: C

DRAWING TITLE: FITTING-A/S - MID. FUS. CONDT. LH - X223.5, +24.50, Y7.25

DRAWING NO: LW12-7141 (-3)

EO NO. B1

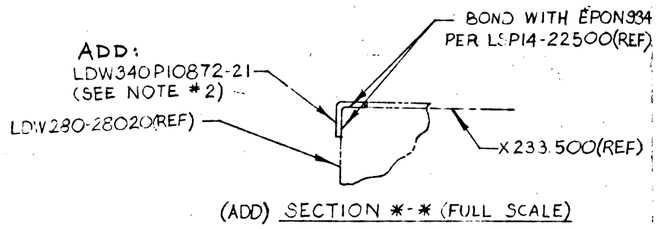
ISSUED BY: LM RELEASED X2-12 SECTION: 121/P-Shop GROUP NO. 5-3

390

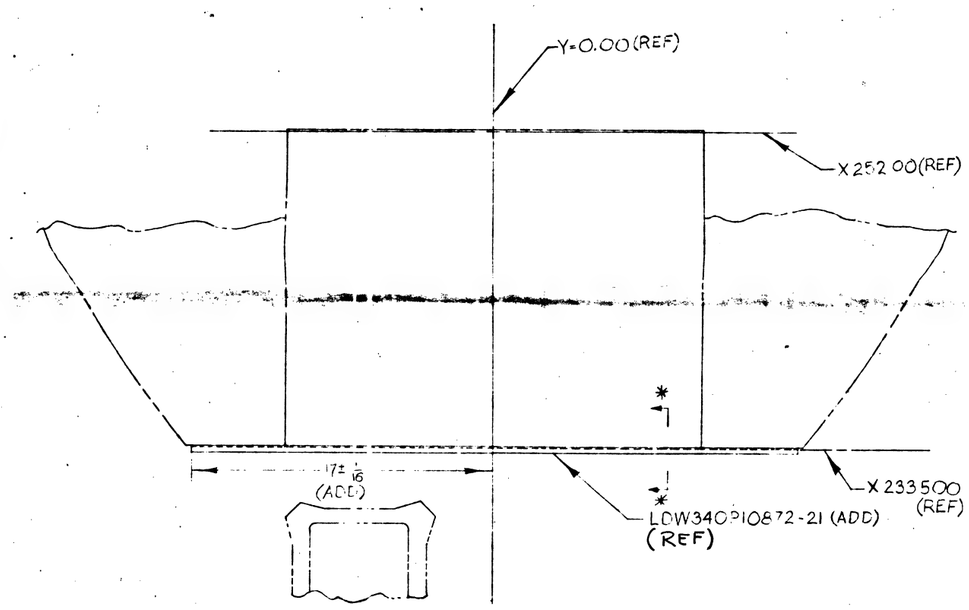
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LDW340-51005 | EO NO. B2
CONTROL INFO NO. LDW340-1947

IN FLD & B/M ON-1 ADD LDW340P10872-21 & SECTION *-*, ADD DIM



(ADD) SECTION *-* (FULL SCALE)



THIS IS AN ORIGINAL E.O.

(ZONE 11A)(REF)

** USE NEXT AVAILABLE SECT. LTR. 5

RETAIN. SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG

REASON FOR EO: TO ADD PART REQD PER CDR REF NO. L-2(+Z27 BHD EDGE)

DESCRIPTION OF EO: IN FLD & B/M ON-1 ADDED LDW340P10872-21 & SECTION *-*, ADDED DIM 17± 1/16

GAEC EO RELEASE: 9-6

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LEM-1(31)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		✓	

APPROVED BY	DATE									
	9/9/66	9/15	8-24-66	8-25-66			9-3	9/1/66		
WTS	8-22-66	SUPPORT WTS	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GDMS		

PRIORITY: C

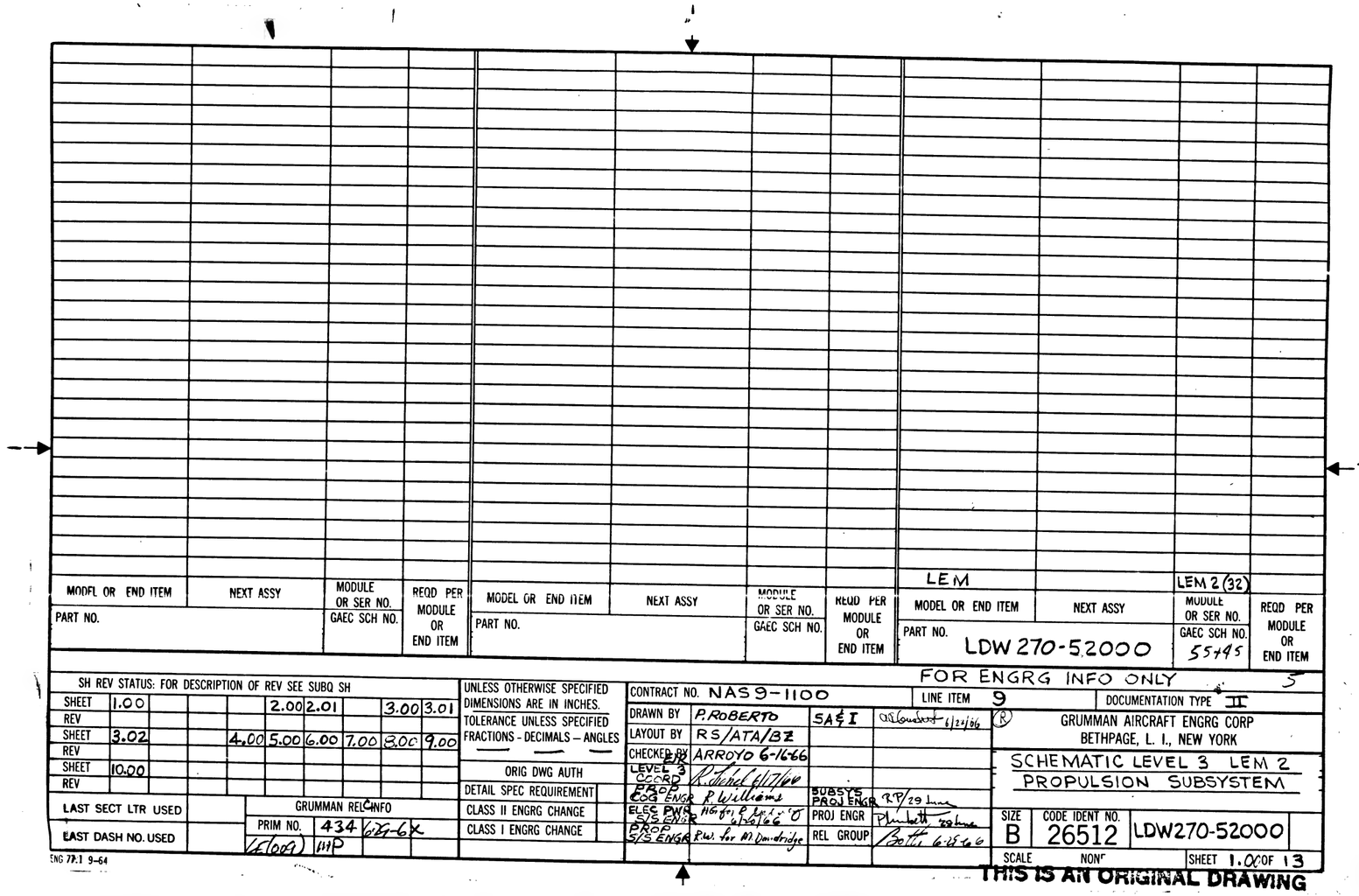
DRAWING TITLE: EQUIPMENT INSTL CREW PROV- COCKPIT- FINAL

DRAWING NO.: LDW340-51005

EO NO.: B2

ISSUED BY WM GEIER X-7344 G HAEMS SECTION CREW PROV GROUP NO. 343 PL 35

NAS 9-1100



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	LEM	NEXT ASSY		MODULE OR SER NO.	LEM 2 (32)	REQD PER MODULE OR END ITEM
PART NO.	LDW 270-52000			GAEC SCH NO.	55145	

FOR ENGRG INFO ONLY 5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00				2.00	2.01		3.00	3.01
REV									
SHEET	3.02			4.00	5.00	6.00	7.00	8.00	9.00
REV									
SHEET	10.00								
REV									

LAST SECT LTR USED	
LAST DASH NO. USED	

GRUMMAN REL INFO

PRIM NO.	434 V27-6X
VEHICLE	LMP

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS — ANGLES

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100 LINE ITEM 9 DOCUMENTATION TYPE II

DRAWN BY	P. ROBERTO	SA&I	6/24/66
LAYOUT BY	RS/ATA/BZ		
CHECKED BY	ARROYO 6-1666		
LEVEL 3 COORD	R. Richard 6/17/66		
PROP COG ENGR	P. Williams	SUBSYS PROJ ENGR	RP/29 June
ELEC PWR SYS ENGR	HG for P. Lipsitz 6/28/66	PROJ ENGR	Plunkett 28 June
PROP S/S ENGR	R.W. for M Dandridge	REL GROUP	Bothe 6-28-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

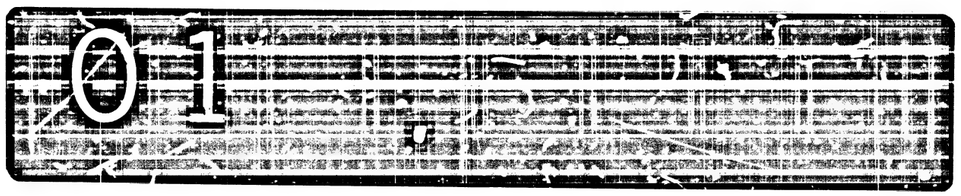
SCHEMATIC LEVEL 3 LEM 2
PROPULSION SUBSYSTEM

SIZE	CODE IDENT NO.	
B	26512	LDW270-52000
SCALE	NONE	SHEET 1.00 OF 13

ENG 72-1 9-64

THIS IS AN ORIGINAL DRAWING

NAS 9-1100



10MT13	LSC360-605-301	TEMP ENGINE INTERFACE INLET OX	6	51B	GQ4311T						
10MT12	NTN510790-203	PRESS REG INLET	6	47B	GQ3010P						
10MT11	NTN510790-203	PRESS REG INLET	6	47B	GQ3009P	10A7A1CR2	UZ5840	ZENER DIODE	6	54B	ARC SUPPR
10MT10	LSC350-605-303	TEMP, TRANSDUCER	6	51B	GQ4219T	10A7A1CR1	UZ5840	↕	6	54B	ARC SUPPR
10MT9	↕	↕	6	51B	GQ4218T						
10MT8	↕	↕	6	50B	GQ3719T	10A6A1CR2	UZ5840	↕	6	54C	ARC SUPPR
10MT7	LSC350-605-303	TEMP, TRANSDUCER	6	50B	GQ3718T	10A6A1CR1	UZ5840	↕	6	54C	ARC SUPPR
10MT1	LSC350-605-301	TEMP ENGINE INTERFACE FUEL	6	48B	GQ3811T	10A5A1CR2	UZ5840	↕	5	38B	ARC SUPPR
						10A5A1CR1	UZ5840	↕	5	38B	ARC SUPPR
10M5	LSC350-00401-03-2	PROPELLANT QTY INDICATOR	7	64B							
10M4	LSC350-80179-13	DUAL VERT METER TEMP	7	68A		10A4A1CR2	UZ5840	↕	5	38C	ARC SUPPR
10M3	LSC350-80125-13	DUAL VERT METER PRESS	7	68A		10A4A1CR1	UZ5840	ZENER DIODE	5	38C	ARC SUPPR.
10M1	LSC350-20100-02-1	He TEMP/PRESS READOUT	7	68C							
10L6	LSC270-00822-7	SOLENOID VALVE ACTUATOR ISOLATION	5	29B							
						10A7	LDW390-28070-3	VALVE ASSY	6	54B	
10FL4	LSC350-80402-04	DESCENT STATUS REG FLAG NO.2	6	56A		10A6	LDW390-28070-1	↕	6	54C	
10FL3	LSC350-80401-04	DESCENT STATUS REG FLAG NO.1	6	56B		10A5	LDW390-51070-1	↕	5	38B	
10FL2	LSC350-80401-04	ASCENT STATUS REG FLAG NO.2	5	40A		10A4	LDW390-51070-1	VALVE ASSY	5	38C	
10FL1	LSC350-80401-04	ASCENT STATUS REG FLAG NO.1	5	40B		10A3	LSC270-00009-23	GAGING CONTROL UNIT PROPELLANT QUANTITY	7	62C	
						10A2	LSC270-00500-10	ASCENT ENGINE(BELL)	12	29B	
						10A1	LSC270-00600-14	DESCENT ENGINE (S.T.L)	10,11	43C	
						REF DESIGNATION	PART NUMBER	DESCRIPTION	SHEET	ZONE	
10A7L1	LSC270-7/3-6	LATCHING He SOLENOID VALVE #2	6	53B							
10A6L1	LSC270-7/3-5	LATCHING He SOLENOID VALVE #1	6	53C							
10A5L1	LSC270-7/3-15	LATCHING He SOLENOID VALVE #2	5	38A							
10A4L1	LSC270-7/3-15	LATCHING He SOLENOID VALVE #1	5	38B							
REF DESIGNATION	PART NUMBER	DESCRIPTION	SHEET	ZONE							

NG 77.10 7-64

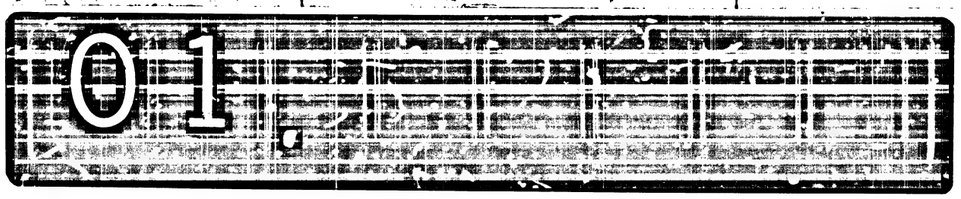
GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW270-52000

SCALE NONE SHEET 2.00

THIS IS AN ORIGINAL DRAWI

NAS 9-1100



REF DESIGNATION	PART NUMBER	DESCRIPTION	SHEET	ZONE	
10S8	LSC350-83-10211	PROPELLANT QTY MONITOR SEL SWITCH	7	64B	
10S7	LSC350-81-05311	DESCENT REGULATOR NO. 2 SWITCH	6	56B	
10S6	LSC350-80305-11	He TEMP/PRESS MONITOR SWITCH	7	68B	
10S5	LSC350-81-05311	DESCENT REGULATOR NO. 1 SWITCH	6	56B	
10S4	LSC350-81-05311	ASCENT REGULATOR NO. 2 SWITCH	5	40B	
10S3	LSC350-81-05311	ASCENT REGULATOR NO. 1 SWITCH	5	40C	
10S1	LSC350-84-02011	TEMP/PRESS MONITOR SWITCH	7	68A	
10MT59	LSC360-624-111	TRANSDUCER PRESS AMBIENT	6	52C	GQ3015P
10MT58	LSC360-601-107	TRANSDUCER, PRESS ABSOLUTE	5	31B	GP0018P
10MT57	LSC360-601-107	TRANSDUCER PRESS ABSOLUTE	6	48B	GQ3025P
10MT56	LSC270-821-29	TRANSDUCER, PRESS ABSOLUTE	6	48B	GQ3436P
10MT55	LSC270-00009-15	SENSING UNIT OXIDIZER QUANTITY	7	63C	
10MT54	LSC270-00009-15	SENSING UNIT OXIDIZER QUANTITY	7	63C	
10MT53	LSC270-00009-16	SENSING UNIT FUEL QUANTITY	7	63C	
10MT52	LSC270-00009-16	SENSING UNIT FUEL QUANTITY	7	63C	
10MT51	LSC360-605-407	TRANSDUCER TEMP	6	43B	GQ3463T
10MT50	LSC360-605-407	↕	6	43B	GQ3459T
10MT49	LSC360-605-407	↕	6	44B	GQ3455T
10MT48	LSC360-605-409	↕	6	44B	GQ3451T
10MT47	NTN510724-001	TRANSDUCER, TEMP	6	44B	GQ3476T
10MT45	LSC270-821-65	TRANSDUCER, PRESS ABSOLUTE	6	45B	GQ3435P
10MT43	LSC270-801-14	OX TANK LEVEL LOW	5	31B	GP1408X
10MT42	LSC360-601-107	TRANSDUCER PRESS ABSOLUTE	5	32B	GP0025P
10MT41	LSC360-801-13	FUEL TANK LEVEL LOW	5	32B	GP0908X
10MT40	LSC360-605-303	TEMP. TRANSDUCER	5	33B	GP1218T
10MT39	LSC360-605-303	TEMP. TRANSDUCER	5	33B	GP0718T
10MT38	LSC360-605-405	TEMP. TRANSDUCER	5	33B	GP0202T
10MT37	LSC360-605-405	TEMP. TRANSDUCER	5	34B	GP0201T
10MT36	LSC360-601-101	TRANSDUCER PRESS ABSOLUTE	5	34B	GP0002P
10MT35	LSC360-601-101	TRANSDUCER PRESS ABSOLUTE	5	34B	GP0001P
10MT34	LSC360-605-301	TEMP ENGINE INTERFACE OX	5	34B	GP7608T
10MT33	LSC360-605-301	TEMP ENGINE INTERFACE FUEL	5	35B	GP7606T
10MT32	NTN510981-201	PRESS DROP OX TANK INTERFACE	5	35B	GP1116P
10MT31	NTN510790-201	PRESS OX TANK VENT RELIEF VALVE INLET	5	35B	GP1004P
10MT30	LSC360-601-107	PRESS OX TANK ULLAGE	5	36B	GP1001P
10MT29	NTN510981-201	PRESS DROP FUEL TANK INTERFACE	5	36B	GP0616P
10MT28	NTN510790-201	PRESS FUEL TANK VENT RELIEF VALVE INLET	5	36B	GP0504P
10MT27	LSC360-601-107	PRESS FUEL TANK ULLAGE	5	36B	GP0901P
10MT26	NTN510790-202	PRESS He SEC REG UPSTREAM INLET	5	37B	GP0020P
10MT25	NTN510790-202	PRESS He PRIM REG UPSTREAM INLET	5	37B	GP0019P
10MT24	LSC360-601-107	TRANSDUCER PRESS ABSOLUTE	6	49B	GQ3611P
10MT23	NTN510981-201	PRESS DELTA OX TK#1 BOT TO ENG INTERFACE	6	45B	GQ4116P
10MT22	NTN510790-201	PRESS OX TANK VENT RELIEF VALVE INLET	6	46B	GQ4005P
10MT21	LSC360-601-107	PRESS OX TANK #1 ULLAGE	6	46B	GQ4001P
10MT20	NTN510981-201	PRESS DELTA FUEL TK#2 BOT TO ENG INTERFACE	6	46B	GQ3666P
10MT19	LSC360-601-107	TRANSDUCER PRESS ABSOLUTE	6	45B	GQ3018P
10MT18	NTN510790-201	PRESS FUEL TANK VENT RELIEF VALVE INLET	6	47B	GQ3505P
10MT17	LSC360-601-107	PRESS ULLAGE FUEL TANK #1	6	47B	GQ3501P
10MT16	LSC360-601-107	TRANSDUCER PRESS ABSOLUTE	6	49B	GQ4111P
REF DESIGNATION	PART NUMBER	DESCRIPTION	SHEET	ZONE	

ENG 77.10 7-64

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW270-52000

SCALE NONE SHEET 2.01

THIS IS AN ORIGINAL DRAWING

NAS 9-1100

0.1

NOTES CHECKED ✓ APPLY TO THIS DRAWING

	1. SOLDERING OF ELECTRICAL CONNECTIONS TO BE IN ACCORDANCE WITH	✓	18. INSTRUMENTATION CALLOUT ON MEASUREMENT LIST & NOT SHOWN ON THIS DWG ARE TELEMETERING NOTATIONS INDICATING COMBINATIONS OF TRANSDUCERS.
	2. BOND PER LSP-390-001.		
	3. WIRING INSTALLATION PER LSP-390-002.		
✓	4. WIRES ARE TO BE TWISTED IN ACCORDANCE WITH LSP-530-001, TABLE III.	✓	19. THIS DRAWING INCORPORATES MEASUREMENTS SHOWN IN LEM 1-3 MEASUREMENT LIST, LED 360-22, REV. E, DATED 11 APRIL 1966 AND THESE PROJECT-APPROVED MCR'S: 305, 305A, 321, 341, 364, 392A, 392C, 427, 428, 468, 478, 504 & 429C.
	5. QUANTITIES OF END CAPS, SPLICES AND TERMINALS ARE NOT SPECIFIED IN THE BILL OF MATERIALS. USAGE: AS REQ'D.		
	6. FOR SCHEMATIC WIRING DIAGRAM SEE DRAWING NO.		
	7. ALL WIRES TO BE HOT STAMPED EVERY INCHES WITH WIRE NUMBER.		
	8. WIRE BUNDLING AND ROUTING: WIRES OF THE SAME CLASSIFICATION MAY BE BUNDLED TOGETHER WHEN A CLASSIFICATION LETTER IS PRECEEDED BY A NUMBER, SUCH SUBCLASSIFICATION SHALL BE SEPARATED BY A MINIMUM OF ONE-INCH. (EXAMPLE: 1D, 2D SEPARATED ONE-INCH MINIMUM) A MINIMUM OF ONE-INCH SEPARATION REQUIRED BETWEEN CLASSIFICATION GROUPS A, B, C, D, & E. A MINIMUM OF ONE-INCH SEPARATION REQUIRED BETWEEN CLASSIFICATION GROUPS F, G, & H. ANYONE OF THE CLASSIFICATION GROUPS A, B, C, D, OR E SHALL BE SEPARATED BY A MINIMUM OF FOUR-INCHES FROM ANYONE OF THE CLASSIFICATION GROUPS F, G, & H. WIRE BUNDLES TO BE ROUTED IN CONSOLE AS SHOWN.	✓	20. ELECTRICAL DRAWING SYMBOLS SHOWN ON THIS DRAWING ARE IN ACCORDANCE WITH SECTION 15 OF THE MSFC DRAFTING MANUAL MIL-STD-15-1A & GS22B.
		✓	21. REFER TO LDW320-52000 SYSTEM SCHEMATIC LEVEL 3 FOR ELECTRO EXPLOSIVE DEVICES ASSOCIATED WITH PROPULSION SUBSYSTEM.
	9. WIRE LENGTHS SHOWN ARE APPROXIMATE. EXACT LENGTHS TO BE DETERMINED ON FIRST MANUFACTURED UNIT AND ENGINEERING DEPARTMENT NOTIFIED.	✓	22. GROUND DESIGNATIONS: N1=AC GRD, N2=DC GRD, N3=SIGNAL GRD, N4=STRUCTURE GRD.
	10. STENCIL OR MARK CHARACTERS PER MS33558, ( ) HIGH UNLESS OTHERWISE SPECIFIED, USING BLACK LACQUER PER TT-L-595, #1775 (GRUMMAN FINISH #69). COVER WITH CLEAR FLAT LACQUER PER TT-L-58 TYPE I (GRUMMAN FINISH #133).	✓	23. NOTED FLAGS WILL SHOW A STRIPE INDICATION WHEN SIGNAL POWER IS APPLIED TO PIN "1". (NORMALLY GRAY)
	11. ENGRAVE CHARACTERS ( ) HIGH x 0.005 MINIMUM DEPTH PER MS33558 (EXCEPT AS NOTED). FILL WITH BLACK LACQUER PER TT-C-595, #1775 (GRUMMAN FINISH #69).	✓	24. NOTED FLAG WILL SHOW GRAY INDICATION WHEN SIGNAL POWER IS APPLIED TO PIN "1". (NORMALLY STRIPED)
	12. ENGRAVE ALL INDEX DIVISIONS APART 3/16 LONG, ROTATING OUTWARD FROM RADIUS.	✓	25. CAP & STOW THESE WIRES. ANTICIPATE UTILIZATION ON LATER VEHICLES.
	13. CENTRALIZE ALL CHARACTERS.		
	14. BREAK ALL SHARP EDGES.		
	15. BEND RELIEF TO BE MINIMUM RADII.		
	16. ALL BEND RADII TO BE MINIMUM RADIUS.		
	17. FINISH: APPLY EPOXY POLYAMIDE PRIMER MIL-P-23377 OR G.M.S. #1012. APPLY COATS OF MIL-L- LACQUER COLOR # ( ) PER FEDERAL STANDARD #595.		

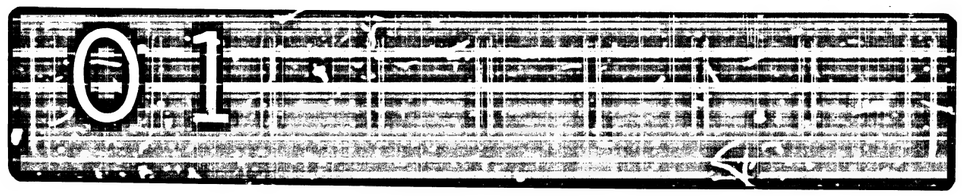
ENG 77.13 8-64

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52000	
SCALE NONE			SHEET 3.00

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NOTES (CON'T) (NOTES CHECKED ✓ APPLY THIS DWG)

✓ 26 WIRES K346-26(A), K347-26(A) & K7-26(A) ARE CONNECTED AS SHOWN FOR MANNED FLIGHTS ONLY. FOR UNMANNED FLIGHTS, DISCONNECT WIRES ABOVE AT TERMINAL STRIP, CAP & STOW & REPLACE WITH NOTED WIRES.

✓ 27. ASCENT AND DESCENT ENGINE ELECTRICAL CIRCUITS AND INTERFACES ARE NOT DOCUMENTED BY LSC DWG'S. ENGINE WIRING DIAGRAMS SHOWN IN THIS LEVEL 3 ARE BASED ON THE BEST INFORMATION AVAILABLE.

✓ 28. SEE SHEET NO. 8.00 FOR SCHEMATIC OF DESCENT STAGE PROPULSION FLUID LINES. SEE SHEET NO. 9.00 FOR SCHEMATIC OF ASCENT STAGE PROPULSION FLUIDLINES.

✓ 29. FLUIDS:
(1) PRESSURIZING AGENT; HELIUM IN ACCORDANCE WITH MIL-P-27407.
(2) PROPELLANT; NITROGEN TETROXIDE IN ACCORDANCE WITH MIL-P-26539
(3) PROPELLANT; HYDRAZINE IN ACCORDANCE WITH MIL-P-27402.

✓ 30. HELIUM STORAGE PRESSURE (MAXIMUM):
(a) 1555 PSIA @ 100°R (DESCENT STAGE)
(b) 3500 PSIA @ 100°F (ASCENT STAGE)

✓ 31. HELIUM STORAGE VESSEL DATA:
(a) DESCENT STAGE;
CHARGE PRESSURE =

CAPACITY = 52.66 LBS TOTAL, 41.85 LBS USABLE.

(b) ASCENT STAGE:
CHARGE PRESSURE = SEE GRAPH FIG 1 (SHT 9.00)
CAPACITY = 6.5 LBS PER STORAGE VESSEL.

✓ 32. PRESSURE REDUCER REQUIREMENTS.
(a) LSC 270-816-11 (DESCENT STAGE) INLET PRESS APPLIED TO EITHER OF TWO INLET PORTS (BUT NOT TO BOTH SIMULTANEOUSLY) = 350 PSIG TO 1750 PSIG. PRESSURE AND FLOW AT OUTLET PORT = 243 PSIG TO 248 PSIG @ 0.43 LBS TO 4.25 LBS PER MINUTE.
(b) LSC 270-715-5 AND -7 (ASCENT STAGE)
PRESSURE AT INLET PORT FOR -5 AND -7 = 400 PSIG TO 3500 PSIG.
PRESSURE AND FLOW AT OUTLET PORT (WITH SECONDARY STAGE REGULATING PRESSURE = 192 PSIG TO 196 PSIG @ 1.55 ± 10% LBS PER MINUTE FOR -5, AND 186 PSIG TO 190 PSIG @ 1.55 ± 10% LBS PER MINUTE FOR -7.
PRESSURE AND FLOW AT OUTLET PORT (WITH PRIMARY OR UPSTREAM STAGE REGULATING PRESSURE) = 194 PSIG TO 198 PSIG @ 1.55 ± 10% LBS PER MINUTE FOR -5 AND 188 PSIG TO 192 PSIG @ 1.55 ± 10% LBS PER MINUTE FOR -7.

✓ 33. REFER TO SHEET NO. 8.00
LSC 270-821-23
BURST DISC RUPTURE PRESSURE = 1425 PSIG TO 1540 PSIG.

✓ 34. OVERBOARD DRAIN LINE SHALL HAVE OPEN END, EXACT DESCRIPTION OF TERMINAL TO BE PROVIDED LATER.

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW270-52000

SCALE | SHEET 3.01

ENG 78.1 6-64

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NAS 9-1100

NOTES (CON'T) (NOTES CHECKED ✓ APPLY TO THIS DWG)

✓ 35. PRESSURE RELIEF VALVE REQUIREMENTS:
LSC 270-818-3 AND -4 (DESCENT STAGE)
LSC 270-717-3 AND -4 (ASCENT STAGE)

	LSC 270-813-3 AND -4	LSC 270-717-3,-4
RATE FLOW PRESSURE	260 PSIG TO 275 PSIG @10.0 LBS PER MINUTE	250 PSIG
RESEAT PRESSURE	254 PSIG MINIMUM	225 PSIG MIN
BURST DISC RUPTURE PRESSURE	268 PSIG TO 308 PSIG	226 PSIG TO 250 PSIG

✓ 36. INSTALL LINE TO OUTSIDE OF VEHICLE AND PROVIDE EXTERNAL GSE CONNECTION FOR SENSING ΔP, FUEL TO OXIDIZER AT ENGINE INTERFACE.

✓ 37. MECHANICAL SYMBOLS SHOWN ARE IN ACCORDANCE WITH MSFC STD-162 WITH THE FOLLOWING ADDITIONS:

FUEL LINE
HELIUM LINE
OXIDIZER LINE
DIFFERENTIAL PRESSURE TRANSDUCER

LINE SIZES (O.DIA)

(-2) = 1/8" (-4) = 1/4" (-6) = 3/8" (-8) = 1/2" (-10) = 5/8"
(-12) = 3/4" (-16) = 1" (-20) = 1 1/4" (-24) = 1 1/2" (-28) = 1 3/4"
(-32) = 2"

✓ 38. TUBING DATA:

SIZE O.DIA	PRESSURE MAXIMUM	WALL THICK.	MAT'L	SPEC
1/8				
1/4	4000	.028	304L	LSM-14-1001
1/4	250	.016		
3/8	4000	.042		
3/8	250	.016		
1/2	4000	.058		
1/2	250	.016		
5/8	250	.016		
3/4	250	.016	304L	LSM-14-1001

✓ 39. WIRE NUMBERS D365, D1319, D1121, D361 & D1314 ARE CONNECTED AS SHOWN FOR MANNED FLIGHTS ONLY. FOR UNMANNED FLIGHTS, DISCONNECT WIRES ABOVE AT PANEL SPLICE POINTS, CUT-OFF SPLICE ON LEADS TO LDW360-52507 AND SPLICE WIRES REFERENCED TO LDW360-52507 TO THOSE WIRES REFERENCED TO LDW360-52007 RESPECTIVELY. SHIELDS AND LEADS TO SWITCH AND METERS CAN BE CAPPED AND STOWED.

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L.I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW270-52000

SCALE NONE SHEET 3.02

ENG 72.1 6-64

THIS IS AN ORIGINAL DRAWING

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NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-11773 | EO NO. B1
CONTROL INFO NO. LDW28081433

IN MOD. BLOCK FOR -11 E, -13: REMOVE N/A LDW 280-53012 (LN-3(63) - 1REQ'D)

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG
	✓	

REASON FOR EO: NOT REQ'D ON LDW280-53012 (CDR LIST)

DESCRIPTION OF EO: ON -11 E-13: REMOVED N/A LDW 280-53012(1)

(5)

EO RELEASE: VC 1/23/68

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		NOT REQD	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: REWORK | SCRAP | NOT REQD

APPROVED BY: DATE 1/17/68 | VDI | SUPPORT | RELIAB GROUP | GROUP LEADER F.J.R. 1-17-68 | STRESS GROUP FAN 1-17 | LIAISON ENGRG | PROJ ENGRG 1/17/68

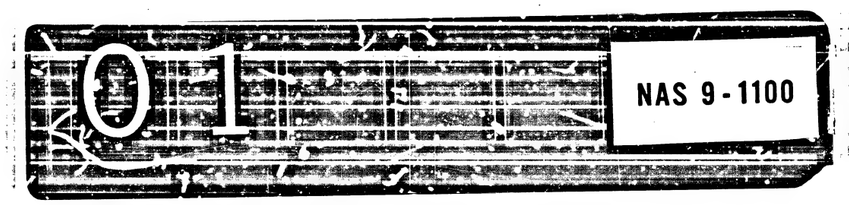
PRIORITY: C

DRAWING TITLE: BRACKET-ASCENT STAGE, MID-SECT. +422 BEAM PROPULSION VIBRATION AMP.

DRAWING NO.: LDW 280-11773

EO NO.: B1

ISSUED BY TRAUGOTT X1153 SECTION VDI GROUP NO. 335 PL 05



ENG 32.1 REV 3-65

C

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW280-17057 | EO NO. B1

CONTROL INFO NO. LDW280A680E

ON-11 ADD DESIGN VERIFICATION TEST(70) EFF: N/A LDW280-22520 (3REQ/MOD), LDW280-22521 (3REQ/MOD), LDW280-22523 (3REQ/MOD)

ON-13 ADD DESIGN VERIFICATION TEST(70) EFF: N/A LDW280-22520 (3REQ/MOD), LDW280-22521 (1REQ/MOD)

ON-15 & -17 ADD D.V.T (70) EFF: N/A LDW280-22522 (2EA REQ/MOD)

DETAIL SPEC REQ | CL II ENGRG CHG | ✓ | CL I ENGRG CHG | LCD-1452 2

REASON FOR EO: HDD DESIGN VERIFICATION TEST REQUIREMENTS LCD 1452

DESCRIPTION OF EO: ADDED DESIGN VERIFICATION TEST EFF: ON -11, -13, -15 & -17

GAEC EO RELEASE: C

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	DATE	SUPPORT	RELEAS GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	QA
LM		VERIFICATION(70)		✓					5/16/67							

PRIORITY: C

DRAWING TITLE: STRAP D/S [illegible] CAP SECTION

DRAWING NO.: LDW280-17057

EO NO.: B1

ISSUED BY R. CLARK / J. STEINHAUSEN

SECTION VD1

GROUP NO. 356 PL 25

064

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512 EMF-A

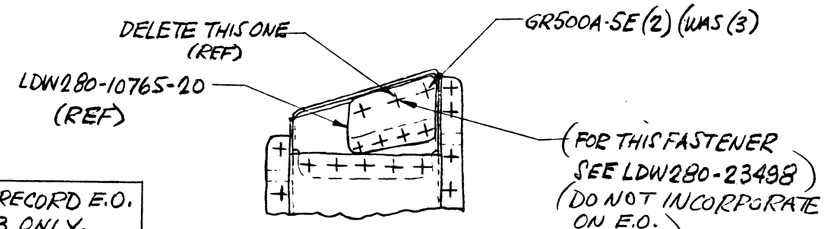
ENGINEERING ORDER

DWG. NO. LDW280-23213 | EO NO. F4

CONTROL INFO NO. LM-5-11397

BNG 32.1 REV 3-65

IN F/D & B/M: DELETE ONE GR500A-5E FROM -2 INSTL.



LDW280-23213-2 INSTL. (REF) ZONE 5B

PARTIAL RECORD E.O. FOR LTA-3 ONLY. THIS CHANGE NOT TO BE INCORP. ON LTA-3

PARTIAL RECORD E.O.

RELEASED BY LIAISON

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG

REASON FOR EO: SUBJECT FASTENER ALSO PICKS UP ON LDW280-23498 N/A.

DESCRIPTION OF EO: FOR -2: DELETED GR500A-5E (1). ADDED EO TO RECORD BLOCK FOR LTA-3

GAEC EO RELEASE: LE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-1(31) THRU	
		LM-15(45)	
LM		LTA-3(13)	

DRAWING CHANGE REQD: REVISE DWG ✓; RECORD EO

DISPOSITION OF PARTS: REWORK ✓; SCRAP

PRIORITY: C

DRAWING TITLE: BRACKET INSTL. - A/S M/S-227 RCS INTERCONN. & CROSS FD VALVE SDT

DRAWING NO.: LDW280-23213

ED NO.: F4

	APPROVED BY	DATE
	WJT	12/13/66
	1	VOI

	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
			~	RH	CH	RHC (2)
			~	12-13-66	12-13	12-20-66

12/7 12/13/66

ISSUED BY G. WHISTON/W. TRAUT SECTION V.D.I. GROUP NO. 335 PL 5

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NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW280-28241		EO NO. C/0
CONTROL INFO NO. LDW280A-4629		

ADD -5 DOOR ASSY. MADE OF FOLLOWING PARTS: LDW280-10774-13(1), -15(1) & -19(1), LDW280-11129-19(1), LDW280-10772-19 (1). REMOVE THESE PARTS FROM -1 INSTL. ADD -5(1) TO -1 INSTL.

ADD -6 DOOR ASSY. MADE OF FOLLOWING PARTS: LDW280-10774-11(1), -14(1), -17(1) & -20(1), LDW280-11129-20(1). REMOVE THESE PARTS FROM -2 INSTL. ADD -6(1) TO -2 INSTL.

ADD -7 DOOR ASSY. MADE OF FOLLOWING PARTS: LDW280-10772-29(1), LDW280-11129-19(1), LDW280-10774-15(1), -19(1) & -23(1). REMOVE THESE PARTS FROM -3 INSTL. ADD -7(1) TO -3 INSTL.

ADD -8 DOOR ASSY. MADE OF FOLLOWING PARTS: LDW280-10774-17(1), -20(1), -21(1) & -24(1), LDW280-11129-20(1). REMOVE THESE PARTS FROM -4 INSTL. ADD -8(1) TO -4 INSTL.

SHOP INFO: -5, -6, -7 & -8 DOOR ASSY USES IDENTICAL MOUNTING HARDWARE AS PREVIOUS -1 INSTALLATION.

3

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	

R+S

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
TO CREATE DOOR ASSYS. FOR SUBSEQUENT SHIPMENT TO KSC	ADDED -5, -6, -7 & -8 DOOR ASSYS.	12/13/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM		LM-2(32)	
LM		LM-1(31)	
LM		LTA-8(18)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: NOT REWORK	REQ'D. SCRAP	APPROVED BY	DATE	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
✓			VDI	[illegible]	11/9		12/6/67	11/27		11/16/67 12/12/67
			3		12/6/67		1-6-67			

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SHIELD INSTL. ASCENT STAGE CABIN FRONT FACE LOWER PANEL OUTBD.	LDW280-28241	C/0

ISSUED BY F. SHANLEY X1441 SECTION VEH. DESIGN INT. GROUP NO. 335 PL 35

01 NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG. NO. LDW280-53553		EO NO. B10
CONTROL INFO NO. LDW 280-B0823		

ON -1, ADD LDW 280-52648-1 (1) IDENTICAL TO & REPLACING LDW 280-52648-9

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	X LCD 2446 / CCA 788

REASON F/R EO: REMOVAL OF RTG SUPPORT TRUSS

DESCRIPTION OF EO: ON -1, ADDED ; LDW 280-52648-1 (1) REPLACING LDW 280-52648-9

GAEC EO RELEASE: SR 1/11/68

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	DATE	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GROUP
LM		LM-3(33)		✓		✓		G	1/11/68	V DI	12/24/67	12/24/67	1/11/68	1/11/68

PRIORITY: C

DRAWING TITLE: SHIELD INSTL DESCENT STAGE THERMAL & BASE HEAT SHIELD

DRAWING NO.: LDW 280-53553

EO NO.: B10

ISSUED BY D. SHAPIRO (X9505) 1-12-68 SECTION V D I GROUP NO. 335 PL 25

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NAS 9-1100

+Y16.625 REF
-Y16.625 REF
-Y31.02(REF)
X 312.50(REF)
+Y 31.02(REF)
LDW280-28852-1 LDW280-28852-1-1 (C6)
LDW280-28852-1(REF)
LDW280-28164(REF)
+Y 61.25 REF
LDW280-28381(REF)
LDW280-28154(REF)
LDW280-28163(REF)
LDW280-28163-2(REF)
LDW280-28856(REF)
LDW280-11964-1
LDW280-11965-11
GN 512C06-075
GS 550F-06-1
SEE NOTE 4
(4 PLACES)
(ON-1-1) (C6)
LDW280-28160(REF)
(C5)(C6) LDW280-28851-3
LDW280-28851-3-1 (ON-1-1)
LDW280-28161(REF)
LDW280-28864-1
(C6) LDW280-28853-1
LDW280-28853-1-1(ON-1-1)
LDW280-28156-1
X200.00(REF)
± Y 0.00(REF)
LDW280-28854(REF)
LDW280-28155(REF)
LDW280-28863(REF)
(C5)(C6) LDW280-28851-7
LDW280-28851-7-1 (ON-1-1)

VIEW B-B (ZONE 5A)
VIEW LOOKING AFT

(C6) LDW280-11964-1
LDW280-11965-11
GN 512C06-075
GS 550F-06-1
SEE NOTE 4
(4 PLACES)
(ON-1-1)
(C5)(C6) LDW280-28852-3
LDW280-28852-3-1(ON-1-1)
± Y0.00(REF)
X312.50(REF)
(C3)(C6) LDW280-28154-5
LDW280-28154-5-1(ON-1-1)
(C5)(C6) LDW280-28852-5
LDW280-28852-5-1 (ON-1-1)
-Y54.00(REF)
LDW280-28856(REF)
LDW280-28856(REF)
LDW280-28381(REF)
LDW280-28863(REF)
-Y16.625(REF)
+Y16.625(REF)
+Y61.25(REF)
LDW280-28381(REF)
LDW280-28163(REF)
X246.63(REF)
-Y98.74(REF)
(C6) LDW280-28851-1
LDW280-28851-1-1(ON-1-1)
(C5)(C6) LDW280-28851-5
LDW280-28851-5-1 (ON-1-1)
LDW280-28160(REF)
LDW280-28863(REF)
+Y73.47(REF)
LDW280-28853(REF)
DETAIL F (ZONE 11A SH 4)
(A1) DETAIL E (ZONE 14A SH 4)
LDW280-28161-1
LDW280-28161-1-1(ON-1-1) (C6)
+Y69.116(REF)
(A6) LDW280-28884-1
LDW280-28155(REF)
LDW280-28854(REF)
X200.00(REF)
X202.687(REF)
LDW280-28864-1
LDW280-28156(REF)

VIEW A-A (ZONE 4B)
VIEW LOOKING FWD

C
+Y73.47(REF)
+Y61.25(REF)
LDW280-5116
(A8) LDW280-28885-1
+Z15.381 REF
(C5)(C6) LDW280-28163-2
LDW280-28163-2-1 (ON-1-1)
+Y49.359(REF)
(A7) LDW280-28282-1
-Y26.525(REF)
+Z 27.00(REF)
+Z 9.016(REF)
(A4) LDW280-28064-1
-Y 31.526(REF)
+Z 26.936(REF)
LDW280-28173(REF)
-Y42.764(REF)
-Y47.918(REF)
(A8) LDW280-28895-1
LDW280-28164(REF)
LDW280-28381(REF)
LDW280-28856(REF)
+Z 31.50(REF)
LDW280-28854(REF)
LDW280-28155(REF)
LDW280-28863(REF)
-Y98.74 REF
3
LDW280-51173(REF)
± Z 0.00(REF)
X299.07(REF)
(C6) LDW280-11964-1
LDW280-11965-11
GN 512C06-075
GS 550F-06-1
(SEE NOTE 4)
(ON-1-1)
X256.56(REF)
X238.75(REF)
LDW280-28398-3
+Z 8.25(REF)
-Z 6.25(REF)
D
(C6) LDW280-28854-1
LDW280-28854-1-1(ON-1-1)
LDW280-28863-1
LDW280-28155-1
(ZONE 7C) B
+Z 31.50(REF)
-Z 32.25(REF)

LDW280-28150 SH 3

01/02 NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65 ©

ENGINEERING ORDER

DWG NO. LEO 390- | EO NO. 209
CONTROL INFO NO. LDW267403811

DWG NO.	CHG NO.	TITLE	MODULE	SH	ZONE	EFFECTIVITY
LDW390-52000 ✓	F9	SCHEMATIC-LEVEL 3 ELECTRICAL PWR SUBSYS	LM-2	6	1A, 40C 39A, 39C	LM-2 (32)
LDW390-53000 ✓	B10		LM-3		35A & 34C	LM-3 (33)

CHANGE THE FOLLOWING WIRE NUMBERS:

AT CDR PNL XI

AT 4CB117 ~ P377-20(c)-(CE1A)(WAS)P377-20(c)
AT 4CB141 ~ P377-20(c)-(CE1B)(WAS)P377-20(c)
AT 4CB63 ~ P377-16(c)-(CR3A)(WAS)P377-16(c)
AT 4CB62 ~ P377-16(c)-(CR3A)(WAS)P377-16(c)
AT 4CB61 ~ P377-16(c)-(CR3A)(WAS)P377-16(c)
AT 4CB60 ~ P377-16(c)-(CR3A)(WAS)P377-16(c)
AT 4CB72 ~ P377-16(c)-(CR2A)(WAS)P377-16(c)
AT 4CB51 ~ P377-16(c)-(CR1A)(WAS)P377-16(c)
AT 4CB81 ~ P377-20(c)-(CS1A)(WAS)P377-20(c)

AT SYS ENGR PNL XVI

AT 4CB96 ~ P272-20(c)-(CE1A)(WAS)P272-20
AT 4CB45 ~ P272-16(c)-(CR3B)(WAS)P272-16(c)
AT 4CB44 ~ P272-16(c)-(CR3B)(WAS)P272-16(c)
AT 4CB43 ~ P272-16(c)-(CR3B)(WAS)P272-16(c)
AT 4CB42 ~ P272-16(c)-(CR3B)(WAS)P272-16(c)
AT 4CB73 ~ P272-16(c)-(CR2B)(WAS)P272-16(c)
AT 4CB52 ~ P272-18(c)-(CR1B)(WAS)P272-18(c)
AT 4CB82 ~ P272-18(c)-(CS1B)(WAS)P272-18(c)

OTHER LEVEL 3 DWGS AFFECTED: NONE
CABLES AFFECTED: NONE
PNLS AFFECTED: LDW 390-52110 c/n 4419, LDW 390-52114 c/n 4445, LDW 390-53110 c/n 4426, LDW 390-53114 c/n 4446

LEVEL 3 DWG CHANGE ORDER
FOR ENGR INFO ONLY

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG
		✓ LCD 1510 (REF)

REASON FOR EO: CREW SAFETY REDUNDANCY BUNDLING CODES

DESCRIPTION OF EO: ADDED BUNDLING CODES TO CREW SAFETY REDUNDANT WIRING AS FOLLOWS: AT PNL XI, (CE1A, CE1B, CR1A, CR2A, CR3A & CS1A) & AT PNL XVI, (CE1A, CR1B, CR2B, CR3B & CS1B).

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		NOTED	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: NOT REQD REWORK | NOT REQD SCRAP
PRIORITY: E
DRAWING TITLE: NOTED ABOVE
DRAWING NO.: LEO 390-
EO NO.: 209

APPROVED BY	DATE	PROJ ENGRG	GAEC EO RELEASE
WB	7/6/67	7-7-67	7-27-67
HG	7/6/67		
LTC	7/6/67		
EPS	5/31/67		

ISSUED BY W BURGERMEISTER X1657 SECTION LTC GROUP NO. 267 PL 5

01

NAS 9-1100

LDW267-54000

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	READ PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO	READ PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	READ PER MODULE OR END ITEM
		GAEC SCH NO.				GAEC SCH NO.		LM		LM-4(34)	
PART NO.				PART NO.				PART NO. LDW267-54000		GAEC SCH NO.	

(FOR ENGINEERING INFORMATION ONLY) WORK PACKAGE FUNCTION NO: 110 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBD SH

SHEET	1.00			4.00	5.00	6.00	7.00			
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED ~

LAST DASH NO. USED ~

GRUMMAN REL INFO 'e'

PRIM NO. 698 (Wed)

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES ~ ~ ~

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE V LCD 3167

CONTRACT NO. NAS9-1100 LINE ITEM 4 DOCUMENTATION TYPE II

DRAWN BY	M. ABNEY	EPS	
LAYOUT BY	RON STINTON		
CHECKED BY	R. Stinton		
GRP LDR			
INST.			
MECH DES.		PROJ ENGR	
CSS		REL GROUP	

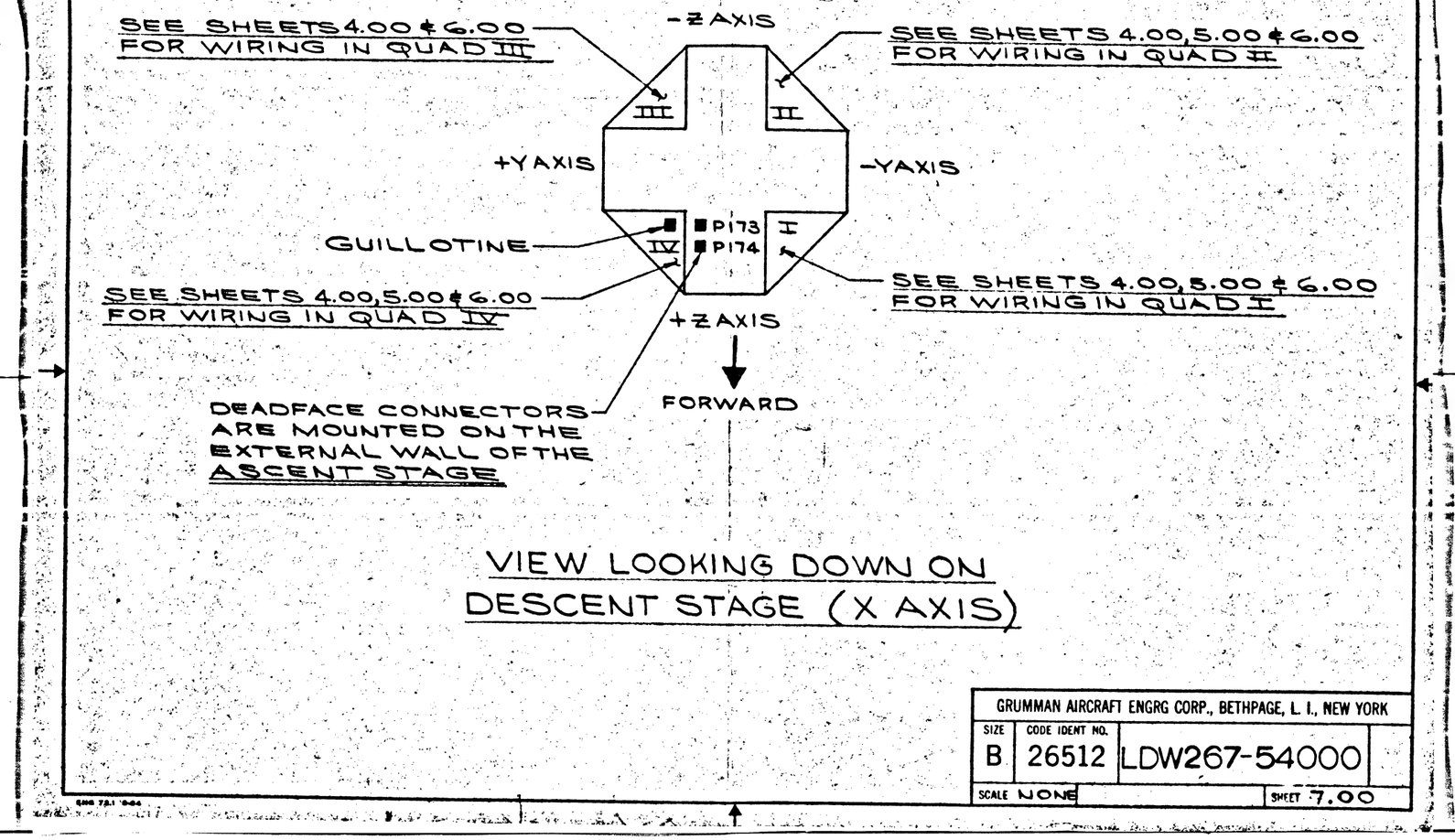
GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

WIRING DIAGRAM
ASCENT/DESCENT
INTERSTAGE WIRING

SIZE B | CODE IDENT NO. 26512 | LDW267-54000 | 7

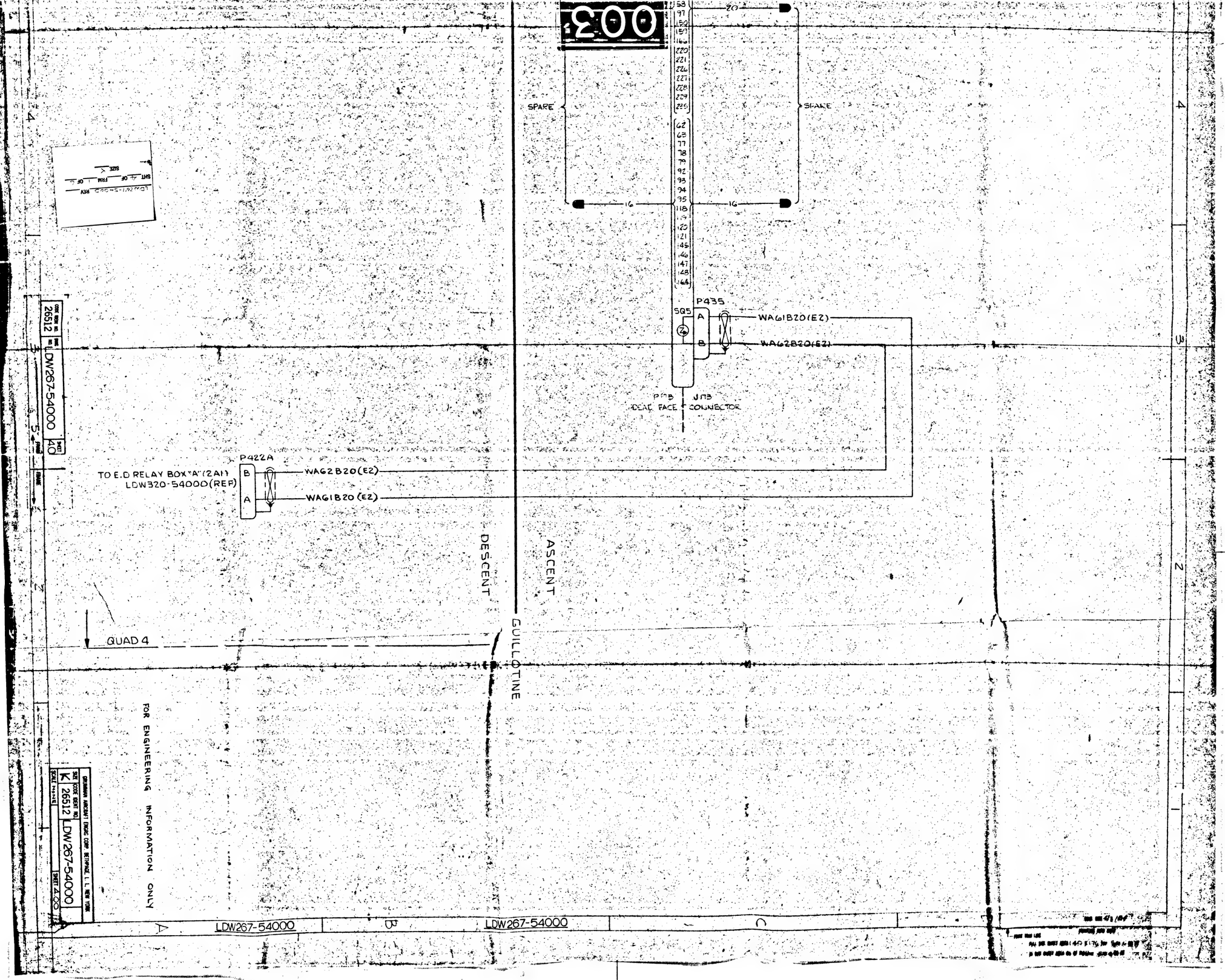
SCALE NONE | SHEET 1.00 OF 5

001



VIEW LOOKING DOWN ON
DESCENT STAGE (X AXIS)

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE	CODE IDENT NO.		
B	26512	LDW267-54000	
SCALE NONE		SHEET 7.00	


003
SPARE
SPARE
20
16
16
53
97
150
151
166
220
221
226
227
228
229
235
62
63
77
78
79
92
93
94
95
118
120
121
145
146
147
148
149
P435
SQS
A
B
WAG1B20(E2)
WAG2B20(E2)
P113
DEAD FACE
J113
CONNECTOR
P422A
TO E.D RELAY BOX "A" (2A1)
LDW320-54000(REF)
WAG2B20(E2)
WAG1B20(E2)
DESCENT
ASCENT
GUILLOTINE
QUAD 4
FOR ENGINEERING INFORMATION ONLY
SEE CODE IDENT NO. 26512
LDW267-54000
SHEET 4 OF 5
GRUMMAN AIRCRAFT ENGINEERING CORP. BETHPAGE, L. I., NEW YORK
LDW267-54000
LDW267-54000
LDW267-54000
4
3
2
1
A
B
C
D

DESCENT ECA (4A2)
LDW270-54000 (REF)

9
10
P1B1EG(C)

P1B1DG(C)

P1B1AG(C)

P1B1BG(C)

4A5
+4
+7
RELAY JUNCTION BOX

* NOTE: PINS 162, 163, 178, 179, 96, 122, 123 & 149 ARE BUSSED CONTACTS.

PROPELLANT QUANTITY GAGING ARC CONTROL UNIT
LDW270-54000 (REF)

10A3
3 FLD
4 FLR
5 NAT-22(E)
6 VIO-22(E)

E904
E905
E902
E952

PEGS UNIT
LDW270-54000 (REF)

MAP-1
-1
-2
-3
-4
-5

E975
E976
E977
E978
E979

K6000P22

K628C22(C) 238 K628B22(C)
K608D22(C) 239 K608C22(C)
K627C22(E) 10 K627B22(E)
K626C22(E) 2 K626B22(E)
K621C22(F) 214 K621B22(F)
K622C22(F) 202 K622B22(F)
K623C22(F) 203 K623B22(F)
K624C22(F) 204 K624B22(F)
K625C22(F) 205 K625B22(F)
K6000C22N4 K6000B22

E5077 E5078

P1808
Z
Y
X
C
H
F
E
W
V
G

TO PANEL I
LDW270-54000 (REF)

P440
SQ26
A
B
WB61B20 (E2)
WB62B20 (E2)

P422B
A
B
TO E D RELAY BOX "B" (2A2)
LDW270-54000 (REF)

NOT USED
1
7
8
9
16
17
18
28
29
30
41
42
43
55
56
57
70
86
87
101 THRU 104
117
126
127
133
138
141
142
156
157
158
186
230
231
240

NOT USED
71
72
84
90
103
107
19
20
31
32
38
44
45
46
47
58
97
152
161
165
220
221
224
227
228
229
234

22
22
20
20

SPARE
SPARE

CODE IDENT NO.	26512
SIZE	D
DWG NO.	LDW267-54000
SHEET	40

4 FRAME
FRAME

QUAD 3

QUAD 4

J30B

ECA #2 4A1
LDW390-54000 (REF)

J177

LM/SLA SEPARATION SEQUENCE CONTROLLER "B" LDW390-54000 (REF)

J176

LM/SLA SEPARATION SEQUENCE CONTROLLER "A" LDW390-54000 (REF)

J1133

TO TV CAMERA (GFE) LDW390-54000 (REF)

J30A

DESCENT ECA #1 (4A2) LDW390-54000 (REF)

TEMP ELECTRICAL FLIGHT EQUIPMENT 2 BAT (OUTT)

DELAY TIMER (2 KA) LDW390-54000 (REF)

DESCENT ECA #1 (4A2) LDW390-54000 (REF)

10A3

P603

TO S4C CONTROL ASSY #1 (4A9) LDW390-54008

P607

TO PANEL XIV

P1801

P970

TO SCERA #2 (2A19) LDW390-54000 (REF)

P607

TO PANEL XIV LDW390-54000 (REF)

P971

TO SCERA #2 (2A17) LDW390-54000 (REF)

P950

P482B

4A5

RELAY JUNCTION BOX

P1808

* NOTE: PINS 162, 163, 178, 179, 96, 122, 123, 149 ARE BUSSED CONTACTS.

CAGE IDENT # 26512 | SHT NO. LDW267-54000 | SHEET 40 | FRAME

QUAD 2
QUAD 3

J1420
M
N
L
K
S1B1E22(A-CS2A)
S1B1D22(A-CS2A)
S1B2E22(A-CS2A)
S1B2D22(A-CS2A)
E1135
E1136
S1B1J22(A-CS2A) 143
S1B2J22(A-CS2A) 144
S1B1G22(E-CS2A)
S1B2G22(E-CS2A)
P60B 70 71
S4C CONTROL ASSY #B (1A1B) DESCENT ENGINE ARM #1 CONTROL (1A10) LDW300-54005 (REF)

J/P565
B
A
C
D
PRESS AMB. HE PRESS BOTTLE (10MT39) GQ3015 LDW270-54000 (REF)
K705B26 (C) 236
K704B26 (C) 237
K705A26 (C)
K704A26 (C)
P98A 10 68
TO SENSOR PWR. FUSE ASSY LDW390-54000 (REF)
D6087E26 (H) 49
D6088E26 (H) 48
D8000FK22N4
E5509
D6087A26 (H)
D6088A26 (H)
D8000BB22N4
E5078
P60B 20 37
TO PCMTEA AND PANEL I.

P560
B
D
E
Y
N
V
K
S
DESCENT ENGINE (2A1) LDW270-54000 (REF)
D254C26 (E)
D254B26 (E)
D256B26 (E)
D256C26 (E)
D257B26 (E)
D259C26 (E)
D259B26 (E)
E813
E814
E812
E811
D254D26 (E) 195
GQ7498U
D256D26 (E) 194
D257D26 (E) 207
GQ7499U
D259D26 (E) 208
D254A26 (E)
D256A26 (E)
D257A26 (E)
D259A26 (E)
P971 60 61 1 2
TO SCERA #2 (2CA19)

J1421
W
X
D
H
F
G
S4C CONTROL ASSY #B (1A1B) LDW300-54005 (REF)
S265N22 (A) 105
S265P22 (A) 88
S517E22 (A) 132
S89J22 (A) 116
S529D22 (A) 115
S528D22 (A) 131
S265L22 (A-CS1B)
S265M22 (A-CS1B)
S517C22 (A)
S89G22 (A)
S529B22 (A)
S528B22 (A)
E868
E867
S265J1B (A-CS1B)
S265K1B (A-CS1B)
S265N1B (A-CS1B)
S266M1B (A-CS1B)
J703 D H
TO ATCA LDW300-54003 (REF)
P73B B A
TO PANEL XVI
P1802 Z Y AA GG
TO PNL VI
TO PNL III
LDW300-54003

J727
A
B
C
N
R
M
P
D
L
DESCENT ENGINE START CIRCUIT DECA (1A10) LDW300-54005 (REF)
S358D16 (A-CS2A)
S358E16 (A-CS2A)
S355F16 (A-CS2A)
S358C16 (A-CS2A)
S357E16 (A-CS2A)
S357C16 (A-CS2A)
S357D16 (A-CS2A)
S511A16 (A-CS2A)
S512A16 (A-CS2A)
E965
E964
S358G12 (A1-CS1A) * (61 76)
S357F12 (A1-CS1A) (165 180)
S358B12 (A-CS2A)
S357B12 (A-CS2A)
P772B H G
* NOTE: PINS 61, 76 & 165, 180 ARE BUSSED CONTACTS.

J1420
I
S
Q
R
S4C CONTROL ASSY #B (1A1B) LDW300-54003
S512B16 (A-CS2A)
S511B16 (A-CS2A)
S357P16 (A-CS2A)
S357N16 (A-CS2A)
E1277
E1276
E1150
S357K

J737
5
32
4
19
3
2
1
DESCENT ENGINE ARM #1 CONTROL (1A10) DECA LDW300-54005 (REF)
S89AB22 (A-CS2A)
S89AA22 (A-CS2A)
S88M22 (A-CS2A)
S88N22 (A-CS2A)
S136C22 (E-CS3A)
S136B22 (E-CS3A)
S136C22 (E-CS3A)
E945
E946
P/J199 H J T
S89Z22 (A-CS2A) 182
S88L22 (A-CS2A) 183
S136G22 (E-CS3A) 100
S136B22 (E-CS3A) 110
S136G22 (E-CS3A) 111
S89Y22 (A-CS2A)
S86K22 (A-CS2A)
S136E22 (E-CS3A)
S136B22 (E-CS3A)
S137E22 (E-CS3A)
E1329
E1330
S89X22 (A-CS2A)
S88J (A-CS2A)
P43B L K
TO PANEL I & V LDW300-54003
P60B 50 62 63
TO S4C CONTROL ASSY #1 (1A9) LDW300-54003

QUAD 3
QUAD 4

LANDING RADAR ELECTRONIC ASSY (1TA4) LDW370-54000

N6000EV22
N6000EY22N4 — E5517
N6000EL22
N6000EK22
N6000EJ22N4 — E5504
N6000FM22N4
N6000FJ22 — E5517
N8000AF22N4 — E5504
N5000FE22N4
N5000FA22N4 — E5506
N5000EX22
N6000FG22N4
N6000FF22 — E5517
N6000FD22
N5000CE22N4
N5000CF22N4 — E5504
N5000FC22N4 — E5502
N465D26(H3)
N464D26(H3)
N463D26(H3)
D4774C26(E3)
D4773D26(E3)
GN7557X — D1192C26(E3)
D1191C26(E3)
GN7521X — D1189C26(E3)
D1190C26(E3)

LATCHING HELIUM SOL VLV #1 (PRI) LDW270-54000(REF) — 10L1 — BRN, GY — E800, E801
LATCHING HELIUM SOL VLV #2 (SEC) LDW270-54000(REF) — 10L2 — VIO, BRN — E802

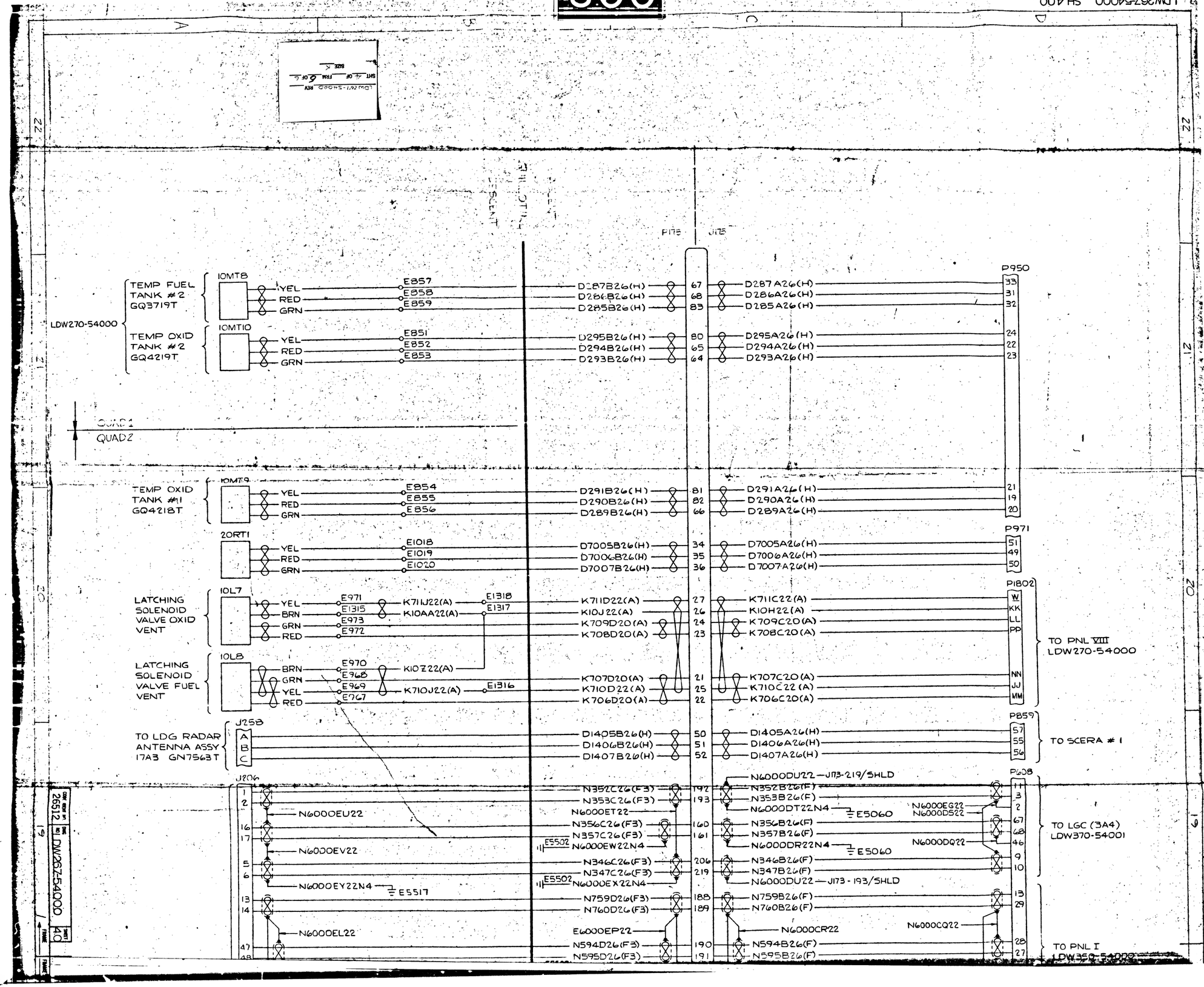
N347C26(F3)
E5502 N6000EX22N4
N759D26(F3)
N760D26(F3)
E6000EP22
N594D26(F3)
N595D26(F3)
E5502 N6000FC22N4
N6000EN22
N592D26(F3)
N593D26(F3)
E5509 N6000EH22N4
N219C26(F3)
N220C26(F3)
E5502 N6000FL22N4
N6000FK22
N217C26(F3)
N218C26(F3)
N585D26(H3)
N587D26(H3)
N586D26(H3)
N597D26(E3)
N596D26(E3)
E5509 N5000FD22N4
N223C26(E3)
N224C26(E3)
N221C26(E3)
N222C26(E3)
E5502 N5000EZ22N4
N5000EW22
N227C26(E3)
N226C26(E3)
N225C26(E3)
E5502 N6000FE22N4
N354C26(F3)
N355C26(F3)
N6000FD22
N350C26(F3)
N351C26(F3)
N6000FA22
N348C26(F3)
N349C26(F3)
N352BC26(E3)
N353D26(E3)
N5000EP22N4
E5509 N5000ES22N4
N480D22(E3)
N479D22(E3)
N504D22(E3)
N505D22(E3)
N358E22(E3)
E5502 N5000FB22N4
K346C26(A)
K7F26(A)
K347C26(A)

N356B26(F)
N357B26(F)
N6000DR22N4 — E5060 — N6000DQ22
N346B26(F)
N347B26(F)
N6000DU22 — J173-193/SHLD
N759B26(F)
N760B26(F)
N6000CR22 — N6000CQ22
N594B26(F)
N595B26(F)
N6000CS22N4 — E5060 — N6000CN22
N6000CP22
N592B26(F)
N593B26(F)
N6000CM22N4 — E5060 — N6000EE22
N219B26(E)
N220B26(E)
N6000ED22 — N6000EC22
N217B26(F)
N218B26(F)
N6000EF22N4 — E5073 — N8000CR22
N585B26(H)
N587B26(H)
N586B26(H)
N8000CQ22N4 — E5060
N597B26(E)
N596B26(E)
N5000CF22N4 — N5000CG22
N5000DZ22N4 — E5060
N223B26(E)
N224B26(E)
N221B26(E)
N222B26(E)
N5000DY22(E) — N5000DX22
N227B26(E)
N226B26(E)
N225B26(E)
N6000DX22N4 — E5060 — N5000DW22
N354B26(F)
N355B26(F)
N6000DW22 — N6000DV22
N350B26(F)
N351B26(F)
N6000DZ22 — N6000DY22
N349B26(F)
N348B26(F)
N6000EB22N4 — E5060 — N6000EA22
N588B26(E)
N587B26(E)
N5000CB22N4
N5000DP22N4 — E5060
N480C22(E)
N479C22(E) — N5000DN22
N504C22(E)
N505C22(E)
N358D22(E) — N5000DQ22
N5000DR22N4 — E5060
N465C26(H)
N464C26(H)
N463C26(H)
D4774B26(E)
D4773C26(E)
D1192A26(E)
D1191A26(E)
D1189A26(E)
D1190A26(E)
K346A26(A)
K7B26(A)
K347A26(A)

TO LGC (3A4) LDW370-54001
TO PNL I LDW350-54000
TO LGC LDW370-54001
TO PNL II LDW350-54000
TO PNL I LDW350-54000

P1801

QUAD 2
QUAD 3


P1T5
J1T5
LDW270-54000
TEMP FUEL TANK #2 GQ3719T
10MT8
YEL
RED
GRN
E857
E858
E859
D287B26(H)
D286B26(H)
D285B26(H)
67
68
83
D287A26(H)
D286A26(H)
D285A26(H)
P950
33
31
32
TEMP OXID TANK #2 GQ4219T
10MT10
E851
E852
E853
D295B26(H)
D294B26(H)
D293B26(H)
80
65
64
D295A26(H)
D294A26(H)
D293A26(H)
24
22
23
QUAD1
QUAD2
TEMP OXID TANK #1 GQ4218T
10MT9
E854
E855
E856
D291B26(H)
D290B26(H)
D289B26(H)
81
82
66
D291A26(H)
D290A26(H)
D289A26(H)
21
19
20
20RT1
E1018
E1019
E1020
D7005B26(H)
D7006B26(H)
D7007B26(H)
34
35
36
D7005A26(H)
D7006A26(H)
D7007A26(H)
P971
51
49
50
LATCHING SOLENOID VALVE OXID VENT
10L7
E971
E1315
E973
E972
K711J22(A)
K10AA22(A)
E1318
E1317
K711D22(A)
K10J22(A)
K709D20(A)
K708D20(A)
27
26
24
23
K711C22(A)
K10H22(A)
K709C20(A)
K708C20(A)
P1802
W
KK
LL
PP
TO PNL VIII LDW270-54000
LATCHING SOLENOID VALVE FUEL VENT
10L8
E970
E968
E969
E967
K10Z22(A)
K710J22(A)
E1316
K707D20(A)
K710D22(A)
K706D20(A)
21
25
22
K707C20(A)
K710C22(A)
K706C20(A)
NN
JJ
MM
TO LDG RADAR ANTENNA ASSY 17A3 GN7563T
J258
A
B
C
D1405B26(H)
D1406B26(H)
D1407B26(H)
50
51
52
D1405A26(H)
D1406A26(H)
D1407A26(H)
P859
57
55
56
TO SCERA # 1
J206
1
2
16
17
5
6
13
14
47
48
N6000EU22
N6000EV22
N6000EY22N4
E5517
N6000EL22
N6000DU22
J173-219/5HLD
N352C26(F3)
N353C26(F3)
N6000ET22
N356C26(F3)
N357C26(F3)
E5502
N6000EW22N4
N346C26(F3)
N347C26(F3)
E5502
N6000EX22N4
N759D26(F3)
N760D26(F3)
E6000EP22
N594D26(F3)
N595D26(F3)
192
193
160
161
206
219
188
189
190
191
N352B26(F)
N353B26(F)
N6000DT22N4
E5060
N356B26(F)
N357B26(F)
N6000DR22N4
E5060
N346B26(F)
N347B26(F)
N6000DU22
J173-193/5HLD
N759B26(F)
N760B26(F)
N6000CR22
N594B26(F)
N595B26(F)
N6000DU22
J173-219/5HLD
N6000EG22
N6000D522
N6000DQ22
N6000CQ22
P608
11
3
2
67
68
46
9
10
13
29
28
27
TO LGC (3A4) LDW370-54001
TO PNL I LDW350-54000
SCALE X
SHT 4 OF 5
REV
LDW267-54000
CODE IDENT NO 26512
DWG NO LDW267-54000
SHEET 40
FRAME 19
FRAME 20
22
12
19
20

605

P461 — DESCENT ENGINE (HE) PRESSURE LDW320-54000
WB217C20(E2) / WB218C20(E2) — J1625 — P1625 — WB217A20(E2) / WB218A20(E2) — P479B

P455 — +Y LEG SQ33
WB213B20(E2) / WB214B20(E2) — J1626 — P1626 — WB213A20(E2) / WB214A20(E2) — P478B

P452 — -Z LEG SQ36
WB201B20(E2) / WB202B20(E2) — J1629 — P1629 — WB201A20(E2) / WB202A20(E2) — P475B

LANDING GEAR DEPOY

EXPLOSIVE DEVICES RELAY BOX SYS "B" LDW320-54000

QUAD 3 ↕ QUAD 4

P1101X — J1101 — P1101A — P1103B
PROTECTIVE CONNECTOR LDW390-513327
C101D13(D)
COMMUNICATION PNL XII

LDW380-54000

J1133 — P1182B — J1182 — P1182A — J379A
C94C(D) / C450B22(D)
C94A(D) / C450A-26(D)
S-BAND TRANSCEIVER 13A1

LDW380-54000

P130K6(C) / P130L6(C) — P5601 LGP-6 — E5600 LGP-9
LDW390-54014
P133U6(C) / P133V6(C) — E5603 LGP-5 — E5602 LGP-10

P423A — P462
WA89B20(E2) / WA90B20(E2) — TANK #1

P424A — P463
WA93B20(E2) / WA94B20(E2) — TANK #2

ASCENT ENGINE (HE) PRESSURE

P425A — P443
WA81B20(E2) / WA82B20(E2) — HE SUPPLY "A"

P426A — P444
WA85B20(E2) / WA86B20(E2) — HE SUPPLY "B"

RCS (HE) PRESSURE

LDW320-54000 TO EXPLOSIVE DEVICES RELAY BOX SYS "A" (2A1)

P474A — P438
WA153A20(E2) / WA154A20(E2) — CABLE CUTTER

P485A
WA327A-20(E2) / WA328A-20(E2) — OX COMP VALVE 3

P486A — P1606
WA325A20(E2) / WA326A20(E2) — FUEL COMP VALVE 1

ASCENT ENGINE (HE) PRESSURE

P451 — CABLE CUTTER

WB154A20(E2) / WB153A20(E2) — P474B

DESCENT — GUILLOTINE — ASCENT

FOR ENGINEERING INFORMATION ONLY

SIZE	CODE IDENT NO.	DWG NO.
K	26512	LDW267-54000

GRUMMAN AIRCRAFT ENGR. CORP. BETHPAGE, L.I., NEW YORK

SCALE NONE — SHEET 6 OF 9

LDW267-54000 — LDW267-54000

FRAME 4 — FRAME 5

PRINTING INFO ONLY

RIGHT
2S19
GM0047A
+Y
LEFT

RED
WHT
BLK
E1008
E1010
E1011
D1145A26(E)
D1146J26(E)

QUAD 1
QUAD 2
QUAD 3

INTERSTAGE CONNECTOR

(-Y LEG) SQ35 LANDING GEAR DEPLOY — P453 — WB205B20(E2) / WB206B20(E2) — J1628 / P1628 — WB205A20(E2) / WB206A20(E2) — P476B

DESCENT ENGINE (HE) VENT
- FUEL VENT VALVE 6 — P1615 — WB342A20(E2) / WB343A20(E2) — J1623 / P1623 — WB342B20(E2) / WB343B20(E2) — P1608B
- OX VENT VALVE 8 — P1616 — WB347A20(E2) / WB348A20(E2) — J1624 / P1624 — WB347B20(E2) / WB348B20(E2) — P1609B

(-Z LEG) SQ34 LANDING GEAR DEPLOY — P454 — WB209B20(E2) / WB210B20(E2) — J1627 / P1627 — WB209A20(E2) / WB210A20(E2) — P477B

EXPLOSIVE DEVICES RELAY BOX SYS "B" LDW320-54000

DESCENT ENGINE (HE) PRESSURE
- OX COMP VALVE 7 — P1601 — WB323C20(E2) / WB330C20(E2) — J1631 / P1631 — WB323A20(E2) / WB330A20(E2) — P487B
- FUEL COMP VALVE 5 — P1603 — WB324C20(E2) / WB331C20(E2) — J1632 / P1632 — WB324A20(E2) / WB331A22(E2) — P488B

LDW270-54000

10L2 LATCHING HELIUM SOLENOID VALVE #2 (SEC) — RED E804 K199C14(A) / GRN E803 K198G14(A) / WHT / BLK E805 K200C14(A) — J774 / P774 — K199B14(A) / K198E14(A) / K200B14(A) — P772B

14 — F
14 — G
14 — H
J

10L1 LATCHING HELIUM SOLENOID #1 (SEC) — RED E807 K196C14(A) / GRN E806 K198F14(A) / WHT / BLK E808 K197C14(A) — L / K / M — K196B14(A) / K198D14(A) / K197B14(A)

MAIN PROPULSION PNL I LDW270-54000

START DESCENT ENGINE (HE) PRESSURE LDW320-54000 — P1619 — WB340A20(E2) / WB341A20(E2) — J1633 / P1633 — WB340C20(E2) / WB341C20(E2) — P1607B

DESCENT ENGINE (HE) PRESSURE — P461 — WB217C20(E2) / WB218C20(E2) — J1625 / P1625 — WB217A20(E2) / WB218A20(E2) — P479B

EXPLOSIVE DEVICES RELAY BOX SYS "B" LDW320-54000

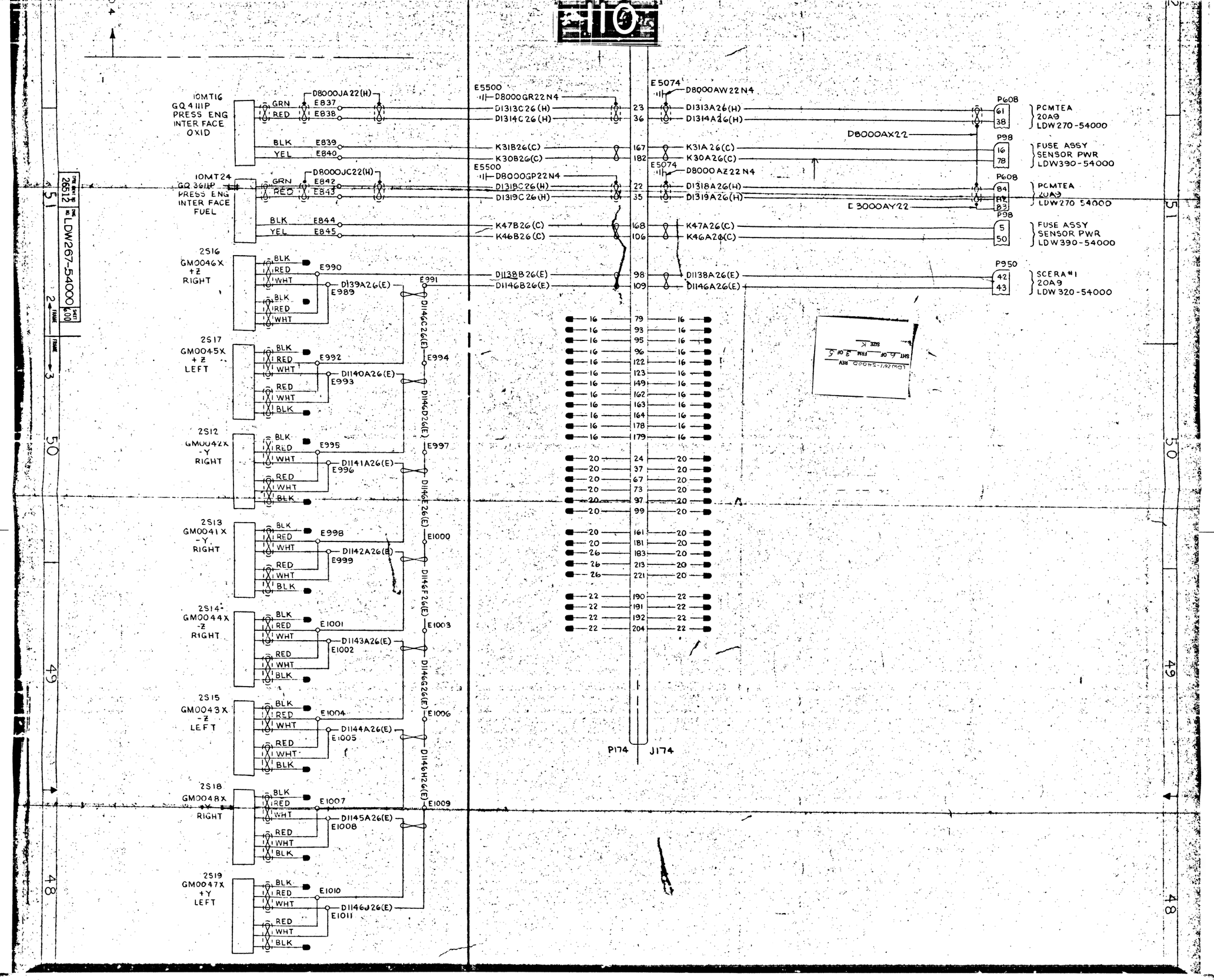
+Y LEG SQ33 LANDING GEAR DEPLOY — P455 — WB213B20(E2) / WB214B20(E2) — J1626 / P1626 — WB213A20(E2) / WB214A20(E2) — P478B

P452

CODE IDENT NO 26512 — DWG NO LDW267-54000 — SHEET 010

FRAME 3 — FRAME 4

48 47 46 45


10MT16
GQ4111P
PRESS ENG
INTER FACE
OXID
GRN
RED
BLK
YEL
D8000JA22(H)
E837
E838
E839
E840
10MT24
GQ3611P
PRESS ENG
INTER FACE
FUEL
D8000JC22(H)
E842
E843
E844
E845
2S16
GM0046X
+Z
RIGHT
2S17
GM0045X
+Z
LEFT
2S12
GM0042X
-Y
RIGHT
2S13
GM0041X
-Y
RIGHT
2S14
GM0044X
-Z
RIGHT
2S15
GM0043X
-Z
LEFT
2S18
GM0048X
+Y
RIGHT
2S19
GM0047X
+Y
LEFT
WHT
E990
E991
E992
E993
E994
E995
E996
E997
E998
E999
E1000
E1001
E1002
E1003
E1004
E1005
E1006
E1007
E1008
E1009
E1010
E1011
D1139A26(E)
D1140A26(E)
D1141A26(E)
D1142A26(E)
D1143A26(E)
D1144A26(E)
D1145A26(E)
D1146J26(E)
D1146C26(E)
D1146D26(E)
D1146E26(E)
D1146F26(E)
D1146G26(E)
D1146H26(E)
E5500
D8000GR22N4
D1313C26(H)
D1314C26(H)
K31B26(C)
K30B26(C)
D8000GP22N4
D1318C26(H)
D1319C26(H)
K47B26(C)
K46B26(C)
D1138B26(E)
D1146B26(E)
E5074
D8000AW22N4
D1313A26(H)
D1314A26(H)
D8000AX22
K31A26(C)
K30A26(C)
D8000AZ22N4
D1318A26(H)
D1319A26(H)
E3000AY22
K47A26(C)
K46A26(C)
D1138A26(E)
D1146A26(E)
P608
P98
P950
PCMTEA
20A9
LDW270-54000
FUSE ASSY
SENSOR PWR
LDW390-54000
SCERA#1
20A9
LDW320-54000
P174
J174
LDW267-54000
SHT 6 OF 6
SIZE K
51
50
49
48

DOC NO. 26512 REV. LDW267-54000 SHEET 609

LDW390-54000

ECA NO.1 VOLT TAP BAT NO.1
33 D1735B26(E) — 186 — D1735A26(E) — P970 25
27 P228C22A — 11 D1734A26(E)
14 D1735B26(E) — 26
29 D1734B26(E)
28 D1736B26(E) — 66 — D1736A26(E)

ECA NO.1 VOLT BAT. NO.1
4 D1492B26(H) — 186 — D1492A26(H) — P971 10
5 D1491B26(H) — 200 — D1491A26(H) — 9
39 D1484M26(H) — 25 — D1484F26(H) — TO E757 (ZONE 36C SH.5.00)
38 D1485F26(H) — 38 — D1485E26(H) (REF) — TO E1073 (ZONE 36C SH.500)

ECA NO.1 CURRENT BAT. NO.1
22 D8000JF22N4(H)
37 D8000HE22N4(H)
20 D8000JJ22N4(H)
21 D8000JL22N4(H)
D8000HF22N4(H)
E5514

P429A
ED RELAY BOX 2A1
D DA1126B26(E) — 127 — DA1126A26(E) — P950 71
E DA1127B26(E) — 137 — DA1127A26(E) — 70

ED BOX SYS "A" 2A1
E5511 D8000GZ22N4
J D6189C26(H) — 175 — D6189B26(H) — P1803 R
H D6188C26(H) — 174 — D6188B26(H) — P N
D8000CX22

P199
S&C CONT ASSY #3 1A13
L S106Q22(A)CS2B — 130 — S106M22(A)CS2B — P1802 N
M S515F22(A)CS2B — 129 — S515E22(A)CS2B — M
U S109V22(A)CS2B — 89 — S109Q22(A)CS2B — R
N S513F22(A)CS2B — 131 — S513E22(A)CS2B — P
N756F22(E) — 115 — N756C22(E) — P1410B 5
105 — N756D22(E) — 14
S352F22(E) — 114 — S352D22(A) — 6
104 — S352C22(A) — 18

J33A
BAT MALFUNCTION NO.1
G D1732D26(E) — E949 — D1732C26(E) — 54 — D1732A26(E) — P1801 73
H D1728A26(E) — E950

J29A
2 D1728B26(E)
41 D1732G26(E)
43 D1732F26(E)
44 D1733E26(E) — E951 — D1733C26(E) — 68 — D1733A26(E) — 74
42 D1733F26(E)
1 D1733G26(E)

2A3 DELAY TIMER
BLU E984
ORN E985 — D5246C26(E) — 177 — D5246A26(E) — 17
D5245C26(E) — 176 — D5245A26(E) — 34
D4708E26(E) — 134 — D4708A26(E) — 40
124 — D4708B26(E) — 41

2A4 DELAY TIMER
BLU
ORN

GM0064T TEMP #1 +Z LAND LEG DRI STRUT
2RT3
YEL E1100 — D1352C26(H) E986 — D1352B26(H) — 14 — D1352A26(H) — P971 36
RED E1101 — D1351C26(H) E987 — D1351B26(H) — 15 — D1351A26(H) — 34
GRN E1102 — D1350C26(H) E988 — D1350B26(H) — 6 — D1350A26(H) — 35

GQ4455X PROP TANKS LIQUID
10A3
GRN E863 — D4971C26(E) — 86 — D4971B26(E) — P608 81
BRN E864 — D4972C26(E) — 87 — D4972B26(E) — 80
E5507 — D8000AK22N4 — E5074

GQ3603Q FUEL QTY
GQ3604Q FUEL QTY
GQ4103Q OXID QTY
GQ4104Q OXID QTY
D8000MT22(H)
BLU E816 — D8000HV22N4 — D4973D26(H) — 1 — D4973B26(H) — P1801 9
BLK E817 — D4974C26(H) — 2 — D4974B26(H) — 22
ORN E815 — D4977D26(H) — 18 — D4977B26(H) — 21
GRN E819 — D4976C26(H) — 19 — D4976B26(H) — 10
BRN E818 — D4975C26(H) — 20 — D4975B26(H) — 23
D8000AQ22 — 24

QUAD 4

10MT16 GQ4111P PRESS ENG INTER FACE OXID
D8000JA22(H)
GRN E837 — E5500 D8000GR22N4 — D1313C26(H) — 23 — D1313A26(H) — E5074 D8000AW22N4 — P608 61
RED E838 — D1314C26(H) — 36 — D1314A26(H) — 38
D8000AX22 — P98 16
BLK E839 — K31B26(C) — 167 — K31A26(C) — 78
YEL E840 — K30B26(C) — 182 — K30A26(C)
E5500 — D8000GP22N4 — E5074 D8000AZ22N4 — P608

10MT24
D8000JC22(H)
GRN E843

P40C22(A)CF

GUILLOTINE

DESCENT

ASCENT

TO E.D RELAY BOX "A" (2A1) LDW320-54000 (REF)

P421A

B — WA54B20 (E2)

A — WA52B20 (E2)

DEAD FACE CONNECTOR P174 J174

P434

S06

A — WA52B20 (E2)

B — WA54B20 (E2)

P439

S027

A — WB52B20 (E2)

B — WB54B20 (E2)

P421B

TO E.D RELAY BOX "B" (2A2) LDW320-54000 (REF)

CONTINUED FROM SHEET 5.00

P416A

G	WA419D22(A) CMDIA	82	WA419C22(A) CMDIA	23	P4068
N	WA36AS22(A) CMDIA	83	WA36AQ22(A) CMDIA	40	
U	WA382B22(A) CMDIA	11	WA382A22(A) CMDIA	9	
V	WA36R22(A) CMDIA	100	WA36F22(A) CMDIA	10	
A	WA383B22(A) CMDIA	110	WA383A22(A) CMDIA	11	
B	WA36S22(A) CMDIA	111	WA36G22(A) CMDIA	12	
L	WA51B22(A) CMDIA	171	WA51A22(A) CMDIA	7	
K	W36Q22(A) CMDIA	170	WA36E22(A) CMDIA	8	
N	WA49B22(A) CMDIA	155	WA49A22(A) CMDIA	13	
M	WA36U22(A) CMDIA	154	WA36J22(A) CMDIA	14	
X	E5510 W1000U22N4 — E5507 W1000R22N4		E5074 W1000H22N4		
W	WA103B22(A) CMDIA	135	WA103A22(A) CMDIA	20	
Y	W1000W22 — WA36T22(A) CMDIA	125	WA36H22(A) CMDIA	19	
G	W1000M22 — E5507 W1000S22N4		E5074 W1000K22N4 — E5084 W1000G22N4 / W1000AN22N4	44	
E	WA44B22(A) CMDIA	232	WA44AE2(A) CMDIA	21	
F	WA45C22(A) CMDIA	233	WA45B22(A) CMDIA	22	PNL VIII
	W1000T22N4 E5510		E5084 W1000J22N4 / W1000AM22N4	43	
B	WA36V22(A) CMDIA	153	WA36K22(A) CMDIA	15	
A	WA34B22(A) CMDIA	152	WA34A22(A) CMDIA	16	
D	WA39B22(A) CMDIA	231	WA39A22(A) CMDIA	17	
C	WA36W22(A) CMDIA	230	WA36L22(A) CMDIA	18	
S	WA23B22(A) CMDIA	150	WA23A22(A) CMDIA	5	
T	WA36P22(A) CMDIA	151	WA36D22(A) CMDIA	6	
P	WA36M22(A) CMDIA	237	WA36B22(A) CMDIA	2	
R	WA57B22(A) CMDIA	238	WA57A22(A) CMDIA	1	
H	WA36N22(A) CMDIA	235	WA36C22(A) CMDIA	4	
J	WA59B22(A) CMDIA	236	WA59A22(A) CMDIA	3	

P429A

G	DA7089B26(E)	53	DA7089A26(E)	57	P950 SCERA #1 20A19
K	DA7088B26(E)	52	DA7088A26(E)	58	

J29A

18	P50B22(A)	126	P50C22(A)	14	P607 S.E PNL XIV AND RELAY JUNCTION BOX (4A5)
19	P52B22(A)	128	P52C22(A)	5	
7	P53B22(A)	136	P53C22(A)	15	
32	P41C22(A)CP3A	239	P41B22(A)CP3A	21	P186B CMD PNL XI
33	P40C22(A)CP3A	240	P40B22(A)CP3A	22	
27	P228C22A — TO P174-138 (ZONE 39C SH.500)				
14	D1735B26(E)	81	D1735A26(E)	25	P970 SCERA #2
29	D1734B26(E)	65	D1734A26(E)	11	
28	D1736B26(E)	66	D1736A26(E)	26	
4	D1492B26(H)	186	D1492A26(H)	10	P971 ATTENUATORS SCERA #2
5	D1491B26(H)	200	D1491A26(H)	9	
39	D1484M26(H)	25	D1484F26(H) — TO E757 (ZONE 36C SH.5.00)		
38	D1485F26(H)	38	D1485E26(H) (REF) — TO E1073 (ZONE 36C SH.500)		

LDW390-54000

ECA NO.1 (4A2)

ECA NO.1 VOLT TAP BAT NO.1

ECA NO.1 VOLT BAT. NO.1

ECA NO.1 CURRENT BAT. NO.1

22 — D8000JF22N4(H)

37 — D8000HE22N4(H)

20 — D8000JJ22N4(H)

21 — D8000JL22N4(H)

D8000HF22N4(H) — E5514

LDW390-54000

P429A

ED RELAY BOX 2A1

D — DA1126B26(E) — 127 — DA1126A26(E) — P950 71 — LDW320-54000 SCERA #1

E — DA1127B26(E) — 137 — DA1127A26(E) — 70

EXPLOSIVE DEVICES RELAY BOX 2A1

LDW390-54000 REV SHT 5 OF FRM SIZE X

DSG EQUIP NO 26512 DWG NO LDW267-54000 SHEET 6 OF 6 SHTS

FRAME 1

FOR ENGINEERING INFORMATION ONLY

CONNECTOR CONTINUED ON SHEET 6.00

DESCENT

ASCENT

GUILLOTINE

DESCENT ENG CONTROL ASSY (A10)

SEC CONTROL ASSY NO.3 (A11)

DESCENT ENG CONTROL ASSY (A10)

SEC CONTROL ASSY NO.3 (A11)

J737

J1420

J1421

J737

P1802

P1808

J701

P1410B

P1301

J1404

LDW300-54003 (REF)

PNL XVII 4FB233

PNL I IDSI LUNAR CONTACT

AT TITUDE AND TRANSLATION CONTROL ASSY 11A1

SEC CONTROL ASSY NO.1 1A9

PANEL I MAIN THROT SW 1510

AEA 12A1 LDW300-54002 (REF)

DESCENT ENG PRESS THRUST CHAMBER GQ6510P

POS. VAR INJECTION ACTVATOR GQ6806H DESCENT ENG 10A1

REF VOLT 400 CPS GH1313, GH1314

GH1314V VOLT ROLL GDA POS (.4KC)

GH1313V VOLT PITCH GDA POS (.4KC)

GH1330X ROLL TRIM FAIL

GH1328X ROLL TRIM FAIL

GH1348X DES ENG ARM

GH1331V VOLT AUTO THRUST CMD

GH1311V VOLT MANUAL THRUST CMD

1A10

DESCENT ENG CONTROL ASSY 1A10

S&C CONTROL ASSY NO.3 1A13

PCMTEA 20A9 LDW27D-54000(REF)

SCERA NO.2 20A19

SCERA NO.1 20A18

TO LGC (3:4) LDW370-54001(REF)

TO PNL III LDW370-54000(REF)

TO S&C CONTROL ASSY NO.1 1A9

TO 4CB207 PNL XI

TO S&C CONTROL ASSY NO.2 1A8

AEA 12A1 LDW300-54002(REF)

PANEL I MAIN THROT SW 1S10

LDW300-54003(REF)

DESCENT ENG CONTROL LDW300-54003(REF)

QUAD 4

LDW267-54000

SHT 5.00

FRAME 3

FRAME 4

26512

10MT17 GQ5501P PRESS ULLAGE FUEL TANK NO.1
E850 YEL, E849 BLK
E848 RED, E847 GRN
D8001JE22(H)

GF4581Q QTY, DESCENT TANK WATER 7A8 LDW330-54000(REF)
E940 RED, E939 GRN
E941 BLK, E942 YEL

10MT21 GQ4001P PRESS.OXID TANK NO.1 ULLAGE
E831 GRN, E832 RED
D8000HZ22(H)
E835 YEL, E834 BLK

10MT57 GQ3025P PRESS HE REG OUT MANIFOLD REDUNDANT
E820 GRN, E821 RED
D8000HW22(H)
E823 YEL, E822 BLK

10MT19 GQ3018P PRESS HE REG OUT MANIFOLD
E826 YEL, E825 BLK
E828 GRN, E827 RED
D8000HY22(H)

10MT45 GQ3435P PRESS S/C He SUPPLY TANK
E872 RED, E871 GRN
D8000HD22(H)
E874 YEL, E873 BLK

10MT56 PRESS S/C He SUPPLY TANK REDUNDANT
E869 YEL, E868 BLK
E866 GRN, E867 RED
D8000HB22(H)

7MT10 GF3584P DESCENT PRESSURE O_2 TANK
E936 RED, E901 GRN
E937 BLK, E938 YEL

P5(A1)
DESCENT ENG PRESS THRUST CONTROL ASSY 10A1 — H, M, L, G
DESCENT ENG PRESS THRUST CHAMBER GQ6510P — K, F, P, Q
POS.VAR INJECTION ACTVATOR GQ6806H DESCENT ENG 10A1 — W, Z, R
D8000FD22N4, D8000FE22N4 — E5501

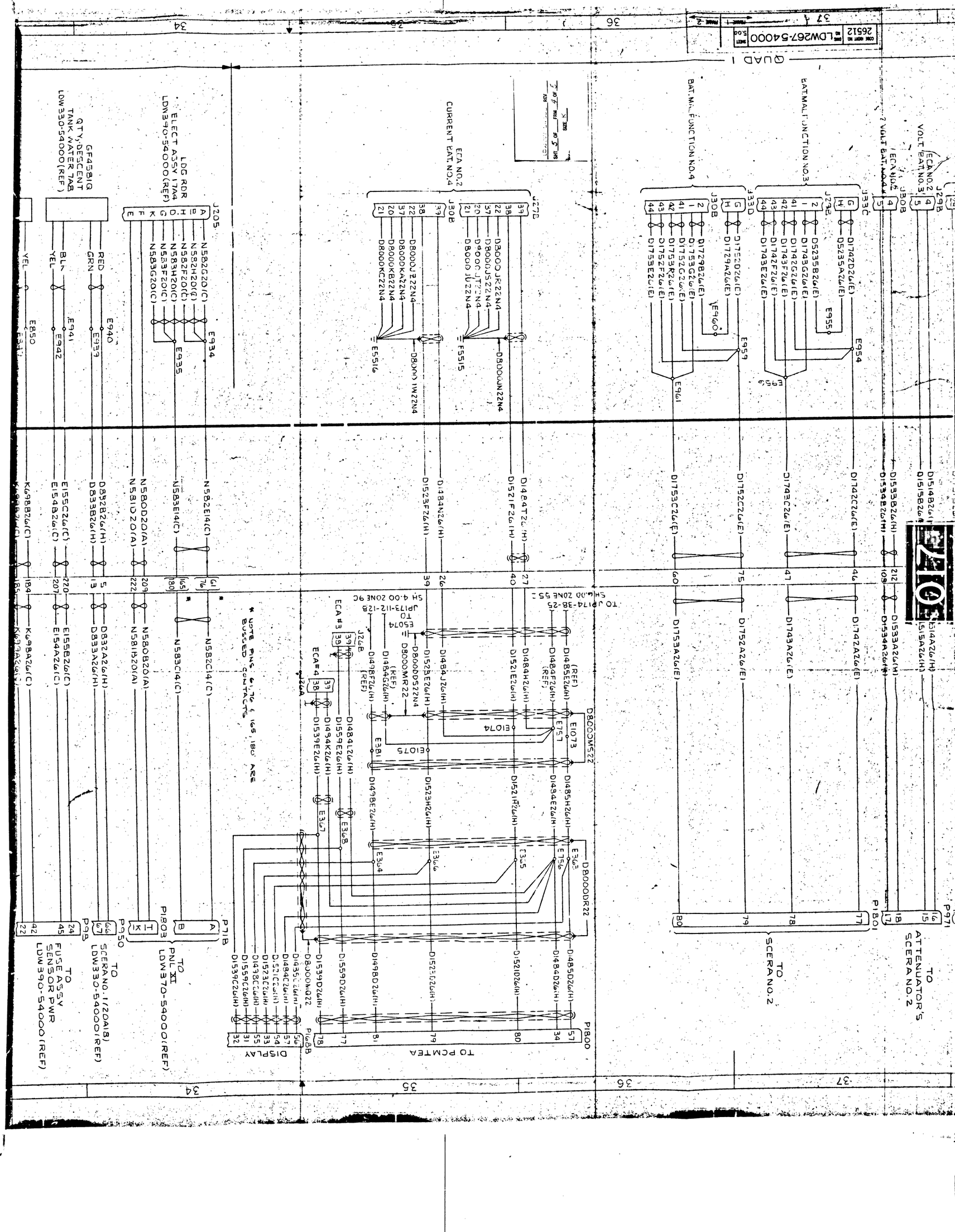
J737
REF VOLT 400 CPS GH1313, GH1314 — B5, B4
D2000G22N4 — E5512
GH1314V VOLT ROLL GDA POS(4K2) — B1, B0
D8000KE22

N580D20(A), N581D20(A)
D832B26(H), D833B26(H)
E155C26(C), E154B26(C)
K698B26(C), K699B26(C)
D608IC26(H), D1121E26(H), D8000GN22N4 — E5500
D1121F26(H) — E830
D1121G26(H), D6080C26(H), D8000GQ22N4 — E5500
K700A26(C), K701A26(C)
D6013C26(H), D6012C26(H), D8000FH22N4 — E5500
K694B26(C), K695B26(C)
K55B26(C), K56B26(C)
D314B26(H), D313B26(H), D8000FJ22N4 — E5500
D322C26(H), D321C26(H), D8000HC22N4 — E5507
K18B26(C), K19B26(C)
K696B26(C), K697B26(C)
D6015C26(H), D6014C26(H), D8000HA22N4 — E5507
D913B26(H), D914B26(H)
E157B26(C), E156B26(C)
K50B26(C), K51B26(C), K49B26(C), K48B26(C)
K683B26(C), K682B26(C)
D249C26(H), D248C26(H), D8000FD22N4, D8000FE22N4 — E5501
D261C26(H), D262F26(H), D8000FA22N4 — E5500
D2320B26(B), D2319B26(B), D2000G22N4 — E5512
D2314D26(H), D2313B26(H), D8000KE22

D580B20(A), D581B20(A)
D832A26(H), D833A26(H)
E155B26(C), E154A26(C)
K698A26(C), K699A26(C)
D608IB26(H)
D1121M26(H), D6080B(H), D8000BM22
K700B26(C), K701B26(C)
D6013B26(H), D6012B26(H), D8000BQ22N4 — E5074, D8000BP22
K694A26(C), K695A26(C)
K55A26(C), K56A26(C)
D314A26(H), D313A26(H), D8000BOB022N4 — E5074
D322A26(H), D321A26(H), D8000AT22N4 — E5074, D8000A522
K18A26(C), K19A26(C)
K696A26(C), K697A26(C)
D6015A26(H), D6014A26(H), D8000AV22N4 — E5074, D8000AU22
D913A26(H), D914A26(H)
E157A26(C), E156A26(C)
K50A26(C), K51A26(C), K49A26(C), K48A26(C)
K683A26(C), K682A26(C)
D249B26(H), D248B26(H), D8000LL22N4 — E5105, D8000BN22
D261A26(H), D262A26(H), D8000B522N4 — E5074, D8000BR22
D2320A26(B), D2319A26(B), D2000B22N4 — E5074
D2314C26(H), D2313A26(H), D8000ES22
D2314A26(H), D2314B26(H) — E436

P950 — TO SCERA NO.1 (20A18) LDW330-54000(REF)
P98 — TO FUSE ASSY SENSOR PWR LDW390-54000(REF)
P1808 — TO MAIN PROPULSION PNL I LDW270-54000(REF)
P98A — TO FUSE ASSY SENSOR PWR LDW390-54000(REF)
P608 — TO PCMTEA 20A9 LDW270-54000(REF)
P98A — TO FUSE ASSY SENSOR PWR LDW390-54000(REF)
P953 — TO SCERA NO.1 (20A18) LDW270-54000(REF)
P608 — TO PCMTEA 20A9 LDW270-54000(REF)
P98 — TO FUSE ASSY SENSOR PWR LDW390-54000(REF)
P1808 — TO MAIN PROPULSION PNL I LDW270-54000(REF)
P1801 — TO SCERA NO.2 20A19 LDW330-54000(REF)
P98 — TO FUSE ASSY SENSOR PWR LDW390-54000(REF)
P608 — PCMTEA 20A9 LDW270-54000(REF)
P887 — SCERA NO.2 20A19 LDW330

CODE IDENT NO 26512 | SIZE B | LDW267-54000 | SHEET 5 OF 5



GUILLOTINE

DESCENT

ASCENT

DEADFACE CONNECTOR
P174 J174

TO J27A-27
SH 600 ZONE 55 A

J30B
27
19
7
18

J29B
18
7
19

ECA1 (4A1)
LDW390-54000 (REF)

4A1
10
9

P151E6(C)

P229C22(A) — 218 — P229B22(A) — E1197 — P229K14(A) — P257B G — CMD PNL XI

P93B22(A) — 227 — P93C22(A) — P607 29
P92B22(A) — 228 — P92C22(A) — 30
P95B22(A) — 229 — P95C22(A) — 31 — S.E PNL XIV AND RELAY JUNCTION BOX (4A5)

P81B22(A) — 172 — P81C22(A) — 47
P76B22(A) — 173 — P76C22(A) — 48
P77B22(A) — 189 — P77C22(A) — 28

P151F6(C) — * 92 — P151A6(C) — 4A6 A1
P151D6(C) — 94 — P151B6(C) — B1 — DEADFACE RELAY BOX

118 119 145 120 121 147

* NOTE: PINS 92, 118, 119, 145 & 94, 120, 121, 147 ARE BUSSED CONTACTS

P233E22(A) — 205 — P248E22(A) CP2A — P608 78
206 — P233D22(A) CP2A — 79 — RELAY JUNCTION BOX

P232F22(A) — 219 — P232H22(A) CP2B — E1055 — P232C22(A) CP2B — P1410B 33 — CMD PNL XI (4A5)
E1056 — P249B22(A) CP2B — 34
P249D22(A) CP2B — P1803 G
193 — P232D22(A) CP2B — E215 — P232B22(A) CP2B — C — RELAY JUNCTION BOX (4A5)

LDW390-54000 (REF)

J29B
14
29
28

ECA NO.2 VOLT TAP
BAT. NO. 3&4
LDW390-54000 (REF)

J30B
14
29
28

D1745B26(E) — 85 — D1745A26(E) — P970 31
D1746B26(E) — 84 — D1746A26(E) — 15
D1744B26(E) — 69 — D1744A26(E) — 32 — TO SCERA NO.2

D1750B26(E) — 102 — D1750A26(E) — 18
D1749B26(E) — 101 — D1749A26(E) — 17
D1751B26(E) — 112 — D1751A26(E) — 35

J29B
4
5

ECA NO.2
VOLT. BAT. NO.3

D1514B26(H) — 210 — D1514A26(H) — P971 16
D1515B26(H) — 211 — D1515A26(H) — 15 — TO ATTENUATOR'S SCERA NO.2

J30B
4
5

ECA NO.2
VOLT BAT. NO.4

D1533B26(H) — 212 — D1533A26(H) — 18
D1534B26(H) — 105 — D1534A26(H) — 17

J33C
G
H

D1742D26(E) — E954
D5235A26(E) — E955

J29B
2
1
41
42
43
44

BAT. MALFUNCTION NO.3

D5235B26(E)
D1743G26(E)
D1742G26(E)
D1743F26(E)
D1742F26(E)
D1743E26(E)

E956

D1742C26(E) — 46 — D1742A26(E) — P1801 77
D1743C26(E) — 47 — D1743A26(E) — 78 — TO SCERA NO.2

J33D
G
H

D1752D26(E) — E959
D1729A26(E) — E960

J30B
2
1
41

BAT. MALFUNCTION NO.4

D1729B26(E)
D1753G26(E)

D1752C26(E) — 75 — D1752A26(E) — 79
80

QUAD 1

CODE IDENT NO. 26512 — DWG NO. LDW267-54000 — SHEET 5 OF 5 — FRAME 1 — FRAME 2

A B C D

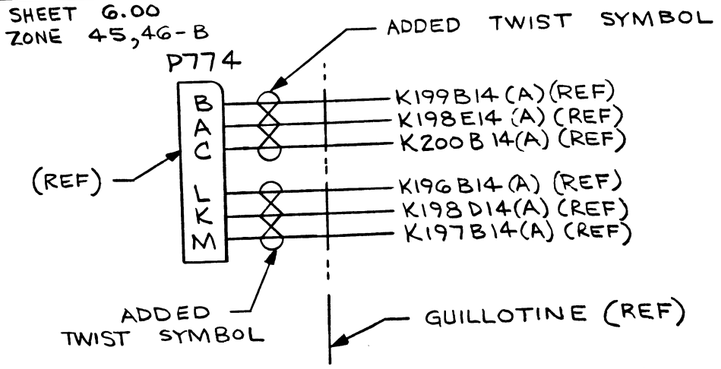
40 39 38 37

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW 267-54000 | EO NO. A1
CONTROL INFO NO. LDW267B39211

ENG 22.1 REV 3-65

SHEET 6.00
ZONE 45,46-B



DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	DESCRIPTION OF EO	GAEC EO RELEASE
REASON FOR EO: DRAWING CORRECTION		X	ON CONN P774 PINS A, B & C AND PINS L, K & M ADDED TWIST SYMBOL.	JR 10/1/68

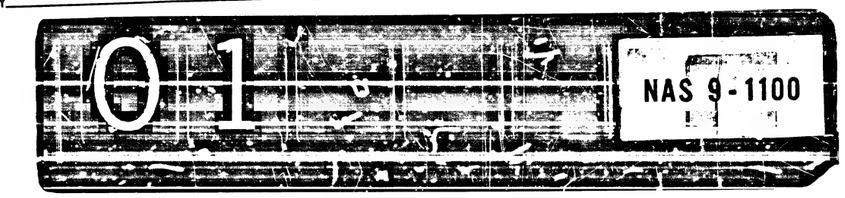
MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		NOT REQD	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: NOT REQD REWORK	NOT REQD SCRAP	APPROVED BY	DATE
✓				RS	9/25/68
				CSS	9/25/68

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
E	WIRING DIAGRAM ASCENT/DESCENT INTERFACE WIRING	LDW 267-54000	A1

GROUP: EPS 9/25/68 | GROUP LEADER: INST | GROUP: MECH DEV | PROJ ENGRG: 9/26/68 | TEST: 10-3-68

ISSUED BY R. STINTON X 86533 SECTION CSS GROUP NO. 267 PL. 25



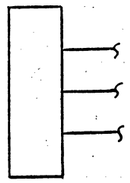
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LDW267-54010 | EO NO. B1
CONTROL INFO NO. LDW267B56322

ENG 32.1 REV 3-65

SHEET 4.00 ZONE 20A
REVISE AS SHOWN:

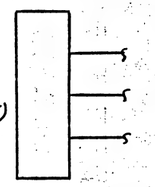
LM-4 { RTG CASK SHLD TEMP (COLD SIDE) GL 8275T
LM-6 { RTG CASK TEMP GL8275U



PANELS AFF: NONE
CABLES AFF: NONE

WAS:

RTG CASK SHLD TEMP (COLD SIDE) GL 8275T



ISSUED

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD 3733 CCA 1652 (5)

REASON FOR EO: ADD SURFACE TEMP MEASURMENT TO TIIE RTG FUEL CASK

DESCRIPTION OF EO: ADDED MEASURMENT No. "GL8275U" TO 20RT1 FOR LM-6 (36) WAS "GL8275T"

GAEC EO RELEASE: VK 9/6 | PJ 9/7 | RHP

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: NOT REWORK	REQD SCRAP
LM		LM-6(36)		✓			

APPROVED BY: DATE 1-27-69 (CSS) | 2-5-69 (MECH) | 2-5-69 | 2-5-69 | 2-6-69 | 2/6/69 | 9/5-69
GROUP LEADER | SUBSYS GROUP | GROUP LEADER | SUBSYS GROUP | PROJ ENGR | CONFIG REL

PRIORITY: E
DRAWING TITLE: WIRING DIAGRAM ASCENT/DESCENT INTERSTAGE WIRING
DRAWING NO.: LDW267-54000
EO NO.: B1

ISSUED BY J. AYREY X86533 SECTION CSS GROUP NO. 267 PL 25

255

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65 **ENGINEERING ORDER**

DWG. NO. LDW2G7-54000 | EO NO. B2
CONTROL INFO NO. LDW2G7BG7211

(REF E.O "B1")

SHEET 4.00 ZONE 20A
REVISE 20RT1 CALLOUT :

LM-4 & LM-6 { RTG CASK TEMP GL 8275U

WAS

LM-4 { RTG CASK SHLD TEMP (COLD SIDE) GL 8275T

LM-6 { RTG CASK TEMP GL 8275U

PANELS AFF : NONE

CABLES AFF : LDW390-54014 C/N LDW390-7735
LDW390-56014 C/N LDW390-7736

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCD 3733 A CCA 1652 AMEND 1 (5)

REASON FOR EO: ADD SURFACE TEMP MEASUREMENT TO THE RTG FUEL CASK

DESCRIPTION OF EO: REF E.O "B1" FOR LM-4 ON 20RT1 ADDED MEAS NO. "GL8275U" & REMOVED MEAS NO. "GL 8275T"

GAEC EO RELEASE: R.S 7/16/69; S.K 7/16/69

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
	LFM 421	LM-4 (34)	
LM		& LM-6 (36)	

DRAWING CHANGE REQD: REVISE DWG	— RECORD EO	DISPOSITION OF PARTS: NOT REWORK	READ SCRAP	APPROVED BY	DATE	R.S	
✓					6/19/69		
						CSS	

	DESIGN GROUP	GROUP LEADER	GAEC PROJECT ENGRG	INST DIVISION ENGRG	PROD. ENGRG
	6/15/69	7/8/69	7/8/69	7-9-69	7/15/69
	MECH EDS DEV	GLD	GLD	INST	REL

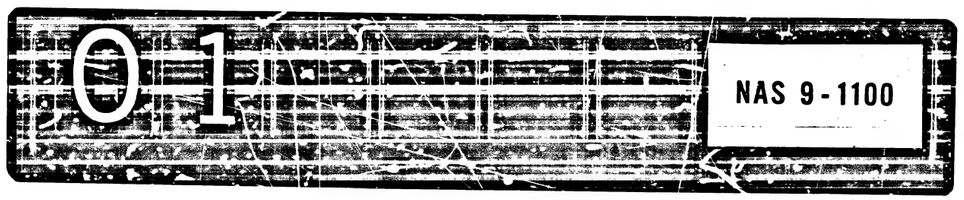
PRIORITY: E

DRAWING TITLE: WIRING DIAG. ASCENT/DESCENT INTERSTAGE WIRING

DRAWING NO.: LDW2G7-54000

EO NO.: B2

ISSUED BY R. STINTON X 86533 SECTION CSS GROUP NO. 267 PL 25



LDW 267-56001 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.					
								LM		LM-6 (36)	
								PART NO. LDW 267-56001		GAEC SCH NO.	

WORK PACKAGE FUNCTION NO. 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	1.10	1.11	4.00	5.00	6.00	7.00	8.00	9.00
REV	B	A	B	A	A	A			
SHEET	10.00	11.00	12.00	13.00	14.00	15.00	16.00	17.00	18.00
REV	A	A	A	B	A	A	A	A	A
SHEET	19.00	20.00	20.01			5.01	5.02		
REV			A			B	B		
LAST SECT LTR USED	~			GRUMMAN REL INFO					
LAST DASH NO. USED	~			PRIM NO.	648				

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
— — —

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS 9-1100 — LINE ITEM ~ — DOCUMENTATION TYPE II

DRAWN BY	T. HOLLOWAY	CES	
LAYOUT BY	E. ARATOLI		
CHECKED BY	R. Hunter 12/9/69		
GRP LDR	E. Ryd 12/9/69		
GRP LDR			
INSTR	Wm Perry 2/3/69	PROJ ENGR	2/3/69
CCS	A. Rubenstein 2/14/69	REL GROUP	2-17-69

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

LM ELEMENTARY FUNCTIONAL DIAGRAM
ENGINE THRUST CONTROL (CES)

SIZE	CODE IDENT NO.		
B	26512	LDW 267-56001	B
SCALE	NONE	SHEET 1 OF 13	

AG 77.1 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	APPD
A	10	18.00	3G 3F 3C				✓		ADDED 1A16 & ASSOC. WIRING. ADDED PJ737 PIN 50 & PJ716A PIN M & ASSOC WIRING. REMOVED NOTE 1.	LM-6(36)	NOT	REQD	DABUT 5-23-1969	6-18-69	6-19-69
	11	20.01	4C				✓		ADDED HEX SYMBOL 3-616-B AT 20A19.						
		1.10 1.11 1.00		(P)			✓		ADDED SHEETS 1.10 & 1.11 SH 1.00 OF 21 WAS 1.00 OF 19						
B	1	1.00, 1.11 5.01 & 5.02					✓		ADDED SHEETS 5.01 AND 5.02	LM-6(36)	NOT	REQD	RJoolley 9/9/69		
	2	13.00		(R)			✓		ZONE F-3, DESIG. "1A13" WAS "1A9" & "CONT ASSY NO. 3" WAS "CONT ASSY NO. 1" DWG CORRECTION SHEET 1.00 OF 23 WAS 1.00 OF 21 Sgalewalka 12-1-69					12-1-69	

CHG APPROVED	LTR	GROUP LDR	GRP LDR	C.E.S	INST	CCS	PROJ ENG
	A	L. W. L. 6549		9 Ellis 11-25-69	Bax 12-1-69	R.S 5/27/69	6/6/69
	B	L. W. L. 11644		9 Ellis 11-25-69	Cleveli 12-8-69	11/13/69	12/2/69

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW267-56001	B

SCALE NONE SHEET 1.11

77.16 3-66

01

NAS 9-1100

SUPPLEMENTARY DATA
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG

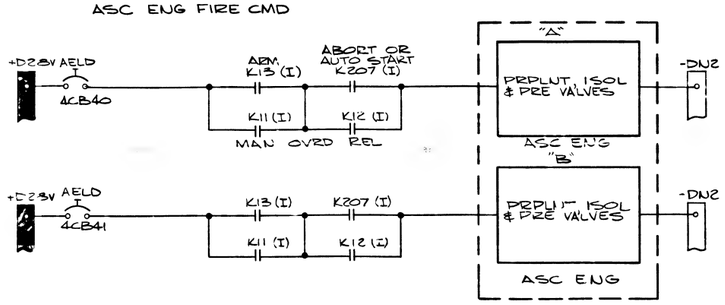
MARK PART NUMBER IN ACCORDANCE WITH MIL STD-130

PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED [ ] IF BOTH SIDES IF NECESSARY

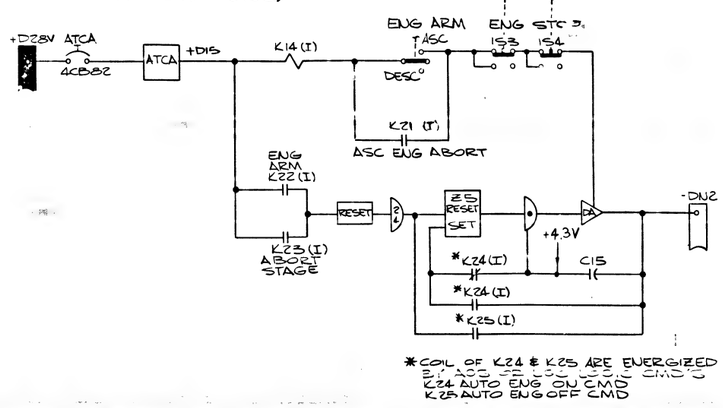
MIL-[illegible] MS HAS & NS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED

INSTALL RIVETS IN ACCORDANCE WITH

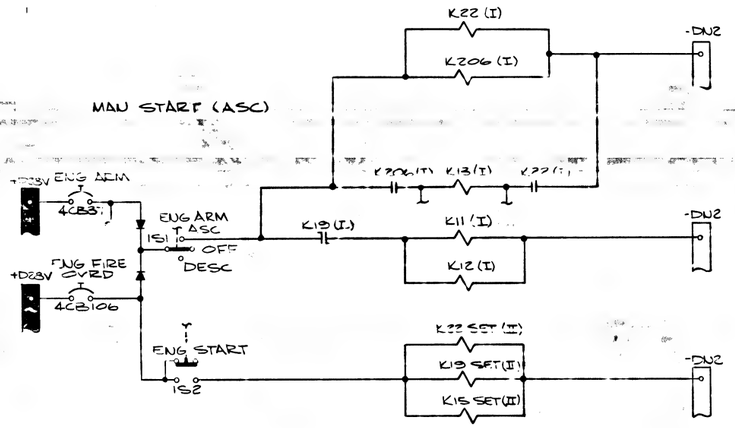
ASC ENG FIRE CMD



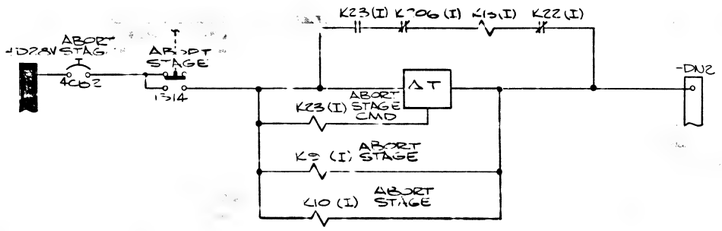
AUTO START (ASC)



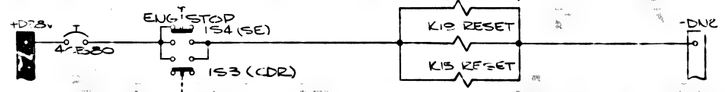
MAN START (ASC)



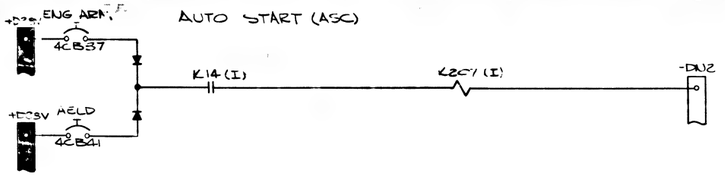
ABORT STAGE (ASC)



MAN STOP (ASC)



AUTO START (ASC)



GRUMMAN AIRCRAFT ENGRG CORP
CES ASCENT ENGINE START AND STOP
CODE IDENT NO 26512
MODFL LM-G EFD 1-606.2 REV B

NAS 9-1100

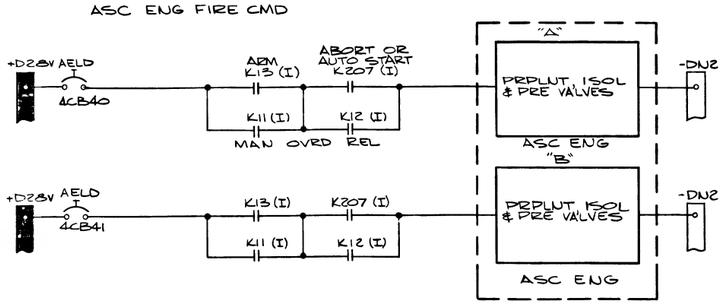
GRUMMAN AIRCRAFT ENGINEERING CORPORATION
BETHPAGE, NEW YORK 11714
SIZE E | CODE IDENT NO 26512 | LDW267-56001 | REV
SCALE NONE | SHEET 5 of 21

LDW267-56001B

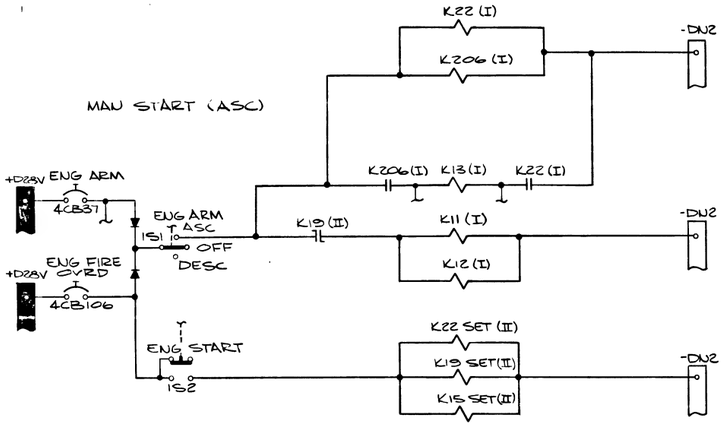
SUPPLEMENTARY DATA
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ☑ APPLY TO THIS DWG

MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☐ USE BOTH SIDES IF NECESSARY	
LENGTHS OF AN NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
INSTALL RIVETS IN ACCORDANCE WITH	

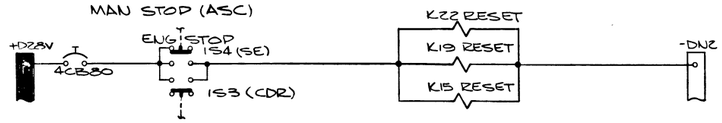
ASC ENG FIRE CMD



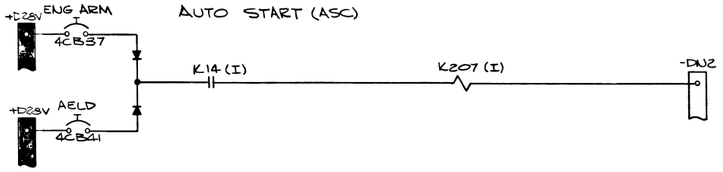
MAN START (ASC)



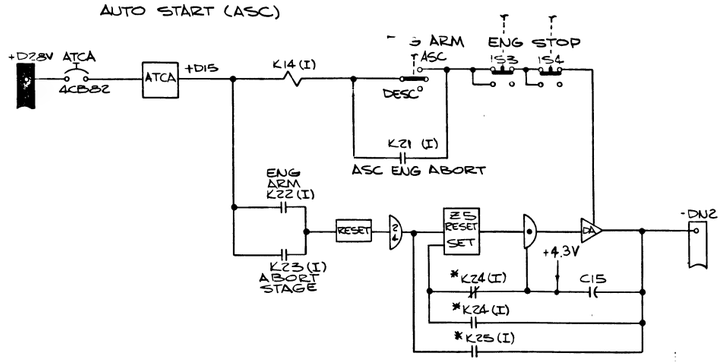
MAN STOP (ASC)



AUTO START (ASC)

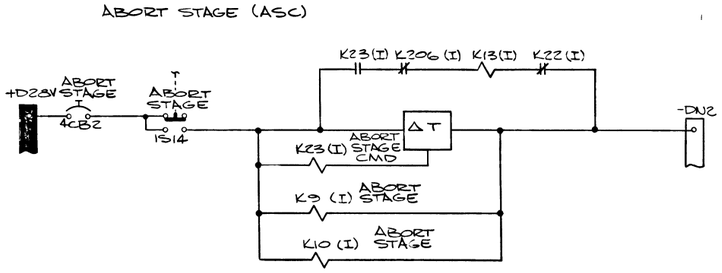


AUTO START (ASC)



*COIL OF K24 & K25 ARE ENERGIZED BY AGS OR LGC LOGIC CMD'S
K24 AUTO ENG ON CMD
K25 AUTO ENG OFF CMD

ABORT STAGE (ASC)



GRUMMAN AIRCRAFT ELGRG CORP
CES ASCENT ENGINE START AND STOP
CODE IDENT NO. 26512
MODEL LM-6 | EFD 1-606.2 | REV B

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORPORATION
BETHPAGE, NEW YORK 11714

SIZE	CODE IDENT NO.		
E	26512	LDW267-56001	D

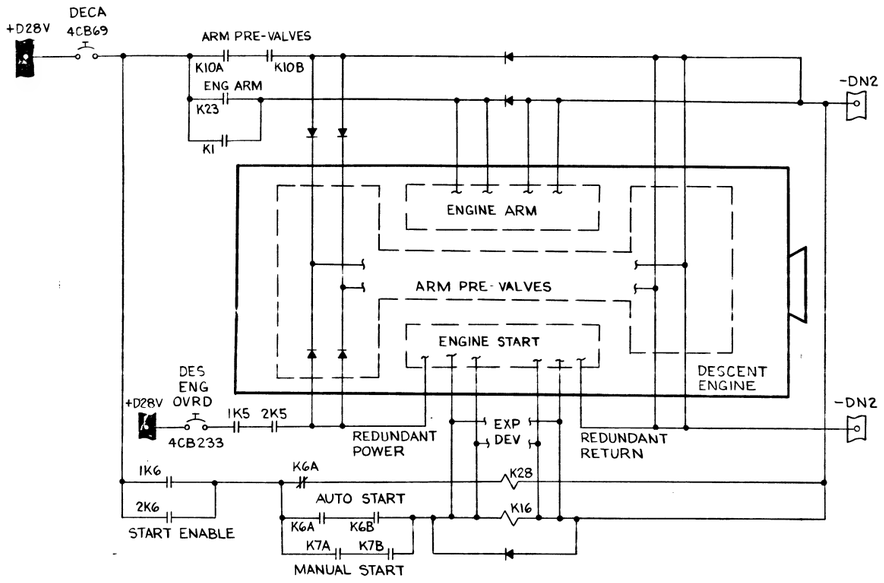
SCALE NONE | SHEET 5.21

LDW 267-56001 B

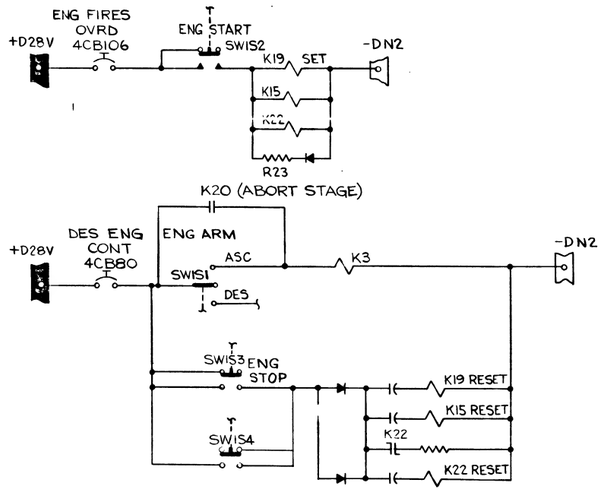
DRG 73.4 REV 5-67

SUPPLEMENTARY DATA
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED (✓) APPLY TO THIS DWG.

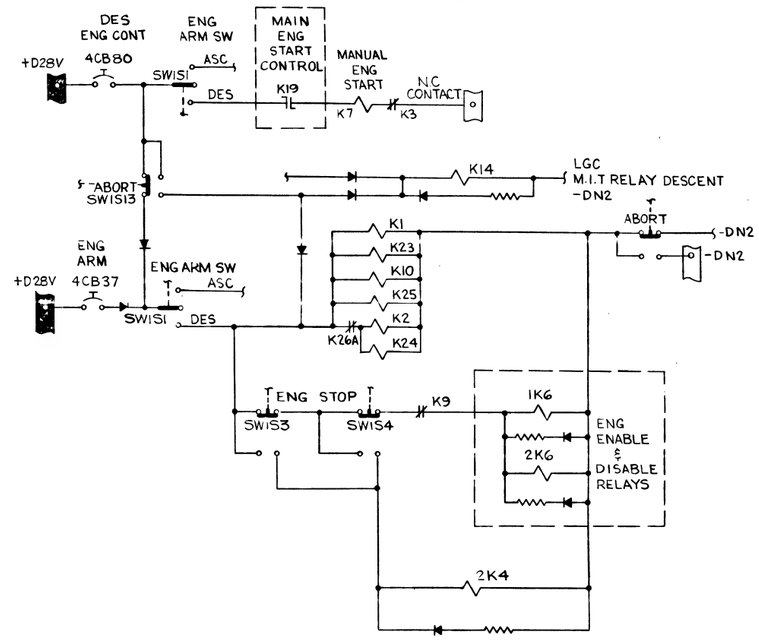
MARK PART NUMBER IN ACCORDANCE WITH MIL STD-130.	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊏⊐ USE BOTH SIDES IF NECESSARY	
LENGTHS OF AN, MS & NS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL RIVETS IN ACCORDANCE WITH	



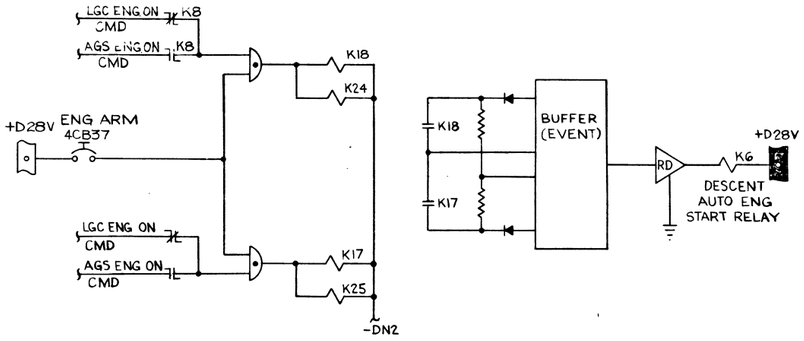
POWER TO PRIMARY DESCENT ENGINE START VALVES



MANUAL ENGINE START & STOP CONTROLS



MANUAL ENGINE START & STOP CONTROLS



AUTO ENGINE START

GRUMMAN AIRCRAFT ENGRG CORP		
CES DESCENT ENGINE START & STOP		
CODE IDENT NO. 26512		
MODEL LM-6	EFD 1 - 606.3	REV B

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714			
SIZE E	CODE IDENT NO 26512	LDW267-56001	B
SCALE NONE		SHEET 5.52	

LDW267-56001 B

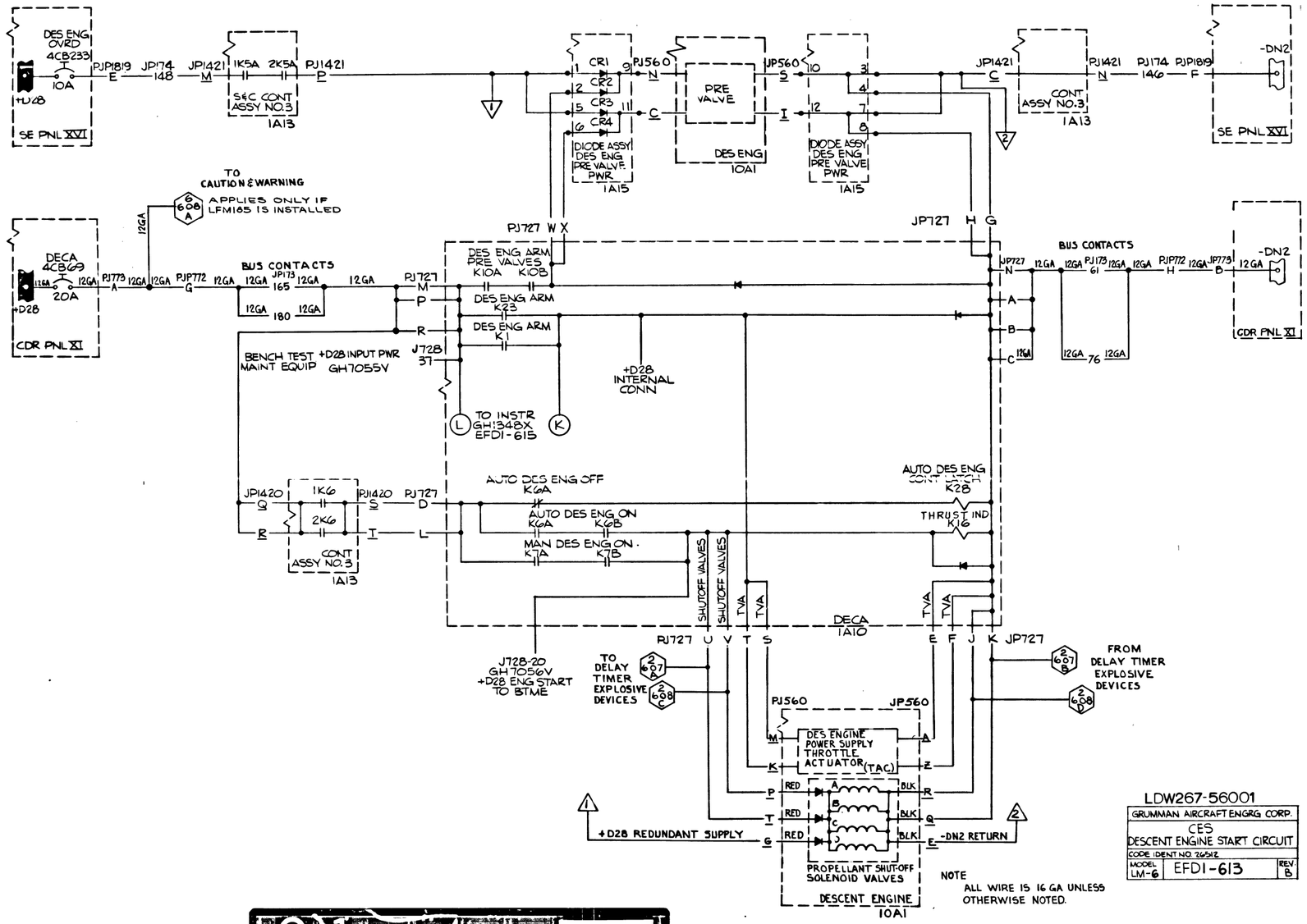
LDW267-56001 B

LDW267-56001 B

8 7 6 5 4 3 2 1

SUPPLEMENTARY DATA
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG

MARK PART NUMBER IN ACCORDANCE WITH MIL STD 130	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY	
LENGTHS OF AN NAS & MS AL ALLOY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL RIVETS IN ACCORDANCE WITH	



NOTE
ALL WIRE IS 16 GA UNLESS OTHERWISE NOTED.

LDW267-56001

GRUMMAN AIRCRAFT ENGRG CORP.		
CES DESCENT ENGINE START CIRCUIT		
CODE IDENT NO 26512		
MODEL LM-6	EFD1-613	REV B

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORPORATION
BETHPAGE, NEW YORK 11714

SIZE	CODE IDENT NO		
E	26512	LDW267-56001	B

SCALE NONE SHEET 13.00

LDW267-56001B

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW267-57000 | EO NO. A1

CONTROL INFO NO. LDW267B67311

SHEET 4.00 ZONE 13A
REVISE 20RT1 CALLOUT:

RTG CASK TEMP
GL 8275U

WAS

RTG CASK
SHLD TEMP
(COLD SIDE)
GL 8275T

PANELS AFF: None

CABLES AFF: LDW390-56014 C/N LDW390-7736
LDW390-59014 C/N LDW390-7737

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCD 3733 A CCA 1652 AMEND 1

REASON FOR EO: ADD SURFACE TEMP MEASUREMENT TO THE RTG FUEL CASK

DESCRIPTION OF EO: 20RT1 CALLOUT WAS "RTG CASK SHLD TEMP (COLD SIDE) GL 8275T.

GAEC EO RELEASE: (5) R4 7/18/69 SK 7/18/69

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM		LM-7 (3T) THRU LM-14 (4T)	

DRAWING CHANGE REQD: ✓ REVISE DWG; — RECORD EO

DISPOSITION OF PARTS: NOT REWORK; REQD SCRAP

APPROVED BY	R.S							
DATE	6/19/69	6/12/69	7/8/69	6/30/69	6-19-69	7/18/69	7/18/69	7/18/69
	CSS	SUPERVISOR	DESIGN GROUP	GROUP LEADER	STANDARDS GROUP	STRUCTURAL ENGRG	PROJ. ENGRG	REL

PRIORITY: E

DRAWING TITLE: WIRING DIAG. ASCENT/DESCENT INTERSTAGE WIRING

DRAWING NO.: LDW267-57000

EO NO.: A1

ISSUED BY R. STINTON x 86533 SECTION CSS GROUP NO. 267 PL 25

JPL 3 FEB PRIOR COPIES FOR SHOP USE ONLY

01 NAS 9-1100

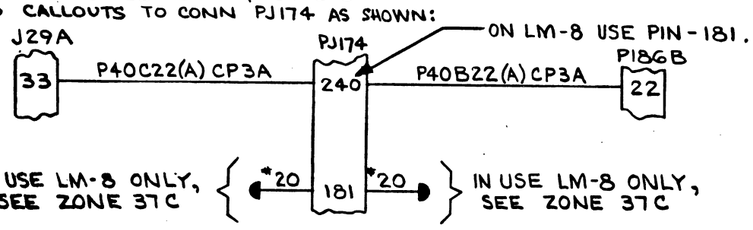
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

DWG. NO. LDW267-57000 | EO NO. A2

ENGINEERING ORDER

CONTROL INFO NO. LDW267B72111

SH 6.00 ZONES 37C & 34 B-C
ADD CALLOUTS TO CONN PJ174 AS SHOWN:



PANELS AFF : NONE
CABLES AFF : LDW390-56916 C/N LM-5-18733 J1 & LDW390-54431 C/N LM-5-18734 J6.
OTHER DWG AFF: NONE

DETAIL SPEC REQ | CL II ENGRG CHG | ✓ CL I ENGRG CHG | TO MATCH VEHICLE | 16

REASON FOR EO: INTERMITTENT SIGNAL PIRR J3443 & PIRR H5698

DESCRIPTION OF EO: SH 6.00 ON CONN PJ174 ADDED CALLOUT "ON LM-8 USE PIN-181" TO PIN-240. ADDED CALLOUT "IN USE LM-8 ONLY, SEE ZONE 37C" TO PIN-181 BOTH SIDES.

GAEC EO RELEASE: 10-29-69 | 10/29/69

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-8 (38)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO —
DISPOSITION OF PARTS: REWORK NOT REQD | SCRAP

	APPROVED BY	DATE	GROUP LEADER	GROUP ENGR	PROJ ENGR
R.S		10-24-69	10/24/69	10/24/69	10/24/69
CSS		10-24-69	10/24/69	10/24/69	10/24/69

PRIORITY: E

DRAWING TITLE: WIRING DIAG ASCENT/DESCENT INTERSTAGE WIRING

DRAWING NO.: LDW 267-57000

ED NO.: A2

ISSUED BY R. STINTON x 86533 SECTION CSS GROUP NO. 267 PL. 25

257

GRUMMAN AEROSPACE CORPORATION

CODE IDENT NO. 26512

ENG 32.1 REV 3-65 **ENGINEERING ORDER**

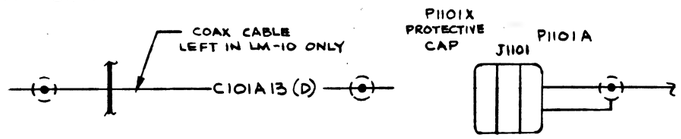
DWG. NO. LDW 267-60000 | EO NO. A1

CONTROL INFO NO. LDW 267B8G611

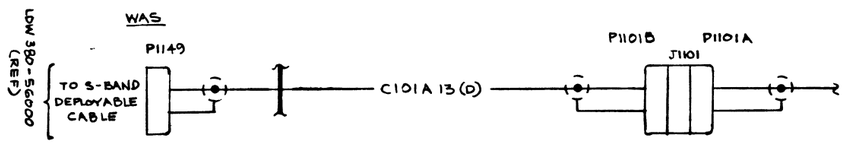
SH 6.00 ZONES 30B & 30C

REVISE AS SHOWN:

IS



WAS



CABLES AFF: LDW390-60543 DCRF 323-1981
LDW390-60014 C/N 390-8003
LDW390-51332 C/N 390-8002

PANELS AFF: NONE

OTHER DWGS AFF: NONE

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓	LCD 5608A PK*1

REASON FOR EO

LUNAR COMMUNICATIONS RELAY UNIT (LCRU) ANTENNA STOWAGE MODIFICATION

DESCRIPTION OF EO

SH 6.00 DELETED P1149 & ASSOC CALLOUT "TO S-BAND DEPLOYABLE CABLE LDW380-56000 (REF)". ADDED CALLOUT "COAX CABLE LEFT IN LM-10 ONLY". P1101X PROTECTIVE CAP WAS P1101B

GAEC EO RELEASE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-10 (40)	
		THRU	
		LM-13 (43)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: NOT REWORK	REQD SCRAP
✓	—		

APPROVED BY										
DATE	8/18/70	8/20/70	8-18-70	8-20-70	8/15/70	8/25/70				
	S/S	CSS	INST	MECH DES	GROUP LEADER	GRP LDR	EPS	PROJ ENGRG		

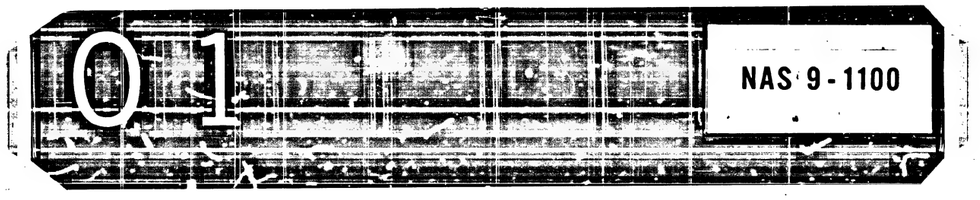
PRIORITY: E

DRAWING TITLE: WIRING DIAGRAM ASCENT/DESCENT INTERSTAGE WIRING

DRAWING NO.: LDW 267-60000

EO NO.: A1

ISSUED BY BOB BARRETT x2148 SECTION CSS GROUP NO. 267 PL 25



LDW267-60010 C

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW267-60010		GAEC SCH NO.	
								LM		LM-12(42)	
								LM		LM-11(41)	
								LM		LM-10(40)	

WORK PKG FUNCTION NO. 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	1.10	1.11	1.12	4.00	4.01	4.02	4.03	5.00
REV	C	A	B	B		A	A	B	
SHEET	6.00	7.00	8.00	9.00	10.00	11.00	12.00	13.00	11.01
REV		B	B	A	A	C	B	B	C
SHEET									
REV									

LAST SECT LTR USED	
LAST DASH NO. USED	

GRUMMAN REL ~~BFO~~ CD
PRIM NO. 648

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES	
ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	V
LCD 3994 PK. 11	

CONTRACT NO. NAS 9-1100			LINE ITEM	DOCUMENTATION TYPE II
DRAWN BY J. RECCARDI 11-19-69	PROP	B J ZANG 24 NOV 1969	GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE, L. I., NEW YORK	
LAYOUT BY E. BENNETT				
CHECKED BY C.W. Bagwell 11.24.69			LM ELEMENTARY FUNCTIONAL DIAGRAM - PROPULSION SUBSYSTEM	
GRP LDR R.W. Zeller 11-26-69				
GRP LDR V. Buscemi 12/8/69				
INST Penza 11-24-69	PROJ ENGR	12/3/69	SIZE B	CODE IDENT NO. 26512 LDW267-60010 C
CSS H. Lieberman 12/5/69	REL GROUP	12-17-69	SCALE NONE	SHEET 1.00 OF 18

ENG 77.1 12-65

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET 1.13

CHANGE LTR.	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	QUAL APPD
B	2	12.00	4C 5C			✓		LCD5638 PKG#1	AT 20A20 WIRE FROM JP850-9 TO WIRE FROM JP856-48 WAS TO BUBBLE "B" AT CALLOUT SEE SH 7.00. REMOVED BUBBLE "B".	LM-10(40) THRU LM-12(42)	NOT	REQ'D	M. SARFATY—3-3-71		8-9-71
	3	12.00	5D				✓		IN 20A18 HEX SYMBOLS 7-11.00B WAS 7-11.00A & 7-11.00A WAS 7-11.00B.	NOT REQ'D					
		8.00	2H						IN PWR FAILURE IND RELAY ASSY BETWEEN COIL 16A5K1 AND TERMINAL 3 ADDED DIODE						
		13.00	6G THRU 6D 4E 4F						IN 10A1 ADDED BRACKET AND CALLOUT "WIRES STOWED NON FUNCTIONAL". AT 20A19 REMOVED MEASUREMENT NUMBERS GQ7499U & GQ7498U FROM BETWEEN PJ971-1 TO PJ173-207 AND PJ971-60 TO PJ173-195 RESP. (SHEET 1.00 OF 17 WAS 1.00 OF 16 ADDED SHEET 1.12)						
	4	13.00	3G	LFM679		✓		LCD11692 PKG#1	AT WIRE FROM SPLICE POINT AT PJ877-21 REMOVED HEX SYMBOL 9-15.00B WITH ASSOCIATED CALLOUT "TO THRUST DISPLAY" AND ADDED ENDCAP.	LM-10(40) THRU LM-12(42)					
	5	1.00				✓		LCD5669 LCD5414	REMOVED EFFECTIVITY LM-13, LM-14 FROM EFFECTIVITY BLOCK	LM-13(43) LM-14(44)					
C	1	11.01 1.00		LFM699 (3)		✓		LCD5853 PKG1	ADDED SHEET 11.01.	LM-10 THRU LM-12	NOT	REQ'D	M. SARFATY 5-25-71		8-9-71
	2	11.00		LFM699 (3)		✓		LCD5853 PKG1	AT 10A2 "CALLOUT "SEE NOTE "B" & "C" WAS "SEE NOTE "B" ADDED NOTE "C" SHEET 1.00 OF 18 WAS 1.00 OF 17.						

CHG APPROVED

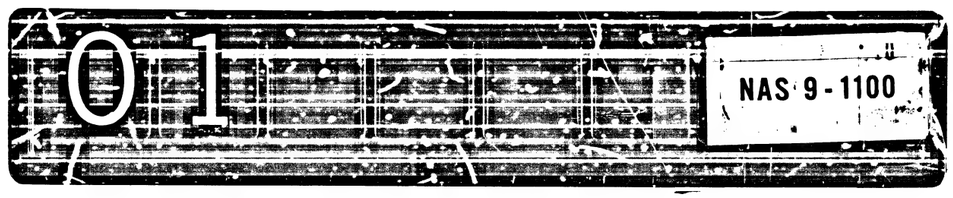
LTR	GROUP LDR	INST	CSS	PROP	P	EPS/PROJ	REL
B	[illegible] 4-5-71	[illegible] 4-5-71	[illegible] 4/26/71	[illegible] 5/3/71		[illegible] 4/5/71	
C	[illegible] 4/30/71	—	R. [illegible] 4/26/71	[illegible] 5/3/71		[illegible] 4/5/71	

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW267-60010	C

SCALE NONE SHEET 1.12

ENG 77.16 3-66



SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
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PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☐ USE BOTH SIDES IF NECESSARY	
LENGTHS OF AN, MS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
INSTALL RIVETS IN ACCORDANCE WITH	

GP2010P PRESS THRUST CHAMBER

+D28 — F30 1/4 AMP — JP98 71 — YEL (+) — P5 SIGNAL CONDITIONER (-) BLK — PJ98 26 — N2 -D 4A9

SENSOR PWR FUSE ASSY 4A9

SIG (+) RED (-) GRN — 10MTG2

INTERCONN CABLE

SENSOR ASSY — GP2010P PRESS THRUST CHAMBER

VALVE POSITION INDICATOR SWITCHES

CLOSED POSITION — OPEN POSITION

PROPELLANT ISOLATION NOT OPEN	A GP1801X	N.C. 5	NOT OPEN	RED	
		N.O. C 2	POLE	BLK	
			OPEN	WHT	
	B GP1802X	N.C. C 7	NOT OPEN	RED	
		N.O. 6	POLE	BLK	
			OPEN	WHT	
	A GP1805X	N.C. 3	NOT OPEN	RED	
		N.O. C 8	POLE	BLK	
			OPEN	WHT	
	B GP1806X	N.C. 5	NOT OPEN	RED	
		N.O. C 6	POLE	BLK	
			OPEN	WHT	
ISOLATION NC	A GP1811X	N.O. 2	CLOSED	WHT	
		N.C. C 3	POLE	BLK	
			NOT CLOSED	RED	
	B GP1812X	N.O. C 6	CLOSED	WHT	
		N.C. 5	POLE	BLK	
			NOT CLOSED	RED	
PROPELLANT ISOLATION NC	A GP1813X	N.O. 2	CLOSED	WHT	
		N.C. C 3	POLE	BLK	
			NOT CLOSED	RED	
	B GP1814X	N.O. C 6	CLOSED	WHT	
		N.C. 5	POLE	BLK	
			NOT CLOSED	RED	

GP2997U — PJ971 6 — BUFFER SIGNAL ISOLATING — JP888 5 — PJ872 18 — 1DPE32-3 — COM BUS

PJ971 5 — 3 — SEE SH10.00 (B) — SEE SH 10.00

SEE SH10.00 (A)

GP2998U — PJ971 8 — BUFFER SIGNAL ISOLATING — (A) SEE SH 1300 — 6 — 36 — 1DPE32-4

SCERA #2 20A19

PJ881 22GA 54 — 200AH7 — 1/1AHR173/178 — 34 — 35 — COM BUS

PCMTEA 20A9

SOLENOID VALVE & DIODE ASSY (TYP)

PROPELLANT VLV B	5 4 1	WHT
		BRN
ISOL VLV B	3 2 1	YEL
		BLK
ISOL VLV A	1 2 3	GRN
		RED
PROPELLANT VLV A	1 2 3	BLU
		ORN

PJP319 B — I 12.00 A — A — I 12.00 B

PJP45 J — I 12.00 D — Y — I 12.00 C

TO CES ENG START CIRCUIT

(-) — U2639 — U2639

PRE-VALVE SOLENOID VALVE ASSY 10L6

PJP43 J1411

VALVE OPEN	RED	RED	RED	F
	BLU	GRN	GRN	E
VALVE B	BLU	BLK	BLK	C
VALVE A	RED	NAT	NAT	G
VALVE OPEN				H

GP7552X, GP7551X — TO GSE

ASCENT ENGINE 10A2

SEE NOTE "B" & "C"

NOTE:
A. ALL WIRE IS 26 GA. UNLESS OTHERWISE NOTED.
B. VALVE POSITION SWITCHES FOR PROPELLANT "A" ARE MECHANICALLY LINKED TOGETHER AS ARE ISOLATION "A", PROPELLANT "B", AND ISOLATION "B" VALVE POSITION SWITCHES.
C SEE SHEET 11.01 FOR EMERGENCY ASCENT ENGINE FIRING SYSTEM.

GRUMMAN AIRCRAFT ENGRG CORP			
PROPULSION-01 ASCENT SOL VALVE AND VALVE POSITION INDICATING CIRCUIT			
CODE IDENT NO. 26512			
MODEL LM	LDW267-60010	SHEET 11.00	REV A

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714

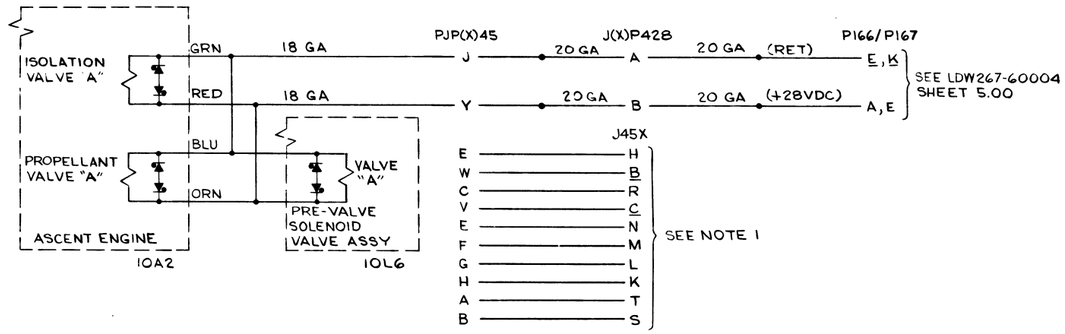
SIZE	CODE IDENT NO.		
E	26512	LDW267-60010	C
SCALE NONE		SHEET 11.00	

SUPERSEDES LDW267-60010 1 11-19-69

LDW 267-60010 C

LDW267-60010 C

SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130.	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☐ USE BOTH SIDES IF NECESSARY	
LENGTHS OF AN, MS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
INSTALL RIVETS IN ACCORDANCE WITH	



FOR EMERGENCY USE OF ASCENT ENGINE FIRING ADAPTER CABLE (SEE NOTE 2)

NOTES:

1. USE OF THE ASCENT ENGINE ADAPTER CABLE REQUIRES DEMATING P45A FROM J45. THESE WIRES ARE FOR THE PURPOSE OF MAINTAINING CONTINUITY OF EXISTING CIRCUITS ONLY WHEN THE ADAPTER CABLE IS INSTALLED.

2(a). THE ASCENT ENGINE FIRING ADAPTER CABLE IS USED IN THE EVENT OF A FAILURE IN THE ASCENT ENGINE CONTROL CIRCUITRY WHICH PRECLUDES FIRING THE ENGINE. THE CABLE WILL SUPPLY POWER FROM THE CDR OR LMP BUS VIA THE GSE CONNECTOR ON PNL XI OR XVI DIRECTLY TO THE SYSTEM "A" VALVES OF THE ASCENT ENGINE THEREBY BYPASSING THE ENGINE CONTROL CIRCUITRY. THE NORMAL WIRE PATH FROM CONNECTOR J45 (+Z27 BHD) TO THE ENGINE VALVES IS UTILIZED. THE ASCENT ENGINE FIRING ADAPTER CABLE IS USED IN CONJUNCTION WITH THE ED POWER ADAPTER CABLE.

(NOTE 2 CONTINUED)

2(b) INSTALL CABLE AS FOLLOWS - DEMATE P45A FROM J45. MATE P45X AND J45X OF THE ASCENT ENGINE FIRING ADAPTER CABLE TO J45 AND P45A RESPECTIVELY. MATE J428X TO P428 OF THE ED POWER ADAPTER CABLE. CONNECTOR P166/P167 OF THE ED POWER ADAPTER CABLE IS MATED TO J166 ON PANEL XVI OR J167 PNL XI.

3. ALL WIRING 16 GAGE EXCEPT AS NOTED.

GRUMMAN AIRCRAFT ENGRG CORP			
PROPULSION ASCENT ENGINE EMERGENCY FIRING SYSTEM			
CODE IDENT NO 26512			
MODEL LM	LDW267-60010	SHEET 11.01	REV C

GRUMMAN AEROSPACE CORPORATION BETHPAGE, NEW YORK 11714			
SIZE D	CODE IDENT NO. 26512	LDW267-60010	C
SCALE NONE		SHEET 11.01	

NAS 9-1100

SUPPLEMENTARY DATA
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED (✓) APPLY TO THIS DWG.

MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☐ USE BOTH SIDES IF NECESSARY.	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL RIVETS IN ACCORDANCE WITH	

STOW LATCH ARMING SW S1
SAFE
ARMED
STOW LATCH PITCH
STOW LATCH YAW
ETI
POWER SUPPLY (TRANSFORMER RECTIFIER & FILTER)
+8.5V +6V +2.5V -3V -5.5V RET
INTERNAL DISTRIBUTION
S-BAND SERVO MOTORS
REDUNDANT THERMOSTAT NETWORK & HEATER
GT0455V 28 VDC S-BAND HEATER VOLTAGE
DEMODULATORS X
DEMODULATORS Y
INT DISTR
+6V
+6V
S-BAND STEERABLE ANTENNA 14A2

115V 400HZ AC BUS B
S-BD ANT 4CB34 2A 18GA
PNL XI
PJ194 H — JP198 5
6 AUTO
5
OFF
4 SLEW
9 POWER TO MANUAL YAW & PITCH CONTROL
8
14 S3 TRACK MODE
9 D SEE SH 11.8.00
3
PJ76 3 — PJP83 3 — PJ1143 43
JP1143 44 — PJP83 4 — JP76 4
E RETURN SEE SH 8.00
PJ198 14 — JP194 1
-N1
CDR PNL XI

+28V
COMM S-BAND ANT 4CB110 2A 18GA
PJ148 BB 20GA — JP103 A 20GA
2
20GA PJ103 V — 20GA PJP1816 K — JP1804 79 — PJ1143 20
20GA

HEATERS S-BD ANT 4CB31 5A 18GA
PJ148 DD 20GA — JP103 C 20GA
20GA
PJ103 J 20GA — PJP1816 U — JP1804 83 — PJ1143 19
PNL XVI
PNL XII

JP1143 21 — PJ1804 82 — PJP1816 N 20GA — JP103 Y 20GA
J1144 10
20GA PJ103 B 20GA — JP148 CC 20GA
X-LUNAR BUS
LMP PNL XVI

JP1143 22 — PJ1804 80 — PJP1816 L 20GA — JP103 W 20GA 12 AUTO
20GA
11
OFF
1453
JP1143 23 — PJ1804 81 — PJP1816 M 20GA — JP103 X 20GA SLEW 10
PNL XII

ALL WIRE IS 22GA UNLESS OTHERWISE NOTED.

GRUMMAN AIRCRAFT ENGRG CORP
S-BAND STEERABLE ANTENNA POWER DISTRIBUTION
CODE IDENT NO. 26512
MODEL LM | LDW267-60013 | SHEET 6.00 | REV A

30%

LDW267-60013A

GRUMMAN AIRCRAFT ENGINEERING CORPORATION
BETHPAGE, NEW YORK 11714.
SIZE E | CODE IDENT NO. 26512 | LDW267-60013 | REV A
SCALE NONE | SHEET 6.00

SUPPLEMENTARY DATA
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED (✓) APPLY TO THIS ITEM

MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130.
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED (DSC) USE BOTH SIDES IF NECESSARY
LENGTHS OF AN MAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED
INSTALL RIVETS IN ACCORDANCE WITH

PJ 391
+20V FROM REG — 39 — PJP183 1 — JP198 11
+24V FROM DC/DC CONV SEE SH 5.00 — M — 60 — 11 — JP198 21
SIG PROCESSOR ASSY 15A2

84 — 9 — 9
L SEE SH 11.00
PCM/KEY FUNCTION 1354
PCM / KEY
BIO-MED 1353
LEFT 3
VOICE FUNCTION
1356 VOICE / OFF 4 / OFF / RIGHT
DN VOICE BU

PJ198 12 — PJP183 3 — JP391 40
S-BAND VOICE TO AUDIO CENTERS — W — LPF — SEE SH 11.00

SEE SH 13.00
JPI145
J — 26GA — 59
H — 26GA — 57
I — 26GA — 58
K — 26GA — 60
SUB CARRIER OSC. 14.5 KC

PJ198 2 — PJP183 2 — G — SEE SH 10.00
N — 3 — 73 — JP391 82
M — 10 — 10 — 83
SEE SH 10.00 — T
Y — X — HPF — SEE SH 10.00
AGC
113KC VOLT CONT OSC
BAL MIXER
125MC BPF
+D20 INT DISTR
FM MIXER
FM SW
1.25
1.024
PM MIXER
PM SW
FILTER
PJ1145 36 — S — FM SIGS
37 — T
33 — U — PM SIGS
34 — V
SEE SH 16.00

PJ198 22 — PJP183 12 — JP391 55
+D20 INT DISTR

GSE GTO105 PCM NRZ DATA — J393 6, 5
DO1 NRZ DATA — JP870 26 — 26GA — PJI804 72 — 26GA — JP1145 31
25 — 26GA — 71 — 26GA — 30
GSE GTO106 SYNC SIG — J393 3, 4
DATA AM LIMITER
MOD
R03 512KC SYNC SIG — 30 — 26GA — 27 — 26GA — 19
14 — 26GA — 28 — 26GA — 18
TUNED AMPL
KEY
KEY GATE
D05 SUBCARRIER REF — 4 — 26GA
3 — 26GA
PCMIEA 20A9
SEE SH 13.00 — Q — JP391 49
P — 48
1.024MC BPF

SEE SH 6.01 — A
+D20 PRIM. AUDIO RCVR SUPPLY REG — N SEE SH 5.00
GRD
INT DISTR
TO AUDIO SECTION
+D20 BU AUDIO RCVR SUPPLY REG
B1 Ø MOD & DBLR
RFI FILTER
RFI

PJ103 P — PJP1816 JPI804 JP391 P — 84 — 46
PJ103 R — PJP1816 JPI804 JP391 R — 85 — 47
GSE GTO108 SUB-CARRIER REF SIG — J393 1, 2
PJI145 16 — 26GA
15 — 26GA
512KC AM LIM

PJ198 24 — PJP183 26 — JP391 58
+D20
23 — 25 — 57
+D20
25 — 27 — 56
3 PM — 2 — 1 FM MODULATE 1355
PJ76 83 — PJP83 JP391 73 — 43
3 PRIM. — 85 — 48 — 41
2 — 4 OFF — 84 — 47 — 42
1 SEC
1352

COMMUNICATIONS PNL XII

SIGNAL PROCESSOR ASSY
PRE MODULATION PROCESSOR
15A2

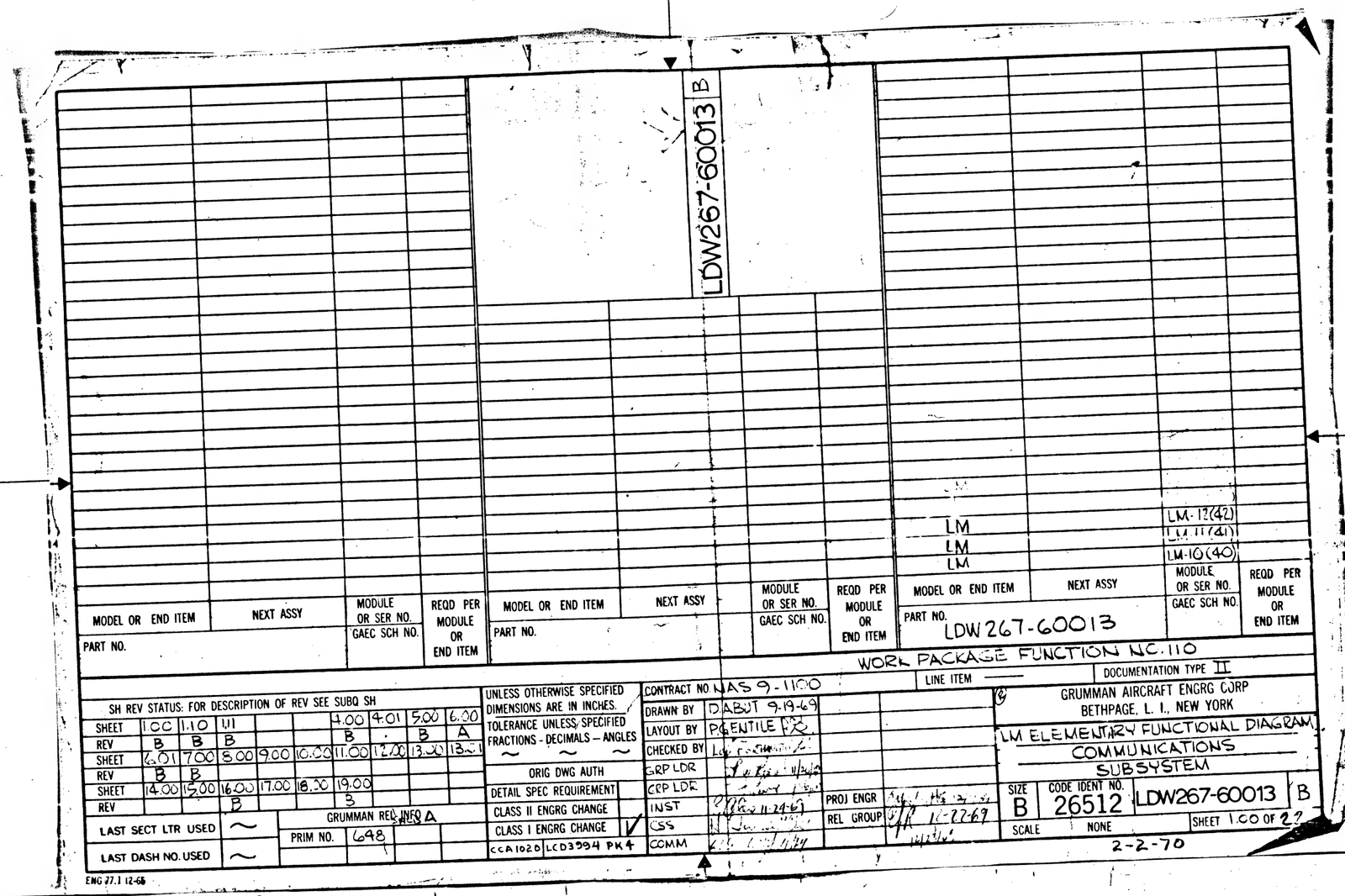
ALL WIRE IS 22 GA UNLESS OTHERWISE NOTED.

GRUMMAN AIRCRAFT ENGRG. CORP.		
SIGNAL PROCESSOR ASSY PMP DATA SECTION		
CODE IDENT NO. 26512		
MODEL LM	LDW267-60013	SHEET 15.00 REV

23%

GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714			
SIZE E	CODE IDENT NO 26512	LDW267-60013	
SCALE NONE	S.CHIARELLO	SHEET 15.00	

LDW267-60013 D
LDW267-60013 B



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM		LM-13(42)	
LM		LM-11(41)	
LM		LM-10(40)	
PART NO. LDW267-60013		GAEC SCH NO.	

WORK PACKAGE FUNCTION NC.110

LINE ITEM —— DOCUMENTATION TYPE II

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	1.11			4.00	4.01	5.00	6.00	
REV	B	B	B			B		B	A	
SHEET	6.01	7.00	8.00	9.00	10.00	11.00	12.00	13.00	13.1	
REV	B	B								
SHEET	14.00	15.00	16.00	17.00	18.00	19.00				
REV			B			B				

LAST SECT LTR USED	~
LAST DASH NO. USED	~

GRUMMAN REL INFO A

PRIM NO. 698

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES ~ ~ ~	
ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
CCA1020 LCD3994 PK4	

CONTRACT NO.	NAS 9-1100
DRAWN BY	D.ABUT 9-19-69
LAYOUT BY	P.GENTILE 9-22-69
CHECKED BY	[illegible] 11-24-69
GRP LDR	[illegible] 11-24-69
CRP LDR	[illegible] 11-24-69
INST	[illegible] 11-24-69
CSS	[illegible] 11-24-69
COMM	[illegible] 11-24-69
PROJ ENGR	[illegible] 11-22-69
REL GROUP	[illegible] 11-22-69

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

LM ELEMENTARY FUNCTIONAL DIAGRAM
COMMUNICATIONS
SUBSYSTEM

SIZE	CODE IDENT NO.		
B	26512	LDW267-60013	B

SCALE NONE SHEET 1.00 OF 22

2-2-70

ENG 27.1 12-66

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET 1.11

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	4.00	4D				✓		IN 13A1 RCVR 1 WAS TO RCVR 2 & PRIMARY & SECONDARY AMPLIFIER.	LM-10 THRU LM-14	NOT	REQ'D	E. CATALANO 5-13-70		5-21-70
	2	6.00	4F				✓		IN 14A2 ADDED STOW LATCH ARMING SWITCH S1 AND ASSOC ETI TO POWER SUPPLY (TRANSFORMER RECTIFIER & FILTER).						
		1.00 1.10							SH 1.00 OF 21 WAS 1.00 OF 20 ADDED SH 1.10						
B	1	4.00	3G				✓	LCD5608B PKG. #1	AT PNL XII REMOVED ERECTABLE S-BAND ANT 14E3 AND ADDED CALLOUT "GSE"	LM-10(40) THRU LM-13(43)	NOT	REQ'D	3-5-71 M. SARFATY		
		7.00	6E 6F 5E						FROM PJP1101 REMOVED IN SUBSEQUENT ORDER "DEPLOYABLE CABLE, PJ1149 AND S-BAND ERECTABLE ANT 14E3. AT PJP1101 CALLOUT "CAPPED" WAS "ERECTABLE ANT TEST GT9501". IN PNL XII AT WIRE FROM PCPJ372A TO SWITCH 1495 REMOVED CALLOUT "LUNAR STAY" ADDED NEW SWITCH POSITION WITH CALLOUT SEE NOTE 2 ADDED NOTE 2.						
	2	6.01	6G	LFM628		✓		LCD5706 PKG. 1	IN PNL XII ADDED TERMINAL WITH CALLOUT "NO CONNECTION" CONNECTING DIODE 15CR6. 15CR6 WAS TO WIRE FROM 1338 TERMINAL 3.						
	3	5.00	6B 3B				✓	LCD5516H PKG. 2	J1133-2 WAS JP1133-2 AND J1133-3 WAS PJ1133-3 AT WIRES FROM J1133-2 TO 15A21 AND FROM J1133-3 TO 15A21 REMOVED PJ127-2 & JP1127-3 RESP. ADDED CALLOUTS "100 FT GFE CABLE" 2 PLACES.	LM-10(40) THRU LM-12(42)					

CHG APPROVED	LTR	GROUP LDR	GRP LDR	INST	CSS	COMM	ENGR REL
	A						
	B						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW267-60013	B

SCALE NONE SHEET 1.10

ENG 77.10 3-66

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
B	3	16.00	7G 6G			✓		LCD 5516H PKG#2	AT WIRE FROM 15A21 REMOVED COAXIAL CABLE CONNECTOR PJ1127 AND CALLOUT "(1&4 CONTACTS)". J1133 (1&4 CONTACTS) WAS PJ1133 (1&4 CONTACTS). ADDED CALLOUT TO WIRE FROM 15A21 TO J1133 "100 FT GFE CABLE".	LM-10(40) THRU LM-12(42)	NOT	REQ'D	M. SARFATY 4/5/71		4-10-71
	4	19.00	7H THRU 2H 6B THRU 5B 8A THRU 5A	LFM671		✓		LCD 5805 PKG #1	IN 15A1 RELOCATED BUBBLES S&T, U&V, W&X WITH ASSOCIATED CALLOUTS AND WIRING FROM BOTTOM OF SHEET TO TOP. AT 13A3 CUT AND END CAPPED WIRES FROM PJ1180-M&L, WAS TO JP1139-18&19 RESP. FROM WIRES AT JP1139-18&19 ADDED 13A5, 20A9 & 4A10 WITH ASSOCIATED CONNECTORS, WIRING, HEX SYMBOL AND CALLOUTS. AT 13A3 J1181-16&17 REMOVED CALLOUT "GT0604 VHF RCVR "A" AGC". (SHEET 1.00 OF 22 WAS 1.00 OF 21 ADDED SHEET 1.11).						
	5	1.00				✓		LCD 5669 LCD 5414 (2)	REMOVED LM-13 & LM-14 FROM EFF. BLOCK.	LM-13(43) LM-14(44)					

CHG APPROVED	LTR	GROUP LDR		INST	EPS/CS	COMM	PROJ ENGR
	B	[illegible] 4-7-71		[illegible] 9-7-71	WF 4-7-71	[illegible] 4-7-71	[illegible]

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW267-60013	B

SCALE NONE SHEET 1.11

SUPPLEMENTARY DATA
UNLESS OTHERWISE SPECIFIED
NOTE: ( ) CHECKED ( ) APPLY TO THIS DWG.

MARK PART NUMBER IN ACCORDANCE WITH MIL STD-130.

PART NUMBER

DO ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY

LENGTHS OF ANY RIVETS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED

INSTALL RIVETS IN ACCORDANCE WITH

13E1
PLSS #1
16A15
SPACE SUIT ASSY #1 SOFT
16A19
SPACE SUIT ASSY #1 HARD
16A14

13E2
PLSS #2
16A17
SPACE SUIT ASSY #2 SOFT
16A18
SPACE SUIT ASSY #2 HARD
16A16

VHF ANT
14E4 14E5 14E6
ANT SELECT
PNL XII
GSE

DIPLEXER
XMTR A
RCVR B
RCVR A
XMTR B
RTTA
13A3
VHF XCVRS & DIPLEXER
15A1

PCMTEA
20A9

S-BAND ANT
14E1 14E2
ANT SELECT
PNL XII
"GSE"

14A2
DISPLAY
PNL XII

DIPLEXER
PRIMARY & SECONDARY AMPLIFIER
S-BAND PWR AMPL & DIPLEXER
13A2

STEERING CONTROL
PNL XII

HEATERS PWR & CONTROL
PNL XII

S-BAND STEERABLE ANT
ERA-5
14A2

COMM CONTROL
PNL XII

LIGHT WEIGHT HEADSET
15W4
KEY
BIO MED
LMP UMBILICAL ASSY
LMP AUDIO CONTROL
PNL XIII
LMP AUDIO CENTER
PMP
AUDIO WARNING SIGNAL S&C CONTROL
1A8

RCVR 1
RCVR 2
XMTR 1
XMTR 2
AGC TRACKING SIGNAL
S-BAND XCVRS
13A1

CDR UMBILICAL ASSY
15W3
KEY
BIO MED
CDR AUDIO CONTROL
PNL VIII
CDR AUDIO CENTER

DUA
14A1
LGC
3A4
PCMTEA
20A9
TV (COLOR)
15A21

TAPE RECORDER
20A17

LIGHT WEIGHT HEADSET

SIGNAL PROCESSOR ASSY
15A2

GRUMMAN AIRCRAFT ENGRG CORP
SIGNAL FLOW BLOCK DIAGRAM
CODE IDENT NO. 26512
MODEL LM | LDW267-60013 | SHEET 4.00 | REV B

28%

LDW267-60013 A

GRUMMAN AIRCRAFT ENGINEERING CORPORATION
BETHPAGE, NEW YORK 11714
SIZE E | CODE IDENT NO. 26512 | LDW267-60013 | B
SCALE NONE | SHEET 4.00

SUPPLEMENTARY DATA
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED (✓) APPLY TO THIS DWG.

MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130.	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED (CRC) USE BOTH SIDES IF NECESSARY	
LENGTHS OF AN NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL RIVETS IN ACCORDANCE WITH	

COMM
CDR AUDIO
4CB36
18GA — 20GA
2A
+D28
PJ194 F — JP193 43
CDR PNL XI

MIKE POWER
SEE SH 13.00 (D)

PJ76 62 — PJP83 32 — JP391 63

SEE SH 11.00 (H)
+D20 REG
INT DISTR
(A) SEE SH 11.00
CDR AUDIO CENTER

RJ1145 71 — JP83 36 — JP76 36 — PJ198 30 — JP194 G
-DN2
CDR PNL XI

COMM PMP
4CB102
18GA
2A
+D28
PJ148 M — 49

(C) BIO POWER
SEE SH 13.00
15R18 185Ω
63 — 31 — 65

(N) SEE SH 15.00
DC/DC CONV 24V
+D20 REG
INT DISTR
N4
(M) FILTER
SEE SH 15.00

SEE SH 10.00 (L)
PJ391 66 — 79 — 38 — 73 — JP143 P
-DN2
LMP PNL XVI

SEE SH 13.00 (E) MIKE RET
SEE SH 13.00 (B) BIO RET
LMP PNL XII

COMM
LMP AUDIO
4CB85
18GA
2A
+D28
N — 72

MIKE POWER
(F) SEE SH 13.00
61 — 54 — 64

(G) SEE SH 11.00
+D20 REG
INT DISTR
LMP AUDIO CENTER

PNL XII

SIGNAL PROCESSOR ASSY
15A2

COMM
TV
4CB104
18GA
2A
+D28
PJP1410 JP173 LL — 81 — 184

J1133 2 — 100FT GFE CABLE

COLOR TV CAMERA
15A21

100FT GFE CABLE — J1133 3 — PJ173 185 — PJP1410 84 — JP148 MM
-DN2
LMP PNL XVI

LMP PNL XVI

ALL WIRE IS 22 GA UNLESS OTHERWISE NOTED.

GRUMMAN AIRCRAFT ENGRG CORP	
TV & SIGNAL PROCESSOR POWER DISTRIBUTION	
CODE IDENT NO. 26512	
MODEL LM	LDW267-60013 SHEET 5.00 REV B

27%

GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714		
SIZE E	CODE IDENT NO 26512	LDW267-60013 B
SCALE NONE		SHEET 5.00

LDW267-60013 B
LDW267-60C13 B

SUPPLEMENTARY DATA
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

MARK PART NUMBER IN ACCORDANCE WITH MIL STD 130

PART NUMBER
AND ALL OTHER MARKINGS IN REGION MARKED ⊏⊐ USE BOTH SIDES IF NECESSARY

LENGTHS OF AN NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED

INSTALL RIVETS IN ACCORDANCE WITH

COMM PRIM S-BD XMTR/RCVR
+D28
4CB111
5A
PJ46 P
JP103 R
LMP PNL XVI

XMTR/RCVR 13S8
3 PRIM.
2 OFF
1 SEC
NO CONNECTION
15CR6
20GA (A) SEE SH 15.00
15CR7
PJ103 A
PJP73 C
20GA
JP379A S
PNL XII

COMM SEC S-BD XMTR/RCVR
+D28
4CB137
5A
PJ1419 W
JP1419 S
CDR PNL XI

RFI FILTER
DC/DC CONVERTER #1
SW FILTER
SEE SH 9.00
(Q) (Z) SEE SH 16.00
-D52 +D4 -D28 +D15 -D15
INTERNAL DISTRIBUTION
DC/DC CONVERTER #2
(R) (A) SEE SH 16.00
RFI FILTER
S-BAND TRANSCEIVER 13A1

PJ379A I
20GA
PJP73 D
JP103 M
PJ103 Z
JP46 R
-DN2
LMP PNL XVI

J 22GA
N4

Q 20GA
B C
I
JP1419 V
-DN2
CDR PNL XI

PNL XII

COMM PRIM S-BD PWR AMPL
+D28
4CB130
7.5A
PJ46 C
PJP73 R
JP383 A
LMP PNL XVI

POWER SUPPLY #1
BUFFER
RFI FILTER
(B) SEE SH 7.00

PJ383 N
PJP73 P
JP46 S
-DN2
LMP PNL XVI

XMTR/RCVR SW 13S8
9 PRIM. 22GA
8 OFF
7 SEC
22GA
PJ76 7
PJP83 7
M

7 PRIM.
6 8 OFF
5 SEC
PWR AMPL SW 13S2

22GA 8 22GA 8 22GA N

GSE
GTO224C J387 1 ANODE CURRENT MONITOR PRIM PA
JTB003V 9 OPERATING POINT TEST PRIM PA
GTO206X 5 RECYCLING PRIM PA
GTO707C P383 Y OUT POINT PRIMARY PA HTR CURRENT MON

BTME
GTO708C W OUT POINT SEC PA HTR CURRENT MON
JTB005V J387 13 OPERATING POINT TEST SECONDARY PA
GTO225C 3 ANODE CURRENT MONITOR SEC PA
GTO207X 7 RECYCLING SEC PA

22GA 10 11 12 9
22GA
PJ76 39
PJP83 39
JP383 L

11 12 22GA
XMTR/RCVR SW 13S8
10
20 22GA 20 22GA K

PJP73 M K

BUFFER
RFI FILTER
BUFFER
POWER SUPPLY #2
(C) SEE SH 7.00

J387 2 GTO224C
10 JTB003V
6 GTO206X
GSE RETURN

P383 X GTO707C
V GTO708C
BTME

J387 14 JTB005V
4 GTO225C
8 GTO207X
GSE RETURN

PJ383 S
PJP73 N
JP1419 H
-DN2
CDR PNL XI

COMM SEC S-BD PWR AMPL
+D28
4CB136
7.5A
PJ1419 U
PNL XI

S-BAND POWER AMPL & DIPLEXER 13A2

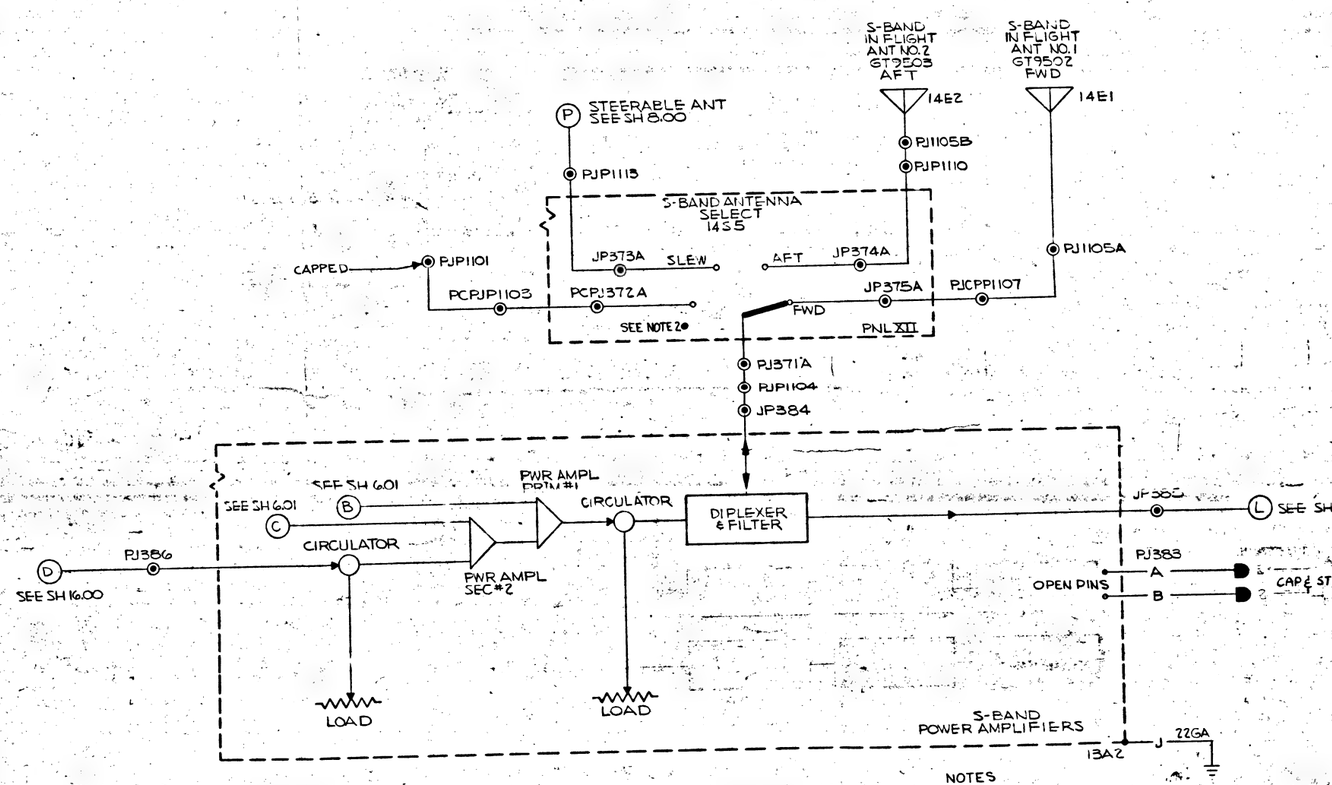
GRUMMAN AIRCRAFT ENGRG CORP
S-BAND TRANSCEIVER DIPLEXER & AMPLIFIER POWER SUPPLIES
CODE IDENT NO. 26512
MODEL LM | LDW267-60013 | SHEET 601 | REV B

27%

GRUMMAN AIRCRAFT ENGINEERING CORPORATION
BETHPAGE, NEW YORK, 11714
SIZE E | CODE IDENT NO. 26512 | LDW267-60013 | B
SCALE NONE | SHEET 601

LDW267-60013 B

SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130.	
AND ALL OTHER MARKINGS IN REGION MARKED ☐ USE BOTH SIDES IF NECESSARY	PART NUMBER
LENGTHS OF AN, NAS, & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL RIVETS IN ACCORDANCE WITH	



NOTES

1. ALL WIRE IS 26GA UNLESS OTHERWISE NOTED.
2. THE DOT POSITION OF 1455 SIGNIFIES GSE TEST POSITION.

GRUMMAN AIRCRAFT ENGRG CORP			
S-BAND ANTENNAS INPUT & OUTPUT			
CODE IDENT NO. 26512			
MODEL LM	LDW267-60013	SHEET 7.00	REV B

28%

GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714			
SIZE E	CODE IDENT NO. 26512	LDW267-60013	B
SCALE NONE		SHEET 7.00	

LDW267-60013 B

SUPPLEMENTARY DATA
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO:

MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL RIVETS IN ACCORDANCE WITH	

COLOP TV CAMERA (GFE) 15A21

100FT GFE CABLE

J1133 (1&4 CONTACTS) PJP1182

JP379 (M&N CONTACTS)

FREQUENCY MODULATOR

SEE SH. 15.00 (S) JP379A H, (T) G

-D15V FROM DC/DC CONV 1&2

-D14V

SEE SH. 9.00 (V), (X)

SEE SH. 15.00 (U) JP379A T, (V) S

SEE SH. 10.00 (T) W, (V) A

PJ198 PJP183

45 — 21 — P

43 — 23 — N

26 — 22 — M

44 — 24 — J

N4

PHASE MODULATOR NO. 1 (IDENTICAL TO PHASE MOD NO. 2, BELOW, LESS HYBRID COUPLER)

RANGE/TV FUNCTION 1351

4 RANGE

3 OFF CWEA RESET

2

TV/CWEA ENABLE

15CR3

15CR4

15CR5

PCM/KEY FUNCTION 1354

VOICE FUNCTION 1356

PCM 15

VOICE 15

1355

6PM

4FM

14 T 16 OFF

13 KEY

13 DN VOICE BU

COMMUNICATIONS PANEL XT1

SEE SH. 9.00 (W)

SWITCH SIG FROM DC/DC CONVERTER NO. 1 SEE SH. 6.01 (Z)

HYBRID

RF AMPL NO. 1

IMPEDANCE MATCHING NETWORK

PHASE MODULATION GATE

NARROW BAND

LIMITER

-D15

WIDE BAND

SUMMING NET

PHASE MODULATOR

LIMITER

HYBRID

RF AMPL NO. 2

SEE SH. 9.00 (V)

RANGE GATE

PHASE MODULATOR NO. 2

RF DET

RF DIODE SWITCH

20DB ISOL

RF POWER COMBINER

JP381

(D) TO S-BAND PWR AMPL SEE SH. 7.00

(A) SEE SH. 6.01 SWITCH SIG FROM DC/DC CONVERTER NO. 2

S-BAND TRANSCEIVER

13A1

TELEM CONV & FILTER

PJ379A G 26GA JP1B05 11 26GA PJ881 29

E 26GA 3 26GA 13

GSE GT0993E TLM DET RF PWR RETURN

1/1AH195

PCMTEA 20A9

ALL WIRE IS 22GA UNLESS OTHERWISE NOTED

GRUMMAN AIRCRAFT ENGRG CORP

S-BAND TRANSCEIVER TRANSMIT SECTION

CODE IDENT NO. 26512

MODEL LM | LDW267-60013 | SHEET 16.00 | REV B

GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714

SIZE E | CODE IDENT NO. 26512 | LDW267-60013 | B

SCALE NONE | SHEET 16.00C

LDW267-60013 B

LDW267-60135

SUPPLEMENTARY DATA
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130.

PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☐ USE BOTH SIDES IF NECESSARY

LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED

INSTALL RIVETS IN ACCORDANCE WITH

PCM SPLIT PHASE DATA SEE SHEET 18.00 — JP1139 S 1 — PJ1180 X
PCM SPLIT PHASE DATA SEE SHEET 18.00 — JP1139 T 2 — PJ1180 Y
VHF XMTR "A" CW CONTROL SEE SHEET 18.00 — JP1138 U 12 — PJ1180 J
VHF XMTR "A" CW CONTROL SEE SHEET 18.00 — JP1138 V 13 — PJ1180 H
VHF XMTR "B" CW CONTROL SEE SHEET 18.00 — JP1139 W 12 — PJ1180 V
VHF XMTR "B" CW CONTROL SEE SHEET 18.00 — JP1139 X 13 — PJ1180 U
15A1

PJ1180 → J1181:
X → 1) GT0107 PCM SPLIT PHASE DATA INPUT
Y → 2)
J → 3) JT8001 VHF XMTR "A" CW CONTROL
H → 4)
V → 12) JT8002 VHF XMTR "B" CW CONTROL
U → 13)
} GSE

POWER SEE VHF XCVR SEE SH 18.00 — +D28 Q — PJP1816 V — PJ1180 A
POWER SUPPLY → +5, +12, -12, -6 } INT DISTR
JP1180 PJP1816 B — A — R RETURN SEE SH 18.00

RANGE TONE SEE SH 18.00 — JP1139 A 4 — PJ1180 H
RANGE TONE SEE SH 18.00 — JP1139 B 5 — PJ1180 J

5.267 KHZ BAND PASS FILTER
SECANT DEMODULATOR
COMBINER AND AMPL
ERROR SIGNAL INHIBIT CONTROL GATE
LOW PASS FILTER
NON LINEAR AMPL
2.022441 MHZ VC SW OSCILLATOR
BUFFER AMPL
CLOCK DRIVER
DRIVER
5.267 KHZ REF FF
COUNT DOWN BY 3 FF
PRODUCT DETECTOR
31.6 KHZ FF
63.2 KHZ FF
126 KHZ FF
252 KHZ FF
5055 KHZ FF
1.011 MHZ FF
CLOCK
RECTIFIER
JP1180 PJ1138 R — 7 — J; S — 8 — K — NSO INHIBIT SEE SH 18.00
31.6 KHZ DELAYED FF
INVERTER
INTERFACE AMPL
JP1180 PJ1139 E — 8 — N — RCVR RANGE GATE SEE SH 18.00; F — 9 — P
EARLY GATE
LATE GATE
EARLY/LATE GATE
CLIPPER
3.95 KHZ BAND PASS FILTER
3.95 KHZ RECTIFIER
LOW PASS FILTER
RECTIFIER
LOW PASS FILTER
COMPARATOR
SIGNAL SENSOR
INVERTER
INVERTER
3.95 KHZ GATE
31.6 KHZ GATE
JP1180 PJ1138 A — 3 — L; B — 4 — M — XMTR RANGE GATE SEE SH 18.00
VHF XCVRS & DIPLEXERS 15A1

VHF RCVR "A" AGC SEE SH 18.00 — JP1138 C 18 — PJ1180 G
VHF RCVR "A" AGC SEE SH 18.00 — JP1138 D 19 — PJ1180 F
M
L
J1181: 18, 19) GT0604 VHF RCVR "A" AGC; 16; 17 } GSE
RANGING TONE TRANSFER ASSY 13A3

VHF RCVR "B" AGC SEE SH 18.00 — JP1139 Y 18 — GT0625V VHF RCVR "B" AGC OUTPUT — PI723 J1 8
VHF RCVR "B" AGC SEE SH 18.00 — JP1139 Z 19 — PI723 J1 15
AMP
J1 PI723 9 — PJ877 11 — COMM BUS
J1 PI723 1 — 3 — 1/1AHR90,103
PCMTEA 20A9
VHF XCVRS & DIPLEXERS 15A1
+28 — F19 — V4A — JP98A B2 — PI723 J1 3
J1 PI723 11 — 11.00 A
FUSE ASSY 4A10
13A5

ALL WIRE IS 22GA UNLESS OTHERWISE NOTED

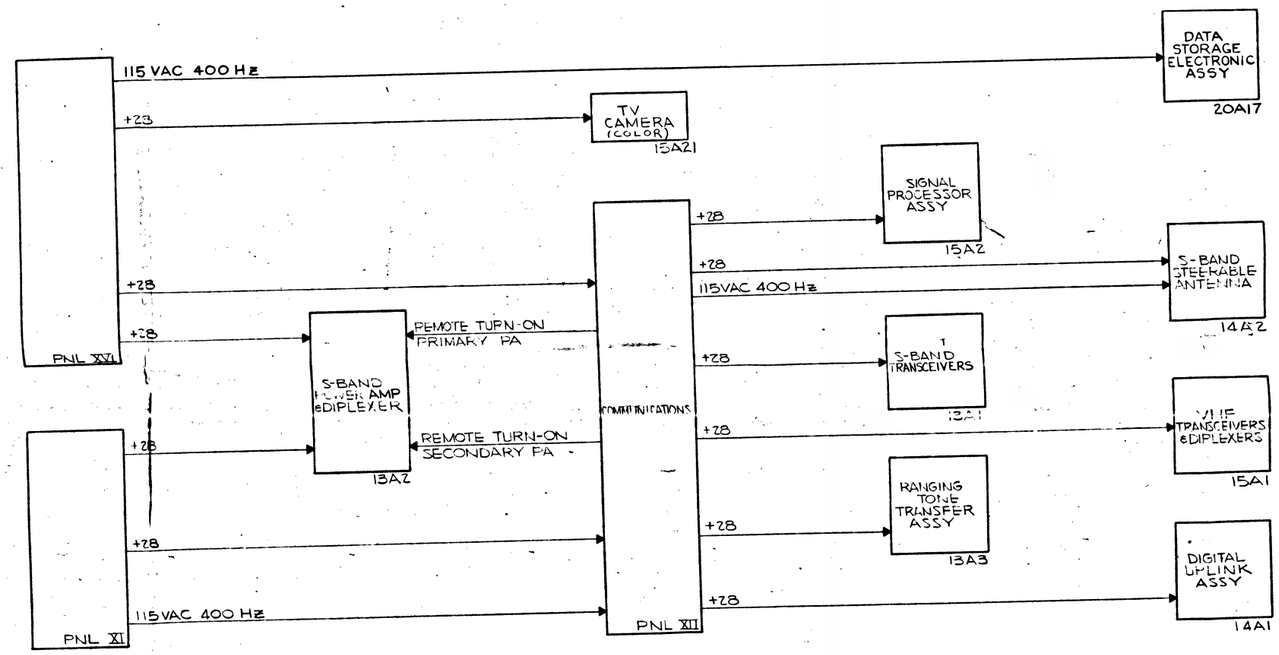
GRUMMAN AIRCRAFT ENGRG CORP
RANGING TONE TRANSFER ASSY
CODE IDENT NO 26512
MODEL LM | LDW267-60013 | SHEET 19.00 | REV B

GRUMMAN AIRCRAFT ENGINEERING CORPORATION
BETHPAGE, NEW YORK 11714
SIZE E | CODE IDENT NO 26512 | LDW267-60013 | B
SCALE NONE | SHEET 19.00

LDW267 B

SUPPLEMENTARY DATA
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

PART NUMBER IN ACCORDANCE MIL-STD-130.	
ALL OTHER MARKINGS IN REGION ☐ USE BOTH SIDES IF ☐ARY	PART NUMBER
THIS OF AN HAS A MS AL ALY TO SHORTER THAN 1 INCH ARE SPECIFIED	
ALL RIVETS IN ACCORDANCE WITH	



GRUMMAN AIRCRAFT ENGRG CORP
POWER FLOW BLOCK DIAGRAM
CODE IDENT NO 26512
MODEL LM LDW267-60013
SHEET 4.01 REV B

31%

GRUMMAN AIRCRAFT ENGINEERING CORPORATION
BETHPAGE, NEW YORK 11714
SIZE E | CODE IDENT NO 26512 | LDW267-60013
SCALE NONE | SHEET 4.01

LDW267-60013

SUPPLEMENTARY DATA
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED (✓) APPLY TO THIS DWG.

MARK PART NUMBER IN ACCORDANCE WITH MIL STD 130.

PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED (CHK) USE BOTH SIDES IF NECESSARY

LENGTHS OF MS, MAS & NS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.

INSTALL RIVETS IN ACCORDANCE WITH

FROM S-BAND ANTENNA SELECT SW PJ1111
RF INPUT/OUTPUT
SEE SH 7.00 GT9504

S-BAND STEERABLE ANT

JP1143
7
N4

10 V RMS 400 HZ

DIVIDE BY 4 COUNTER
10 HZ
DIVIDE BY 2 COUNTER
+50 HZ -0
LOGIC
-50 HZ -0
PIN DIODE SWITCH
FREQUENCY SELECTIVE POWER DIVIDER
90° HYBRID
W FEED
W FEED
Δ FEED
Δ FEED

R F TRACKER DEMODULATOR DRIVER
R F TRACKER GATE DRIVER
LOAD SWITCH

MICROWAVE NET WORK

A G C SIG	BUFFER	J1144 16	GT0660V	TRACKING A G C SIGNAL
		15		
LOAD SW	BUFFER	5	GT0711V	100 HZ SYNC OUTPUT
		6		
DIVIDE BY 2 COUNTER	BUFFER	8	GT0712V	50 HZ SYNC OUTPUT DVT ONLY
		9		
SERVO MOTORS	BUFFER	14	GT0665V	Yc SERVO OUTPUT 90°
		12		
SERVO MOTORS	BUFFER	11	GT0664V	Yc SERVO OUTPUT 0°
		4		
SERVO MOTORS	BUFFER	13	GT0663V	Xc SERVO OUTPUT 90°
		3		
SERVO MOTORS	BUFFER	1	GT0662V	Xc SERVO OUTPUT 0°
		2		
POWER SUPPLY RETURN				

USED FOR VENDOR ACCEPTANCE TEST & FAULT ISOLATION TEST.

SEE SH 6.00
E YAW SLEW CONTROL
PJ1171 JP1171
A D
C C
B E
14B1

	PJ76	PJP83	PJ1143	
D	11	11	8	COMMAND +120°
C	12	12	9	COMMAND 0°
E	13	13	10	COMMAND -120°

TRACKING AGC SIG FROM S-BAND SH 9.00
K 26 GA PJ1143 39
J 26 GA 38

R F TRACKER DEMODULATOR
R F TRACKER X & Y AXIS GATE
X AXIS & SERVO AMPL
Y AXIS & SERVO AMPL
BAL MOD
BAL MOD
DEMODULATORS
DEMODULATORS
RESOLVER & AMPL
RESOLVER & AMPL

10V 400 HZ
ANT SERVO X AXIS
ANT SERVO Y AXIS
TRANSDUCER
TRANSDUCER
10V 400 HZ
ANGLE DEMODULATOR AND ANGLE AMPLIFIER

	PJ76	PJP83	PJ1143	
D	25	25	16	COMMAND +120°
E	26	26	14	COMMAND 0°
C	27	27	15	COMMAND -120°

PJ1172 JP1172
A D
C C
B C
14B2
D SEE SH. 6.00
+115V 400 HZ
PNL XII

ELECTRONICS ASSY

JP1143	PJP83	JP76		
28	26GA 16	26GA 16	XG ✱ RET	
27	26GA 15	26GA 15	XG ✱ READOUT	
30	26GA 14	26GA 14	YG ✱ RET	
29	26GA 5	26GA 5	YG ✱ READOUT	

ANTENNA YAW INDICATOR 14M4 ('X' OUTPUT) GT0452H
SEE SH 12.00 F
SEE SH 12.00 G
SEE LTG LDW267-60016 SH. 10.04
ANTENNA PITCH INDICATOR 14M3 ('Y' OUTPUT) GT0451H
PNL XII

TEMP SENSORS GT0454T

JP1143		
13	26GA	B 17.00 C
12	26 GA	B 17.00 B
11	26 GA	B 17.00 A

REACTION CONTROL

ALL WIRE IS 22 GA UNLESS OTHERWISE NOTED.

42
N4
S-BAND STEERABLE ANTENNA
14A2

GRUMMAN AIRCRAFT ENGRG CORP	
S-BAND STEERABLE ANTENNA	
CODE IDENT NO. 26512	
MODEL LM	LDW267-60013 SHEET 8.00 REV

22%

GRUMMAN AIRCRAFT ENGINEERING CORPORATION
BETHPAGE, NEW YORK 11714

SIZE	CODE IDENT NO.	
E	26512	LDW267-60013
SCALE NONE		SHEET 8.00

LDW267-60013 B

DWG 73.4 REV 547

SUPPLEMENTARY DATA
UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.

MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130.	
AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY.	PART NUMBER
LENGTHS OF AN NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL RIVETS IN ACCORDANCE WITH	

S-BAND ANT INPUT (L) SEE SH 7.00 — JP380 — RF DIODE SWITCH

SWITCH SIG FROM DC/DC CONV NO.1 SEE SH 6.01 (Q)

SWITCH SIG FROM DC/DC CONV NO.2 SEE SH 6.01 (R)

RECEIVER NO.1 (IDENTICAL TO NO.2)

MIXER NO.1 — GAIN CONTROL AMPL — MIXER NO.2 — BANDPASS FILTER — WIDEBAND & IF AMPL — AGC DET — AGC

MULTIPLIER CIRCUIT

RANGE DET — FILTER

DIVIDER — PHASE SHIFTER — PHASE SHIFT — PHASE DET

VOLTAGE CONTROLLER OSCILLATOR

RECEIVER NO.2

SUM NETWORK — PRE COND — RFI FILTER

X, Y — PHASE MODULATOR SEE SH 16.00

V, W — PHASE MODULATOR SEE SH 16.00

PJ379A
B 22GA (I) TO SIG STRENGTH INDICATOR SEE SH 12.00
C 22GA (H)

PJ379A PJ1804 RJ955
I 26GA 33 26GA 17 — TLM AGC

PJ379A PJ1804 RJ955
H 26GA 32 26GA 18 — GT0994V TLM AGC RET

BUFFER SIGNAL ISOLATING — SCERA NO.1 20A18

JP952 PJ880 — 5 26GA 2 — 1/1AH152,161 — PCMTEA 20A9

9.00 A

JP856 85

SUM NETWORK — PRE COND — RFI FILTER

PJ379A
A 26GA (J) TRACKING AGC SIGNAL TO S-BAND STEERABLE ANT. SEE SH 8.00
Z 26GA (K)

SUM NETWORK — X-FMR — RFI FILTER

B (M) S-BAND RCVR SUB-CARRIER SEE SH 10.00
C (N)

B (B) TO DUA SEE SH 14.00
A (A)

26GA

SUM NETWORK — PRE COND — RFI FILTER

PJ379A JP1805
E 26GA 15 26GA 26GA 15
D 26GA 14 GT0992B 26GA 5 — TLM STATIC Ø ERROR

DIA21 1 — 1/1AH185 — 10AH2 — PCMTEA 20A9

JP850 40

INT DISTR — C&W MASTER ALARM 6 5.00 — GL8162V LD..267-60006 SEE SH 12.00 — HLD

SET — RESET — RD — 330 — K45

K45 — 6 8.01 V

C&WEA 20A20

+D9 — 26GA — C&WEA 20A20

RJ851 PJ1805 PJP183 JP198
21 26GA 17 26GA 42 26GA 42

RANGE/TV FUNCTION SW 13S1
5 8° RANGE
7 OFF RESET
6 TV CWEA ENABLE

PNL XII

RJ198 PJP183 JP1805 JP851
40 26GA 40 26GA 18 26GA 26
41 26GA 41 26GA 19 26GA 28

+2-6 VOLTS — GL4060X — 10 — 6 8.01 U — TEST

S-BAND RCVR 6DS40 — PNL II

RJ804 PJP15 JP853
82 85 27

ALL WIRE IS 22GA UNLESS OTHERWISE NOTED.
HLD = HIGH LEVEL DETECTOR

S-BAND TRANSCEIVER 13A1

GRUMMAN AIRCRAFT ENGRG CORP		
S-BAND TRANSCEIVER RECEIVER SECTION		
CODE IDENT NO. 26512		
MODEL LM	LDW267-60013	SHEET 9.00 REV

GRUMMAN AIRCRAFT ENGINEERING CORPORATION
BETHPAGE, NEW YORK 11714

SIZE	CODE IDENT NO.	
E	26512	LDW267-60013
SCALE NONE		SHEET 9.00

LDW267-60013

22%

SUPPLEMENTARY DATA
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

MARK PART NUMBER IN ACCORDANCE WITH MIL STD 130.

PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☐ USE BOTH SIDES IF NECESSARY

LENGTHS OF AN, NAS, & MS IN, ALT WIRES SHORTER THAN 1 INCH ARE NOT SPECIFIED

INSTALL WIRES IN ACCORDANCE WITH

S-BAND RCVR SUB-CARRIER
GSE GTO555V
7 8 J393

BUFFER & RFI FILTER

S-BAND RCVR SUB-CARRIER SEE SH 9.00
(M) JP1145 80
(N) 81

INPUT XMFR

BP FILTER

30 KHZ DISCR

ACTIVE LP FILTER

SQUELCH CKT SIG PATH SWITCH

PJ391 33 — PJP83 38 JP76 78 — PJ65 K JP87 B — 2 — 3 ENABLE 1 OFF — PJ87 G JP65 J — TO GROUND (L) SEE SH 5.00

PNL XII

13517 UPLINK SQUELCH
PNL XIV

PNL XII

RECTIFIER & DETECTOR

+D20

CDR AUDIO CONTROL
15AS5
NORMAL 6
4 BU
9
7
5
8
PNL VIII

COMMANDER SPACE SUIT ASSEMBLY
MIKE SIGNAL SEE SH 13.01
16A19 OR 16A14

P316 45 — JT9523 — 46
PJ85 E 26GA JP64 13
D 26GA 14
CDR UMBILICAL ASSY
15W3

PJ64 50 74 73 49
JP198 37 60 85 84

LMP SPACE SUIT ASSEMBLY
MIKE SIGNAL SEE SH 13.01
16A13 OR 16A16

P317 45 — JT9520 — 46
PJ86 E 26GA JP198 38
D 26GA 39
LMP UMBILICAL ASSY
15W4

LMP AUDIO CONTROL
15BS5
NORMAL 12
10 BU
15
13
11
14
PNL XIII

PJ76 43 26GA PJP83 50 26GA JP1145 7C
SEE SH 14.00 RECD BU SIG VIA DUA
(K) RJ1804 78 26GA
(J) 77 26GA

PJ76 44 26GA PJP83 49 26GA JP1145 63

PJ76 69 26GA PJP83 28 26GA JP1145 66

68 26GA 29 26GA 67

INPUT XMFR

INPUT XMFR

INPUT XMFR

RECD S-BAND TO AUDIO CENTERS SEE SH 11.00 (V)

CONTROL AMPL → ISOLATION AMPL → RESISTIVE COMBINING NETWORK → MIKE VOICE (W) SEE SH 11.00

CONTROL AMPL → ISOLATION AMPL → RESISTIVE COMBINING NETWORK → MIKE VOICE (U) SEE SH 11.00

CONTROL AMPL

CONTROL AMPL → RECD VHF "B" TO AUDIO CENTER (S) SEE SH 11.00

RECD VHF "B" VOICE & EMU DATA SEE SH 18.00
(E) JP1145 72
(S) 73
GSE GTO164V RCVD VHF "B" VOICE
J393 12
11
BUFFER

INPUT XMFR

LOW PASS FILTER

AGC VHF B

RECD VHF VOICE "A" SEE SH 18.00
(F) JP1145 78
(X) 77
GSE GTO163 RECD VHF "A" VOICE & EMU DATA
J393 9
10
BUFFER

HIGH PASS FILTER

(T) (X) (Y) TO DATA SECTION SEE SH 15.00

+D20 → ISOL AMPL & MIXER

RECD VHF "A" TO AUDIO CENTER (R) SEE SH 11.00

AGC VHF A

BUFFER

J393 13 14 GSE GTO161V BACK UP VOICE

BACK UP VOICE CONTROL SEE SH 15.00
(G) +D28 JP391 79

SEE SH 11.00 (Z)
SPEECH PROCESSOR

PJ1145 74 (T) SEE SH 16.00
75 (Y)

BU VOICE FROM AUDIO CENTERS ASSY

PRE-MODULATION PROCESSOR SIGNAL PROCESSOR ASSY
15A2

ALL WIRE IS 22GA UNLESS OTHERWISE NOTED

GRUMMAN AIRCRAFT ENGRG CORP			
PRE-MODULATION PROCESSOR AUDIO SECTION			
CODE IDENT NO. 26512			
MODEL LM	LDW267-60013	SHEET 10.00	REV

27%

GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714			
SIZE E	CODE IDENT NO. 26512	LDW267-60013	
SCALE NONE		SHEET 10.00	

LDW267-60013

SUPPLEMENTARY DATA
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG

MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130.	
AND ALL OTHER MARKINGS IN RECORD MARKED ☐ USE BOTH SIDES IF NECESSARY	PART NUMBER
LENGTHS OF AN NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL RIVETS IN ACCORDANCE WITH	

VOX SENSITIVITY CONTROL 15AR8

+D28 (A) SEE SH 5.00 — REG +D20 — PJ391 19 — PJP183 34 — JP64 63

PJ64 65 — PJP183 28 — JP391 20

4 VOX — PJ64 41 — PJP183 29 — JP391 22

ICS/PTT 15AS6 MODE SWITCH — PTT — PJ64 40 — PJP183 49 — JP391 23

SEE SH 10.00 MIKE SW (W) FROM PMP — (H) SEE SH 5.00 -D28

MIKE AMPL — AGC — VOX SENS — VOX KEY — VOX CKT

TRANSISTOR SWITCH AND KEYER CKT

SEE SH 10.00 RECD VOICE S-BAND FROM PMP (V)

S-BAND VOLUME CONTROL 15AR14 — PJ64 32 — PJP183 44 — JP391 70

VHF "A" VOLUME CONTROL 15AR12 — 80 — 69 — 72

VHF "B" VOLUME CONTROL 15AR13 — 55 — 68 — 71

ICS VOLUME CONTROL 15AR7 — 54 — 70 — 73

31 — 45 — 74

SEE SH 10.00 (R) RECD VOICE VHF "A" FROM PMP — VOL

SEE SH 10.00 (S) RECD VOICE VHF "B" FROM PMP — VOL

VOL

ACA KEY SUPPLY VHF "B" (3)

CDR AUDIO CENTER

SPA 15A2

PJ391 2 — PJP83 67

PTT 15AS10 — JP709A A — PJ709A B — JP64 19 — 1A1

PJ64 18 — 15AS5 NORMAL — PJ64 37 — JP85 H — PJ85 G — 15W3 — 20 — 21 NORMAL

PTT 15AS11 — 22 BU 35 — PNL VIII

CDR AUDIO CONTROL 15AS5 — 19 BU — PNL VIII

JP64 36 — JP64 38 — JP64 39

PJ198 35 19 — BU — JP76 G3 — NORM 5 — PJ198 20 — JP86 H — PJ86 G — PJ198 8 — 7 BU — PJ198 18 — PJ198 36 — PJ76 41 — PJP83 66 — JP391 1

PTT 15BS11 — 15W4

PTT 15BS10 — PJ709B B — JP709B A — PJ65 V — 1A12

15BS5 LMP AUDIO CONTROL — PNL XII

PJP83 42 — JP391 3

SEE SH 5.00 (G) +28V — 2EG — 4 — ACA/DSEA SUPPLY VHF "A" — LMP AUDIO CENTER — SPA 15A2

PJ1145 24 — PJP83 33 — JP76 82

VOX SENSITIVITY CONTROL 15BR8 — PJ76 57 — PJP83 56 — JP391 26

3 — 34 — 81 — 25

4 VOX — 33 — 80 — 27

MODE 15BS6 — ICS/PTT — 56 — 55 — 28

PTT

S-BAND VOLUME CONTROL 15BR14 — 81 — 37 — 50

VHF "A" VOLUME CONTROL 15BR12 — 55 — 84 — 52

VHF "B" VOLUME CONTROL 15BR13 — 80 — 60 — 51

ICS VOLUME CONTROL 15BR7 — 31 — 59 — 53

32 — 83 — 54

PANEL XII

CDR AUDIO CENTER

MIKE SEE SH 10.00 (U)

LMP AUDIO CENTER (IDENTICAL TO THE CDR AC ABOVE)

(W) SEE SH 15.00 VOICE TO S-BAND VIA PMP

PJ391 69 — PJP83 18 — (Z) SEE SH 18.00

80 — 26GA — 30 — 26GA (H) TO DSEA SEE SH 12.00

81 — 26GA — 59 — (I)

SIDETONE PAD — HEAD SET AMPL — FILTER

PJ1145 22 — 26GA (F) SEE SH 18.00 TO CDR HEADSET

23 — 26GA (G)

CDR RELAY SW 15AS4 — RELAY ON — S-BAND T/R SW 15AS1

RELAY OFF — T/R — OFF RCV

PJ391 4 — PJP183 64 — JP64 17 — PJ64 33 — PJP183 66 — JP391 8

5 — 65 — 34

6 — 67 — 56 — T/R OFF RCV — VHF "A" SW 15AS2

7 — 43 — 81

16 — 46 — 30 — T/R OFF RCV — VHF "B" SW 15AS9

17 — 47 — 52

14 — 71 — 76 — ICS T/R OFF — ICS T/R SW 15AS3

15 — 72 — 77 — ICS RCV

53 — 48 — 18

58

57

CDR AUDIO CONTROLS PNL VIII

CDR AUDIO CENTER

RFI FILTER

DIODE SW

+28 PTT — 44 — PJP83 68 (Y)

45 — 19 (A) SEE SH 18.00

68 — 43 (X)

PJ1145 44 (D) SEE SH 18.00 TO VHF "B" XCVR

45 (E)

42 — 26GA (F) SEE SH 12.00 TO DSEA

41 — 26GA (G)

47 (B) SEE SH 18.00 TO VHF "A" XCVR

48 (C)

TO SPEECH PROCESSOR (Z) SEE SH 10.00

FROM AC

PAD

SEE SH15.00 (L) — SEE SH15.00 (N) — PJ198 75

3 RELAY ON — 74

2 RELAY OFF — LMP RELAY SW 15BS4 — (M) SEE SH15.00

T/R — OFF RCV — S-BAND T/R SWITCH 15BS1

PJ391 29 — PJP83 62 — JP76 54 — PJ76 35 — PJP83 57 — JP391 38

30 — 63 — 79

31 — 61 — 53 — T/R OFF — 15BS2 VHF "A" SW

32 — 85 — 52 — RCV

36 — 35 — 37 — T/R OFF — 15BS9 VHF "B" SW

37 — 58 — 60 — RCV

34 — 82 — 59 — ICS T/R OFF — 15BS3 ICS SWITCH

35 — 34 — 58 — ICS RCV

PJ1145 25 — 26GA (H) TO LMP HEAD SET SEE SH13.00

26 — 26GA (I)

LMP AUDIO CONTROLS PNL XII

LMP AUDIO CENTER

SPA 15A2

ALL WIRE IS 22 GA UNLESS OTHERWISE NOTED

21%

GRUMMAN AIRCRAFT ENGRG CORP	
SPA AUDIO CENTERS	
CODE IDENT NO 26512	
MODEL LM	LDW267-60013 SHEET REV 11.00

GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714

SIZE	CODE IDENT NO.	LDW267-60013
E	26512	
SCALE NONE		SHEET 11.00

LDW267-60013

SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.
MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130.
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY.
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED
INSTALL RIVETS IN ACCORDANCE WITH

AC BUS A
TAPE RCDR
+115 V 400 HZ
4CB202
8GA
2A
PNL XI
PJ194 X
PJ900 3

LOGIC CONTROL

JP900 4
JP194 J
-N1
PNL XI

END OF TAPE SW

TAPE DRIVE MOTOR

BIAS OSC

FROM SPA SEE SH. 11.00
PJP183 60 26 GA PJ900 9
61 26 GA 10

VOICE AMP

MIXER

SERIAL TIME CODE
9.00 A
26 GA 11
9.00 B
26 GA 6

TCD MOD

REFERENCE OSC

VOICE OPERATED SWITCH

POWER CONVERTOR

RECORDER INDICATOR CIRCUIT

MONITOR SHIELD	J901 19	GSE
TRACK #1 SHIELD	12	
GL4122 MONITOR TRACK #3 & #4	1	
GL4201 MONITOR TRACK #1	5	
GL4314 MONITOR TRACK #2	3	
GL4121 MONITOR TRACK #2 & #3	2	
GL4312 MONITOR TRACK #4	4	
GL4203 RECORD HEAD CURRENT	7	
GL4301 TCD INPUT	16	
GL4302 VOICE INPUT	6	
GL4315 REVERSE COMPLETE	18	
GL4317 -D5	8	
GL4305 +D12	10	
GROUND	9	
GL4306 RECORD INDICATOR	11	
GL4310 RECORD CMD PWR (VOX)	15	
RECORD CMD RET (VOX)	14	
JL8506 RESET CMD	13	
GL4316 FORWARD COMPLETE	17	

DSEA
20A17

JP900 1 — 26GA — PJ198 34
JP900 5 — 26GA — PJ198 57
PJ300 7 — 26GA — PJ198 58
PJ300 8 — 26GA — PJ198 82

FROM SPA SEE SH. 11.00
JP198 I 17 26 GA
H 16 26 GA

1 OFF
2
3 ON
VOICE RECORDER 13S11

COMM DISP
+28
4CB153
18GA
2A
PNL XVI
PJ87 U
JPG5 H

14 MI SIGNAL STRENGTH INDICATOR

POWER TO STEERABLE ANTENNA METERS
F
G
SEE SH. 8.00

AGC FROM S-BAND RCVR SEE SH. 9.00
PJP83 H 1 — JP76 1
I 2 — 2

GTO504V
3
1
2
4
9
7
SEE LIGHTING LDW267-60016 SH. 10.04

1
2
4
5
TAPE STATUS FLAG 13FL1
SEE LIGHTING 0-75 V 400 HZ LDW267-60016 SH. 10.04

PJG5 G
JP87 W
-DN2
PNL XVI

PNL XII

ALL WIRE IS 22GA UNLESS OTHERWISE NOTED

GRUMMAN AIRCRAFT ENGRG CORP.			
TAPE RECORDER POWER & CONTROL			
CODE IDENT NO. 26512			
MODEL LM	LDW267-60013	SHEET 12.00	REV

25%

GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714			
SIZE E	CODE IDENT NO. 26512	LDW267-60013	
SCALE NONE		SHEET 12.00	

LDW267-60013 B

ENG 73-4 REV. 5-67

SUPPLEMENTARY DATA
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

MARK PART NUMBER IN ACCORDANCE WITH MIL STD 130.	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY	
LENGTHS OF AN NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL RIVETS IN ACCORDANCE WITH	

BIO MED 1353 — +D20 — 15 LEFT / OFF / RIGHT — SEE SH 5.00 — PNL XII — PJ198 — 50 / 46

BIO POWER

JP85 Y → CDR UMBILICAL ASSY GT9513 (15W3) → P316 53 → (HARD OR SOFT) SEE NOTE 2 CDR SPACESUIT EKG SIGNAL JT9522 (16A19 OR 16A14) → P316 31 / 13 / 15 → CDR UMBILICAL ASSY (15W3) → PJ85 Z / B / A → PJP183 7 / 8 (26GA) → JP198 51 / 47 → POWER RETURN B, SEE SH 5.00, PNL XII

EKG SIGNAL TO SPA SEE SH 15.00 (H, I)

JP86 Y → LMP UMBILICAL ASSY GT9516 (15W4) → P317 53 → (HARD OR SOFT) SEE NOTE 2 LMP SPACESUIT EKG SIGNAL JT9513 (16A18 OR 16A16) → P317 31 / 13 / 15 → LMP UMBILICAL ASSY (15W4) → PJ86 Z / B / A → PJP183 18 / 19 (26GA) → JP198 47

EKG SIGNAL TO SPA SEE SH 15.00 (J, K)

CDR AUDIO CONTROL 15A-S5 — NORMAL / BU — 15AR16 470Ω, 15AR17 470Ω — PJ64 — 58 / 59 — JP64 60, 61 — PNL VIII

PJ198 65, 66

JP85 V → CDR UMBILICAL ASSY LEFT MIKE PWR GT9511 → P316 22 → (HARD OR SOFT) SEE NOTE 2 CDR SPACESUIT → P316 41 → CDR UMBILICAL ASSY (15W3) → PJ85 U

JP85 X → CDR UMBILICAL ASSY RIGHT MIKE PWR GT9512 → P316 39 → (HARD OR SOFT) SEE NOTE 2 CDR SPACESUIT → P316 9 → CDR UMBILICAL ASSY (15W3) → PJ85 W

PJ85 U / W → JP64 82 → PNL VIII → JP64 62 → PJ198 67 → JP198 27 → RETURN E, SEE SH 5.00, PNL XII

LMP & CDR MIKE POWER — +D28 — F, D — SEE SH 5.00 — 15BR16 470Ω, 15BR17 470Ω — NORM / BU — PJ198 — 28 / 29

JP86 V → LMP UMBILICAL ASSY LEFT MIKE PWR GT9514 → P317 22 → (HARD OR SOFT) SEE NOTE 2 LMP SPACE SUIT → P317 41 → LMP UMBILICAL ASSY (15W4) → PJ86 U

JP86 X → LMP UMBILICAL ASSY RIGHT MIKE PWR GT9515 → P317 39 → (HARD OR SOFT) SEE NOTE 2 LMP SPACE SUIT → P317 9 → LMP UMBILICAL ASSY (15W4) → PJ86 W

PJ86 U / W → JP198 27 → RETURN E, SEE SH 5.00, PNL XII

LMP AUDIO CONTROL 15B-S5 — +D28 — F, D — SEE SH 5.00 — 15BR16 470Ω, 15BR17 470Ω — NORM / BU — PJ198 — 28 / 29 — PNL XII

LMP HEADSET SIGNAL SEE SH 11.00 — H, I — 26GA — PJP83 — 74, 75 — 26GA — JP76 — 23, 24

15BR15 LMP MASTER VOLUME CONTROL — CCW — PNL XII — JP198 — 63, 64

LMP AUDIO CONTROL 15B-S5 — NORM / BU — PJ198 — 63 / 64 — 26 GA — JP86 R / P → LMP UMBILICAL ASSY LMP HEADSET SIG (15W4) → P317 3 / 4 → (HARD OR SOFT) SEE NOTE 2 LMP SPACE SUIT HEADSET GT 9518 (16A18 OR 16A16)

AUDIBLE WARNING TONE SEE LDW267-60006 SH 5.00

PJ64 — 48, 72, 61, 75 (26GA)

CDR HEADSET SIGNAL SPA SEE SH 11.00 — F, S — 26GA — PJP183 — 20, 37 — 26GA — JP64 — 27, 47

15AR15 COMMANDER MASTER VOLUME CONTROL — CCW — PNL VIII — PJ64 — 28, 29

CDR AUDIO CONTROL 15A-S5 — NORM / BU — PJ64 — 28 / 29 — 26 GA — JP85 R / P → CDR UMBILICAL ASSY CDR HEADSET SIG (15W3) → P316 3 / 4 → (HARD OR SOFT) SEE NOTE 2 CDR SPACE SUIT HEADSET GT 9517 (16A19 OR 16A14)

PTT SW → 15AS11 UMBILICAL ASSY (15W3) → PJ85 M / L

PTT SW → 15BS11 UMBILICAL ASSY (15W4) → PJ86 L / M

PJP183 — 17, 16 — Q, P — EMERGENCY KEY SEE SH 15.00

NOTES:
1. ALL WIRE IS 22GA UNLESS OTHERWISE NOTED.
2. THERE WILL BE TWO TYPES OF SPACE SUITS AVAILABLE. TWO SOFT SUITS & TWO HARD SUITS. THE ELECTRICAL INTERFACES ARE IDENTICAL. ALSO SEE SH. 13.01

GRUMMAN AIRCRAFT ENGRG CORP	
COMMUNICATION UMBILICAL ASSY & SPACE SUIT HEADSET	
CODE IDENT NO. 26512	
MODEL LM	LDW267-60013 SHEET 13.00 REV

27%

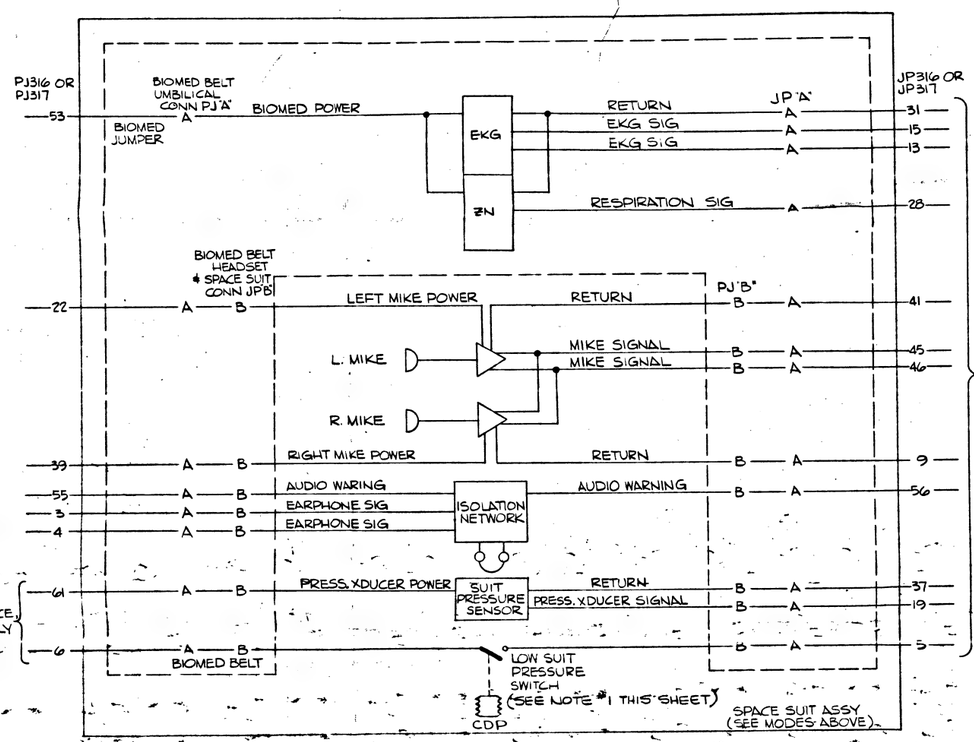
GRUMMAN AIRCRAFT ENGINEERING CORPORATION
BETHPAGE, NEW YORK 11714

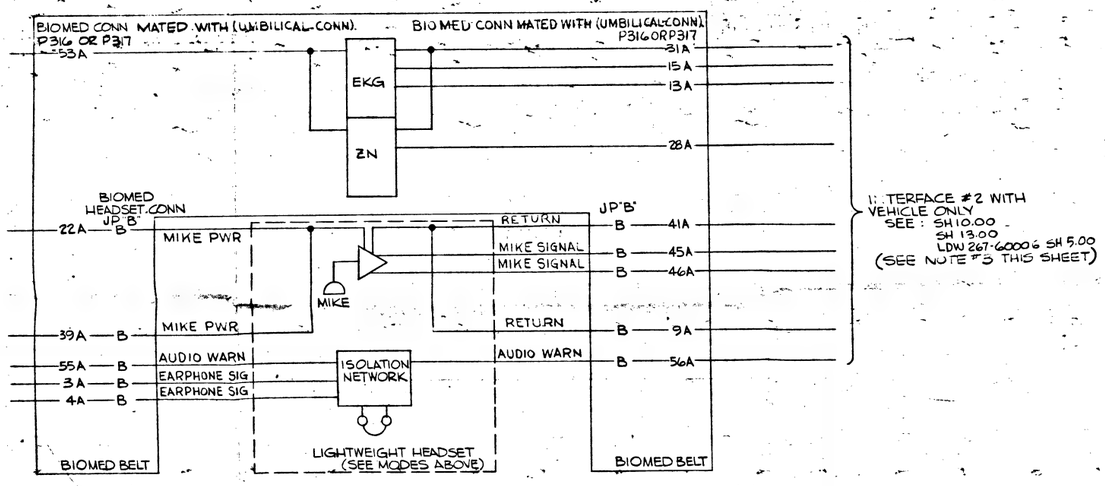
SIZE	CODE IDENT NO.	
E	26512	LDW267-60013
SCALE NONE		SHEET 13.00

LDW267-60013 B

SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH MIL STD 130	
AND ALL OTHER MARKINGS IN REGION MARKED ☐ USE BOTH 3.00 5 IF NECESSARY (PART NUMBER)	
LENGTHS OF AN INS & MS AT ALY WHICH IS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
*INSTALL RIVETS IN ACCORDANCE WITH	

SPACE SUIT MODES (NORMAL)				
MODE	ENVIRONMENT	REF	INTERFACE	QUANTITY
1	AES (HARD SUIT) (SEE NOTE #4 THIS SH)	16A14 16A16	#1	2
2	A7L (SOFT SUIT) (SEE NOTE #4 THIS SH)	16A19 16A18	#1	2
3	SHIRT SLEEVE (LIGHTWEIGHT HEADSET)	GFE	#2	2





NOTES:

1. DURING MODES 1 & 2 THE PRESSURE TRANSDUCER & LOW PRESSURE SWITCH ARE OPERATIONAL ONLY DURING PLSS OPERATION.
2. DURING MODE 1 & 2 A JUMPER CONNECTS THE UMBILICAL CONNECTOR J316 (OR J317) TO THE BIOMED CONNECTOR JP A
3. DURING MODE 3 THE UMBILICAL PLUG MATES DIRECTLY TO THE BIOMED CONNECTOR PJ "A". THE LIGHTWEIGHT HEADSET PLUG WILL MATE DIRECTLY WITH THE OTHER BIOMED CONNECTOR PJ "B"
4. BOTH SPACE SUITS WILL NOT BE STOWED IN IU THE LM VEHICLE AT EARTH LAUNCH. THE REQUIREMENTS OF THE MISSION WILL DICTATE WHICH MODES ARE TO BE EXERCISED.

GRUMMAN AIRCRAFT ENGRG CORP			
COMMUNICATIONS SPACE SUIT INTERFACE			
CODE IDENT NO. 26512			
MODEL LM	LDW267-60013	SHEET 13.01	REV

24%

GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714			
SIZE E	CODE IDENT NO. 26512	LDW267-60013	
SCALE NONE		SHEET 13.01	

LDW267-60013

SUPPLEMENTARY DATA
UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG

MARK PART NUMBER IN ACCORDANCE WITH MIL STD 130	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☐ USE BOTH SIDES IF NECESSARY	
LENGTHS OF AN NAS & MS AL RLY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL RIVETS IN ACCORDANCE WITH	

COMM UP-DATA LINK
+28V
4CB228
18GA
2A
PJ194 N — JP103 M
PNL XI

UP DATA LINK 13S16
3 VOICE BU
2
OFF
1 DATA
PJ103 U — PJP186 49 — PJ368 34
S — 50 — 85
PNL XII

REGULATOR
+ POWER TO INTERNALS EXCEPT AUDIO INHIBIT
RETURN
POWER SUPPLY
+24V REG
+4.5V REG
INT DIST
AUDIO INHIBIT

JP368 82 — PJP186 75 — JP103 T
PNL XII
PJ103 L — JP194 M
-DN2
PNL XI

RECEIVED VOICE & DATA FROM S-BAND RECEIVER SEE SH 9.00
B — PJ1804 74 — PJ368 47
A — 75 — 71
70K HZ DISCR
AUDIO AMPL
(VOICE)
BACK UP VOICE XMFR
JP368 13 26GA (J) 27 26GA (K) TO SPA SEE SH 10.00

(DATA)
AUDIO AMPL
PSK DEM
DECODER "A"
INTERFACE
62 26GA 3 20.00 A
63 26GA 3 20.00 C
64 26GA 3 20.00 B
65 26GA 3 20.00 D
TO LGC

J368
69 44 67 42 68 43 66 41 46 26 25 11 24 10 23 9 22 21 70 45
PRA INTERFACE

54 79 80 56 32 55 81 57 73 48 28 49 74 50 29 75 51 30 76 52 77 53 31 38
RELAY DRIVER

DECODER "B"
VERIFICATION INTERFACE

JP368 — PJ871
20 26GA RETURN 72
1 26GA 71
2 26GA 47
3 26GA 39
4 26GA 26
5 26GA 21
6 26GA 11
7 26GA 10
8 26GA 9
DUA VERIFY GT0441X
COM
50DPI-8
PCMTEA 20A9

DUA 14A1

ALL WIRE IS 22A UNLESS OTHERWISE NOTED

GRUMMAN AIRCRAFT ENGRG CORP			
DIGITAL UPLINK ASSY, POWER RANGE INDICATION & BU VOICE			
CODE IDENT NO. 26512			
MODEL LM	LDW267-60013	SHEET 14.00	REV

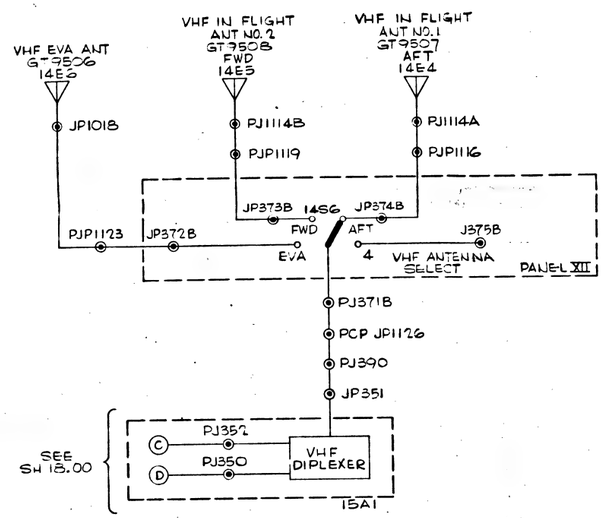
24%

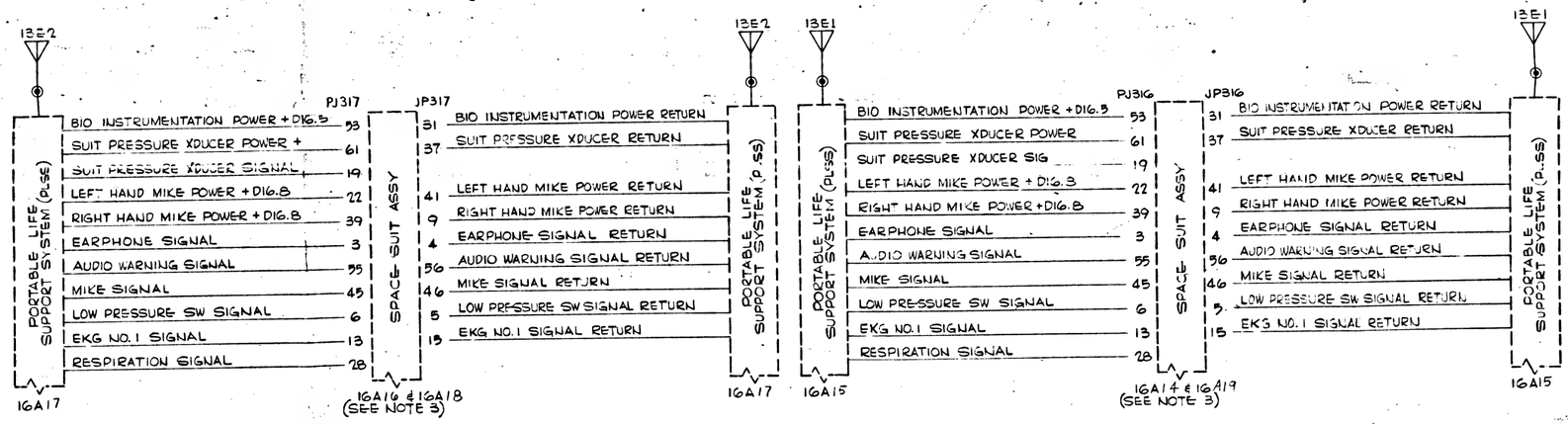
GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714			
SIZE E	CODE IDENT NO 26512	LDW267-60013	
SCALE NONE		SHEET 14.00	

LDW267-60013 B

SUPPLEMENTARY DATA
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130.	
AND ALL OTHER MARKINGS IN REGION MARKED ☐ USE BOTH SIDES IF NECESSARY.	PART NUMBER
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL RIVETS IN ACCORDANCE WITH	





NOTES:
1. THE PLSS IS PLUGGED INTO THE ASTRONAUT'S UMBILICAL ASSY AS SHOWN FOR THE LUNAR STAY INVESTIGATION. WHEN IN THE SPACE CRAFT THE PLSS IS REPLACED BY THE COMMUNICATIONS SYSTEM.
2. LEGEND "AFT" WILL BE USED FOR PLSS TEST POSITION. A PERMANENT LOCKOUT ON PANEL PREVENTS TURNING TO THE FOURTH POSITION.
3. THERE ARE TWO TYPES OF SPACE SUITS, A7L AND AEL. THE ELECTRONIC INTERFACES ARE IDENTICAL.

GRUMMAN AIRCRAFT ENGRG CORP			
VHF ANTENNAS AND PLSS SYSTEM			
CODE IDENT NO. 23512			
MODEL LM	LDW267-60013	SHEET 17.00	REV

GRUMMAN AIRCRAFT ENGINEERING CORPORATION
BETHPAGE, NEW YORK 11714

SIZE	CODE IDENT NO	
E	26512	LDW267-60013
SCALE NONE		SHEET 17.00

B 1 DW267-60013

SUPPLEMENTARY DATA
UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.

MARK PART NUMBER IN ACCORDANCE WITH MIL STD-130.

PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☐ USE BOTH SIDES IF NECESSARY

LENGTHS OF AN NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.

INSTALL RIVETS IN ACCORDANCE WITH

COMM VHF 'B' XMTR 4CB162
18GA 20GA 5A
+D28
PNL XI
PJ105 JP65 20GA 20GA
B 20GA R

VHF 'B' XMTR 13S12
VOICE 3 2 OFF 1 20GA
DATA 1 2
PJ65 E
PJ76 10
PJ103 H
PJ76 76
51
PNL XII

PJP183 52 30 20GA JP388 A
PJP183 PJP1816 PJP1804 C 9 V
PJP83 76 C
77 B
SEE SH 11.00 D E
E F

DC/DC CONVERTER
+28 & +24 VOLTS INTERNAL DISTRIBUTION

K1B
K2B

PJ398 B 20GA PJP183 75 74 20GA JP65 D 20GA
SEE SH 11.00 JP1804 3 PJP1816 B JP103 G
JP76 9 VOICE 5 6 OFF 4 DATA
20GA 20GA PJ65 S 20GA JP105 E 20GA -DN2
PNL XII
PNL XI

SPLIT PHASE DATA
PCMTEA 20A9
JP870 11 12
30 PJ76 26GA 26GA
JP1804 58 59 26GA 26GA
Y Z

BAL LIMITER VOICE MUTE
DATA AMP LIMITER EMITTER FOLLOWER KEYER
DATA MUTE NOISE SUPPRESSION OSC
MODULATOR
S SEE SH 19.00 T
X W SEE SH 19.00

FREQ TRIPLER PWR AMPL BPF
OSC
EXCITER PWR AMP
TRANSMITTER 'B'
K1B K1B JP1147 SEE SH 17.00 C

PJP83 52 A

COMM VHF 'B' RCVR 4CB114
18GA 2A
+D28
PJ148 EE JP198 70
VHF 'B' RCVR 13S15
ON 3 OFF 1 2
PJ76 29 78 R
VHF EMU FILTER ASSY 15A20

+D10 & +D20 VOLT REGULATOR
SEE SH 19.00 A B
AMPL RF MIXER
MIXER EARLY GATE LATE GATE FILTER
OSC
AGC
AUDIO DET
AUDIO AMP & GATE
AGC DET
OUTPUT XMFR
PJ388 M N E S SEE SH 10.00
SQUELCH DET
SCHMITT TRIGGER
AGC AMPL
AMPL, IF & AUDIO
K2B K2B
N P SEE SH 19.00
SEE SH 19.00 Z Y
RECEIVER 'B'

VHF 'B' SQUELCH CONT
13R15
PJ76 42 66 67
PJP83 9 21 22
JP388 H J K
PJ388 P R2 15Ω C2 56μf N4 FILTER ASSY 15A20
PJP83 53 JP76 50
RANGE VOICE 13S7
PJ198 71 JP148 Q -DN2
PNL XII PNL XI

JP76 48 21 JP389 64 V
Z SEE SH 11.00
RANGE VOICE 13S7 VOICE/RANGE
PJ389 U 65 22
OFF 4 1 2 3 VOICE/RANGE
PJ76 49 A SEE SH 11.00

KIA K2A

COMM VHF 'A' XMTR 4CB115
18GA 5A
+D28
PNL XVI
PJ87 JP65 20GA 20GA
V N

PJP83 20GA B 20GA 38 89 20GA A
PJP183 62 63 20GA C 20GA
PJ65 20GA 20GA U 20GA JP87 U
PNL XVI

FOR LOGIC SEE XMTR 'B' WITH DELETION OF VOICE MUTE AND DATA CHANNEL ADDITION OF RANGE CKT AS SHOWN BELOW
LIMITER AMPL LIMITER AMPL EMITTER FOLLOWER KEYER
SEE SH 19.00 L
NOISE SUPPRESSION OSC J K M
XMTR 'A'
KIA U V SEE SH 19.00

VOICE FROM SPA SEE SH 11.00 B C E F

TO RANGING TONE TRANSFER SEE SH 19.00 Q

SEE SH 19.00 R 20GA JP103 D 20GA

COMM VHF 'A' RCVR 4CB87
18GA 2A
+D28
PNL XI
PJ194 JP198 68
VHF 'A' RCVR 13S10
ON 3 OFF 1
PJ76 75 PJP 83 30
VHF EMU FILTER ASSY 7 15A20
JP389 R

KIA KIA D SEE SH 17.00
FOR LOGIC SEE RECEIVER 'B' ABOVE WITH DELETION OF E/L GATE & RANGE TONE & RCVR RANGE GATE FUNCTIONS
K2A JP1147 K2A C D SEE SH 19.00
PJ389 P R1 15Ω C1 56μf N4 FILTER ASSY 15A20
PJP83 51 JP76 74
PJ198 69 JP194 Q -DN2
PNL XII PNL XI

VHF 'A' SQUELCH CONT 13R10
45 46 70
10 23 24
H J K
RECEIVER 'A'
PJ389 M N X F SEE SH 10.00
VHF TRANSCEIVERS AND DIPLEXERS 15A1

ALL WIRE IS 22GA UNLESS OTHERWISE NOTED.

GRUMMAN AIRCRAFT ENGRG CORP		
VHF TRANSCEIVERS		
CODE IDENT NO. 26512		
MODEL LM	LDW267-60013	SHEET 19.00 REV

LDW267-60013

25%

GRUMMAN AIRCRAFT ENGINEERING CORPORATION
BETHPAGE, NEW YORK 11714

SIZE	CODE IDENT NO.	
E	26512	LDW267-60013
SCALE NONE		SHEET 19.00

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW270-51010	LEM-2(32)	3
LEM	LDW270-51010	LEM-1(31)	3
LEM	LDW270-28010	LTA-8(18)	3
LEM	LDW270-23010	LTA-3(13)	3
PART NO. LDW270-10011-11		GAEC SCH NO. 45	

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00	1.10	2.00	3.00						
REV	A	A								
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED	
LAST DASH NO. USED	-11

GRUMMAN REL INFO A

PRIM NO.		
450	MP-A	7-11-66

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES NOTED ± 1/2°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS 9-1100 LINE ITEM | DOCUMENTATION TYPE II

DRAWN BY	I. SCOTT 3-18-66 Rel			
LAYOUT BY	SCIARROTTA 3/24/66			
CHECKED BY	3-21-66			
GR LEADER	M. LIEBMAN 3/24/66	PROP.	B. THOMPSON 3/24/66	
VEH DES INT				
STRUCTURE	3/24	PROJ ENGR	4-7-66	
STRUCTURE	4/1	REL GROUP	4-8-66	

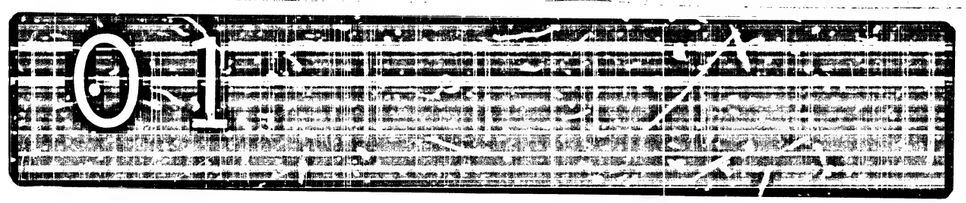
(B) GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

WASHER
ASCENT STAGE - ENGINE SPACER

SIZE	CODE IDENT NO.		
B	26512	LDW270-10011	A

SCALE NONE SHEET 1.00 OF 4

ENG 77.1 9-64



NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	QUALITY APPD
A	1	1 & 1.10						E O A1	ADDED SH. 1.10 SH. 1 OF 4 WAS 1 OF 3. FOR -1 IN M/B ADDED EFFECT. FOR LTA-8 (18).	LTA-8	NOT	REQ'D	J. BRODA 6-8-66		
	2	1 & 1.10							REF E O A1 -11 WAS -1	NOT REQD	NOT	REQD			
	3	1 & 1.10							ADDED LEM-1 & 2 EFF. WITH LDW 270-51010 N/A	LEM-1 & 2	NOT	REQD	J. ESAITIS 6-24-66		

CHG APPROVED

LTR	GROUP LDR	VEH. DES. INT.	STRUCTURE	STRUCTURE	RELIABILITY	PROP
A						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

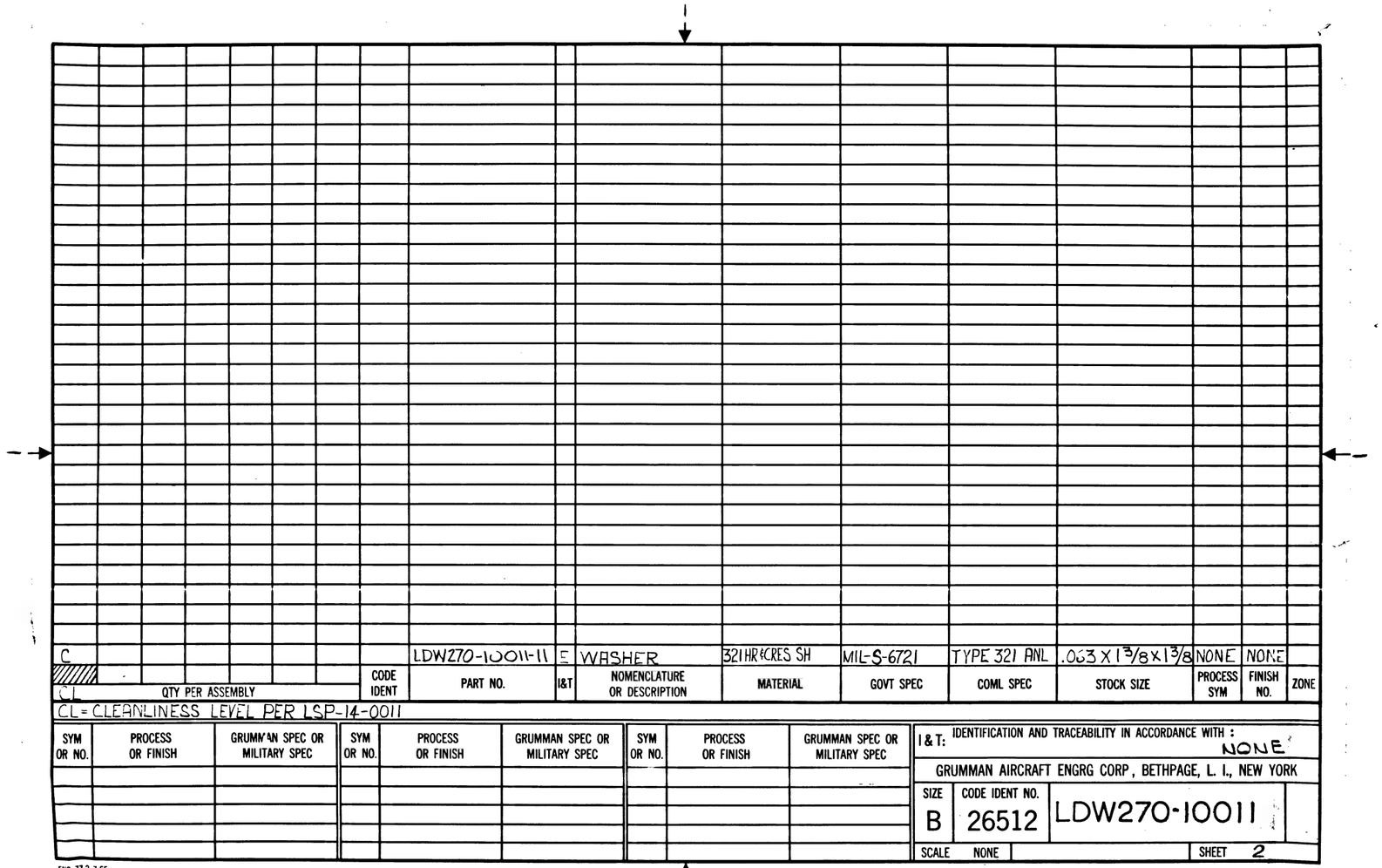
SIZE	CODE IDENT NO.		
B	26512	LDW 270-10011	A

SCALE NONE SHEET 1.10

ENG 77.10 3-66

01

NAS 9-1100



QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
C		LDW270-10011-11	E	WASHER	321HR&CRES SH	MIL-S-6721	TYPE 321 ANL	.063 X 1 3/8 X 1 3/8	NONE	NONE	

CL = CLEANLINESS LEVEL PER LSP-14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

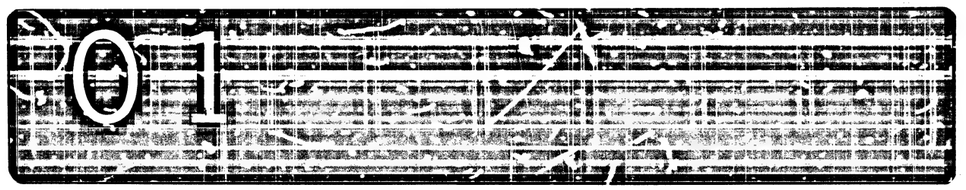
I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW270-10011

SCALE NONE SHEET 2

ENG 77.2 7-65

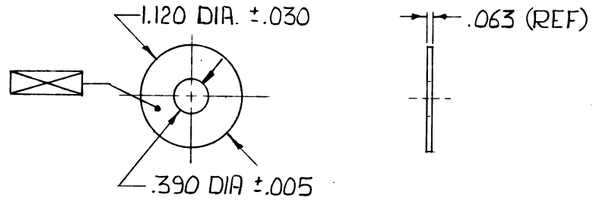


NAS 9-1100

NOTE:

1. ON INITIAL RELEASE OF THIS DWG TOOLING FOR LDW270-10011-11 IS IDENTICAL TO LTM270-50001-11

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
REMOVE ALL BURRS BREAK ALL EDGES .015-.031	✓
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED	✓



-11

4

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-10011	
SCALE FULL		SHEET 3.00	

EMC 75.1 6-64

01 A

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG NO. LDW270-10011 | EO NO. B1

CONTROL INFO NO. LM-5-9760

IN M/B ADD LDW270-10011-11 (3) REQ'D.
N/A LTM270-50000 EFF. TM-2 A/R.

(5)

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG

REASON FOR EO: TO ADD REQMTS. FOR TM-2 A/R

DESCRIPTION OF EO: IN M/B ADDED LDW270-10011-11 (3) REQ'D. FOR TM-2 A/R N/A LTM 270-50000.

GAEC EO RELEASE: C

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM		TM-2 A/R	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: REWORK ✓ | SCRAP

APPROVED BY										
DATE			1		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
							KD 12/14/66		11-22-66	11 28 66 / 11/22/66

PRIORITY: C

DRAWING TITLE: WASHER A/S ENGINE SPACER

DRAWING NO.: LDW270-10011

EO NO.: B1

ISSUED BY LIAISON J. JARVIS SECTION Y.D.I. GROUP NO. 270 PL 35

01

NAS 9-1100

ENG 22.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-10011 | EO NO. B2
CONTROL INFO NO. LM270-750

CANCEL EO B1 (LM-5-9760)

DETAIL SPEC REQ	Cl. II ENGRG CHG	Cl. I ENGRG CHG		3
				GAEC EO RELEASE FR 7/6/6

REASON FOR EO
LDW270-10011-11 NOT REQD. AS LTM270-50001-11 IS IDENTICAL

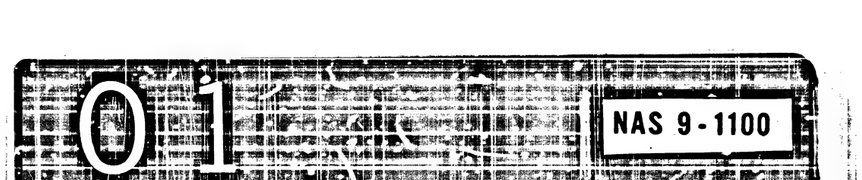
DESCRIPTION OF EO
CANCELLED EO B1

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		TM-2 A/R	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	DATE	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	DONE
			✓	6				RB 11/3/66	—	—	12-6-66	12/12/66

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	WASHER A/S ENGINE SPACER	LDW270-10011	B2

ISSUED BY W. KUTNER X7427 SECTION PROPULSION GROUP NO. 345 PL 35



LDW270-10012 A

4

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW270-21011	LEM-3(33)	12 EA
		LEM-2(32)	
		LEM-1(31)	
LEM	LDW270-21011	LTA-1(11)	12 EA
PART NO. LDW270-10012-11		GAEC SCH NO. 45	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00	1.10	2.00	3.00						
REV	A	A		A						
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED	
LAST DASH NO. USED	-11

GRUMMAN REL INFO 1
PRIM NO. 65009
215 MP12

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES ± 1/32 ± .005 ± 1/2°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS9-1100 LINE ITEM 009 DOCUMENTATION TYPE II

DRAWN BY	JAEGGI 4-6-66	RELIABILITY	4/11
LAYOUT BY	SCIARROTTA 4-6-66		
CHECKED BY	4-7-66		
GR LEADER	9/5/66		
VEH DES INT			
STRUCTURES		PROJ ENGR	4-12-66
STRUCTURES		REL GROUP	4-15-66
WEIGHTS	4/11/66		

© GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

WASHER
ASCENT STAGE-AMPLIFIER MOUNT

SIZE	CODE IDENT NO.		
B	26512	LDW270-10012	A
SCALE NONE		SHEET 1.00 OF 4	

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.10, 1.00 & 3.00						EO A1	ON -11 .140-.150 DIA WAS .130-.135 DIA. ADDED SH 1.10 SH 1 OF 4 WAS SH 1 OF 3	LTA-1 LEM-1, 2 & 3	V		A. STERNBERG 7-10-66		
	2	1.10						EO A2	SUPERSEDED BY EO A3		NOT	REQD			
	3	1.10 & 3.00						EO A3	SUPERSEDES EO. A2 FOR -11 ADDED ALUM TUBING AS ALTERNATE MATL & CALLOUT ".032 STOCKSIZE" IN FLD.						

CHG APPROVED	LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY				
	A										

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-10012	A

SCALE NONE SHEET 1.10

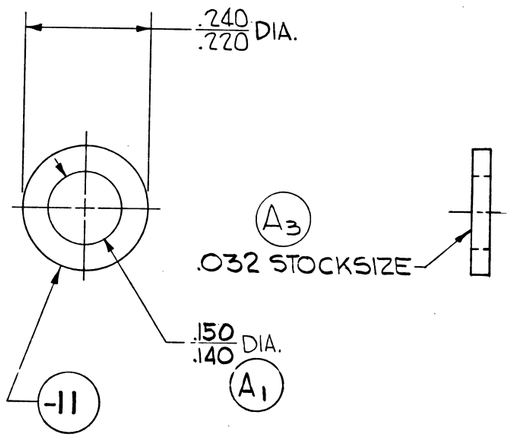
ENG 77.18 3-66

01

NAS 9-1100

NOTE

1. ALTERNATE MATERIAL ALLUM TUBING 2024-T3 PER WW-T785, .250x.065 WALLx.032



GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-10012	A
SCALE 6x1		SHEET 3.00	

ENG 73.1 6-64

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW270-10012-11	E	WASHER	AL ALLOY SH SEE NOTE 1	QQ-A-250/5	2024-T3	.032 x 1/2 x 1/2	NONE	76	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
						76	ALODINE	LSP14-9010

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW270-10012

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

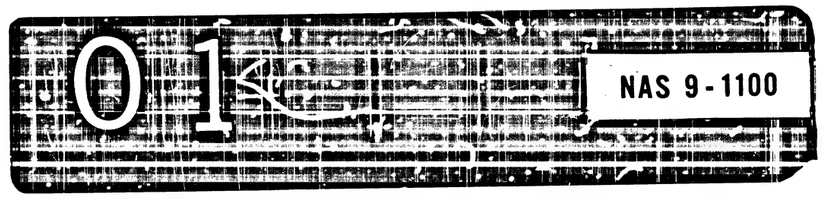
ENGINEERING ORDER

DWG. NO. LDW270-10012		EO NO. B1
CONTROL INFO NO. LM 270-833		

* { IN THE M/B ON-11 CHG. N/A TO "LDW270-51010" FOR LM-1(31), LM-2(32) & "LDW270-53010" FOR LM-3(33)

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD 19-1202												25
REASON FOR EO: WASHER TO BE CALLED OUT ON LDW270-51010 & 53010						DESCRIPTION OF EO: SEE ABOVE *												GAEC EO RELEASE: JK 5/1/67
MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG ✓	RECORD EO	DISPOSITION OF PARTS: NOT REQD REWORK	SCRAP	APPROVED BY										
		LM-1 (31)						DATE	5/1/67			5/3/67	5-8-67		5/10/67	5/10/67		
LM		LM-2 (32)		PRIORITY C		DRAWING TITLE: WASHER - ASCENT STAGE - AMPLIFIER MOUNT		G	PROP	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	DRAWING NO. LDW270-10012		EO NO. B1
		LM-3 (33)																

5-3-67
ISSUED BY S. SCIARROTTA X1471 SECTION PROPULSION GROUP NO. 345 PL 25



GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG. NO. LDW270-10012 | EO NO. B2
CONTROL INFO NO. LM270-1065

THIS E.O. REVISES E.O. B1
CHG TO READ "N/A" (WAS N/A LDW270-53010) "LDW270-53020" FOR LM3(33)

DETAIL SPEC REQ | CL II ENGRG CHG | ✓ CL I ENGRG CHG | LCD 1422

REASON FOR EO: ROTATE ASCENT ENGINE 180°

DESCRIPTION OF EO: REF EO B1 REVISED N/A FOR LM-2 WAS LDW270-53010

GAEC EO RELEASE: C — 12/12/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-3(33)	

DRAWING CHANGE REQD: ✓ REVISE DWG | RECORD EO
DISPOSITION OF PARTS: ✓ REWORK | SCRAP

	LEAD	DATE	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ. ENGRG
APPROVED BY	KB				RJG			
DATE	7/21/67				7/27/67			11/4/67
	C	PROP						11/20/67

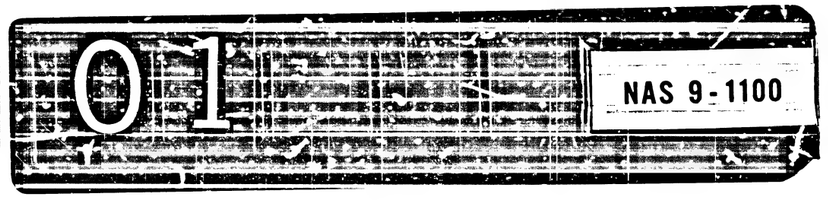
PRIORITY: C

DRAWING TITLE: WASHER. - ASCENT STAGE - AMPLIFIER MOUNT

DRAWING NO.: LDW270-10012

EO NO.: B2

ISSUED BY S. SCIARROTTA X1471 SECTION PROPULSION GROUP NO. 345 PL 25



GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LED-270 | EO NO. 68

CONTROL INFO NO. LM270-1250

ADD EFFECT & N/A AS LISTED BELOW

PART No.	MODEL	N/A	MODULE	REQD	EO No.
LTM270-50005-57 LTM270-50005-55 LTM270-50005-53 LTM270-50005-51	LFM	LTM270-50020	PA-1(47)	1 1 1 1	A7
LTM270M50008-11				1	A1 *
LTM270M50009-11				1	A2
LDW270-28013-1				3	B8
LDW270-53204-5				1	B7
LDW270-10012-11	LFM	LTM270-50020	PA-1(47)	12	B3

LFM

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD 2635 CCA 931 | 5

REASON FOR EO: SUPPORT ROCKETDYNE TEST PROGRAM

DESCRIPTION OF EO: SEE ABOVE *

GAEC EO RELEASE: H.F 7/1/65

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 197	PA-1(47)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: NOT REQD — REWORK | SCRAP

APPROVED BY	PROP	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
DATE	6/25/65	—	—	6/25/65	—	—	6/26/65

PRIORITY: C

DRAWING TITLE: SEE DWGS.

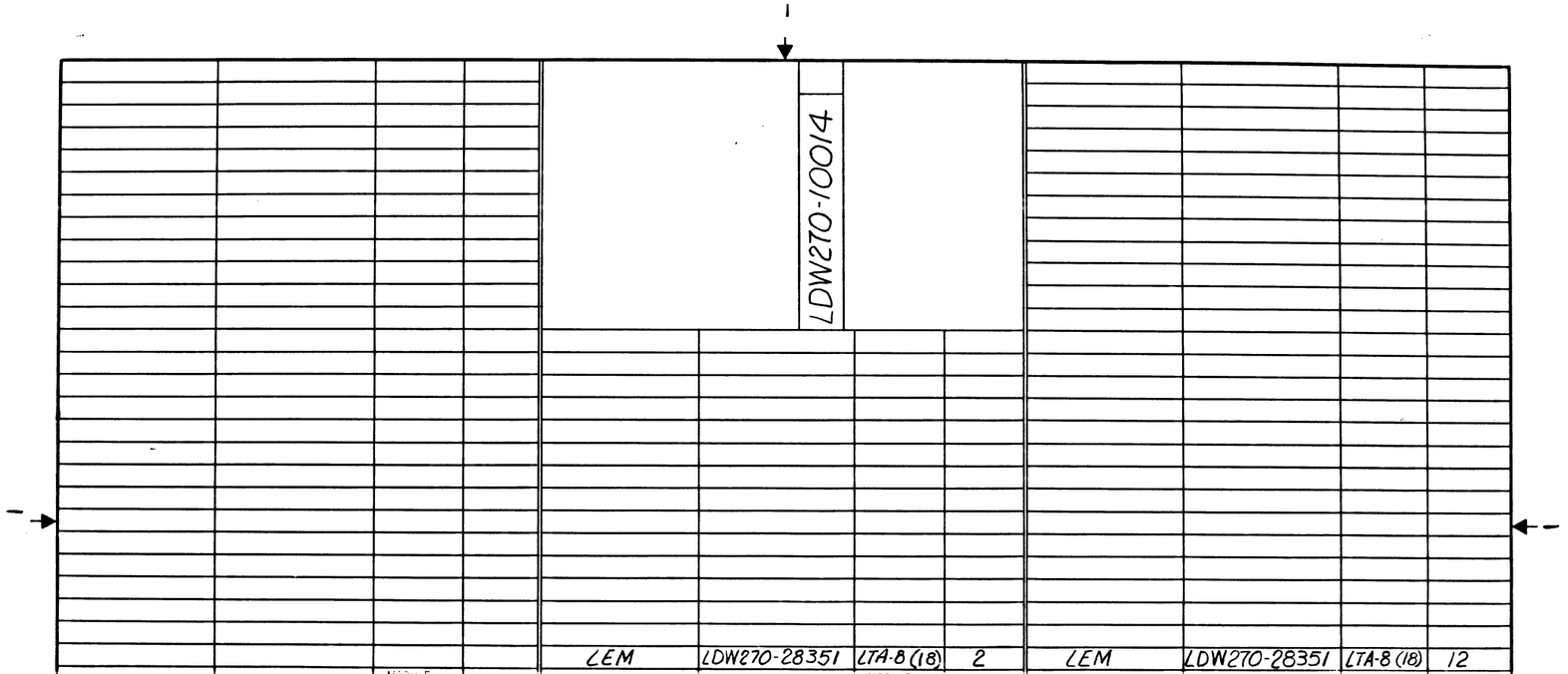
DRAWING NO.: LEO-270

EO NO.: 68

ISSUED BY S.SCIARROTTA x1471 SECTION PROPULSION GROUP NO. 345 PL 25

01

NAS 9-1100



				LEM	LDW270-28351	LTA-8 (18)	2	LEM	LDW270-28351	LTA-8 (18)	12
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO. LDW270-10014-3		GAEC SCH NO.		PART NO. LDW270-10014-1		GAEC SCH NO. 55	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00	2.00	3.00							
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED		GRUMMAN REL INFO	
LAST DASH NO. USED	-3	PRIM NO. 136	(Rocky) IMP 12 RS 4-20

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
~ ±.03 ±1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100 | LINE ITEM 9 | DOCUMENTATION TYPE II

DRAWN BY	N. GRAUL 4/6/66	RELIABILITY	T.S. Doyle for L.K. 5/11
LAYOUT BY	S. NEVIN 4/18/66		
CHECKED BY			
GP LEADER	4/19/66		
PROPULSION			
V.D.I.	JS	PROJ ENGR	Allen 5-19
STRESS	Silverman 5-13	REL GROUP	Scott 5-21-66
WEIGHTS	R. EBERLE 5-13		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

TUBE-TANK, THERMAL SIMULATOR, DESCENT PROPELLANT PRESSURIZATION SUBSYSTEM

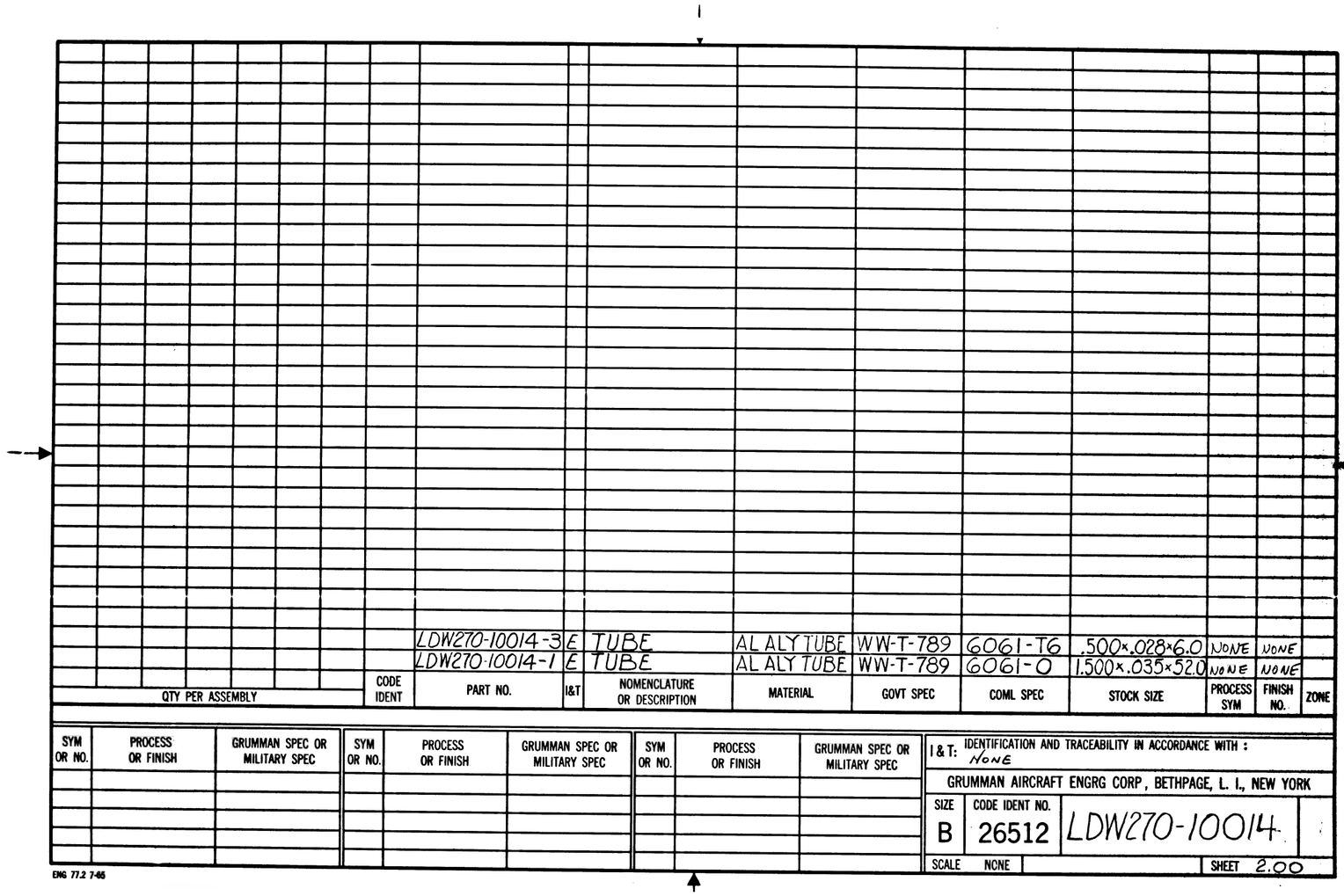
SIZE	CODE IDENT NO.	
B	26512	LDW270-10014

SCALE NONE | SHEET 1.00 OF 3

ENG 77.1 12-65

01

NAS 9-1100



QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
	E	LDW270-10014-3	E	TUBE	AL ALY TUBE	WW-T-789	6061-T6	.500×.028×6.0	NONE	NONE	
	E	LDW270-10014-1	E	TUBE	AL ALY TUBE	WW-T-789	6061-O	1.500×.035×52.0	NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

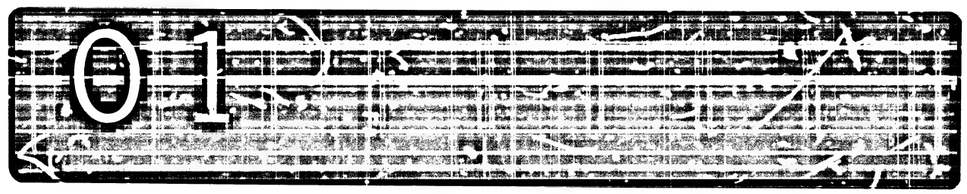
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW270-10014

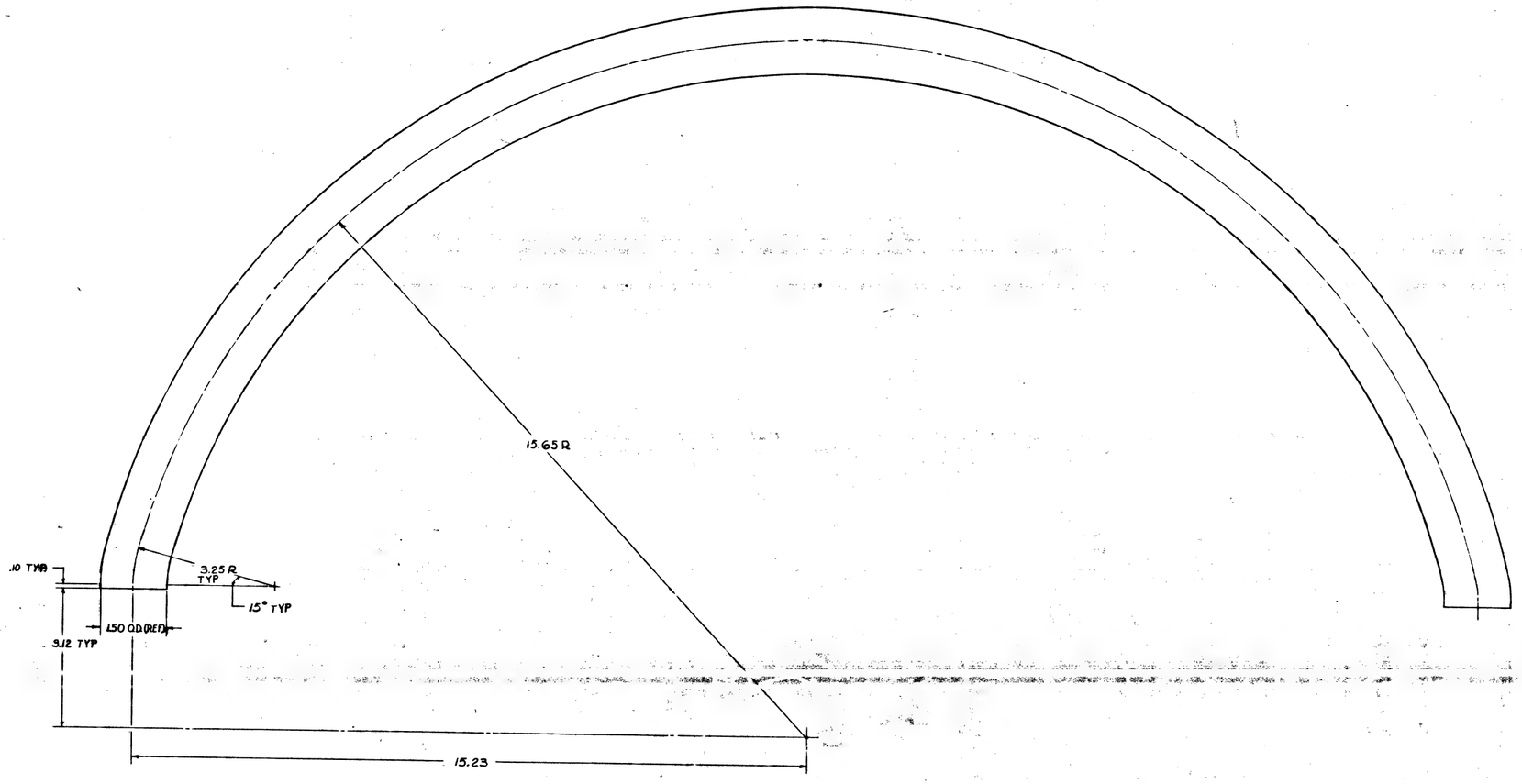
SCALE NONE SHEET 2.00

ENG 77.2 7-65

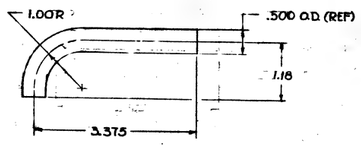


NAS 9-1100

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.
FILLET AND INSIDE CORNER RADII TOLERANCES .015R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 UNF THDS. BEYOND PERMISSIBLE.
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
250 FOR ALL DRILLED HOLES
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED EG
SYMBOL √ DENOTES SURFACE TO BE MACHINED
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FRACTIONS IS ± 1/32
LENGTHS OF AN, NAS & MS ALLOY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
TOLERANCE ON LOFTED DELINEATIONS IS



LDW270-10014-1 TUBE



LDW270-10014-3 TUBE

NAS 9-1100

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK		
LEM	SIZE E	CODE IDENT NO. 26512	LDW270-10014
MODEL OR END ITEM	SCALE FULL		SHEET 3.00

LDW270-10014

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65 **ENGINEERING ORDER**

DWG. NO. LDW270-10014 | EO NO. A1
CONTROL INFO NO. LEM 270-597

IN B/M FOR -1 PROCESS SYM "T6" WAS "NONE"
IN PROCESS BLOCK ADD:

SYM OR NO	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
T6	AL. HT. TREAT	MIL-H-6088

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG

REASON FOR EO
ENG'RG ERROR
ADDED INFORMATION

DESCRIPTION OF EO
IN B/M FOR -1 PROCESS SYM T-6 WAS NONE.
IN PROCESS BLOCK ADD: T-6, AL.HT.TREAT, MIL-H-6088

GAEC EO RELEASE: LE 8-24

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
LEM		LTA-8(18)		✓		✓	

APPROVED BY / DATE	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
APPROVED BY	—	—	AST	—	RME (WAS)	CL
DATE	6/10/66	—	—	7/29/66	—	8-10-66 8-2-66
PROP.	SUPPORT					

PRIORITY: C
DRAWING TITLE: TUBE-TANK, THERMAL SIMULATOR
DRAWING NO.: LDW270-10014
EO NO.: A1

ISSUED BY S. NEVIN X1471 SECTION PROPULSION GROUP NO. 270 PL 35

01

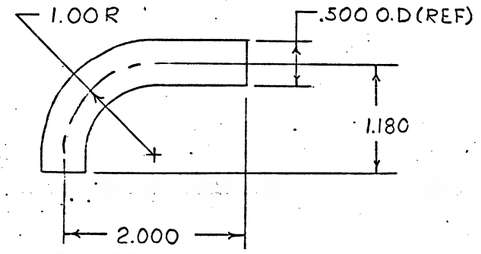
NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

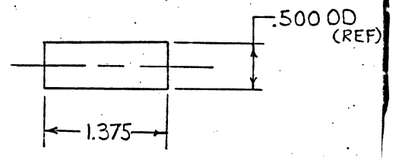
ENG 32.1 REV 3-65 LIAISON ENGINEERING #5 ENGINEERING ORDER

DWG. NO. LDW270-10014 | EO NO. A2
CONTROL INFO NO. LM5-9095

B/M+F/D CREATE -5 & -7 TO REPLACE -3 (CANCEL -3)
+M/B AS SHOWN. MAT. -5 & -7 AL ALY TUBE .500 X .028, 6061 T6, WW-T-789



LDW 270-10014-5 TUBE ELBOW



LDW 270-10014-7 TUBE

M/B N/A FOR -5 & -7 LDW270 2835! REWORK. -5 CAN BE MADE FROM -3 (INSTALLED)
LTA-8 (18) 2 REQD EACH

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG

REASON FOR EO: IMPROPER INSTL OF SWAGELOK N/A (LEAKED).

DESCRIPTION OF EO: F/D, B/M, M/B CREATED -5 & -7. CANCELLED -3

GAEC EO RELEASE: C

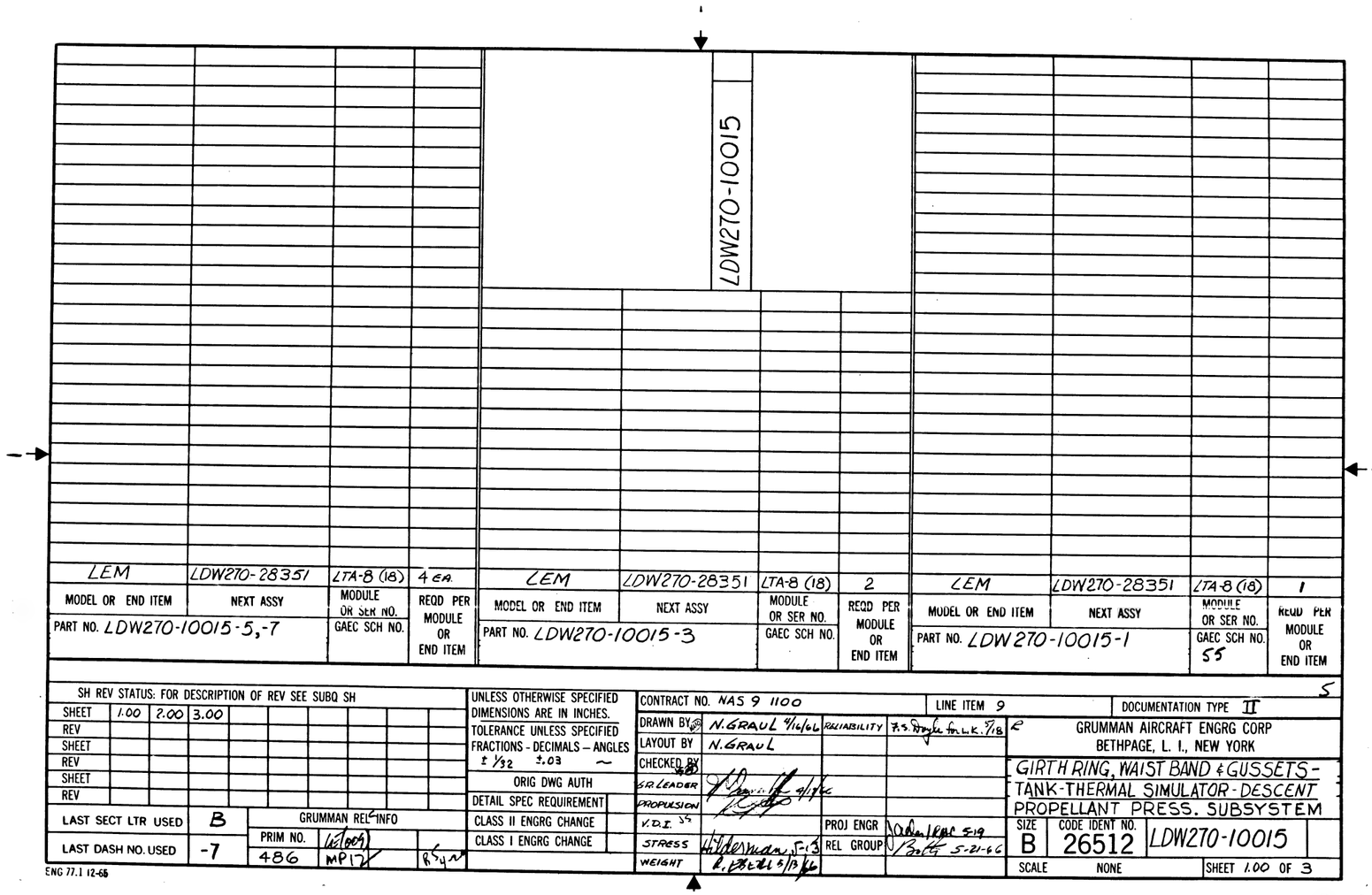
MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA-8 (18)	

DRAWING CHANGE REQD: REVISE DWG ✓; RECORD EO
DISPOSITION OF PARTS: SEE REMARKS REWORK; SCRAP

APPROVED BY									
DATE	9-13-66		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	SCHT
						9-14-66	9-14-66	9-16-66	

PRIORITY: C
DRAWING TITLE: TUBE TANK THERMAL SIM. DESCENT PROP PRESS. SUB. SYS.
DRAWING NO.: LDW270-10014
EO NO.: A2

ISSUED BY LIAISON J. GRASSIANO X4452 SECTION PROP. GROUP NO. 270 PL 35



LEM	LDW270-28351	LTA-8 (18)	4 EA.	LEM	LDW270-28351	LTA-8 (18)	2	LEM	LDW270-28351	LTA-8 (18)	1
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW270-10015-5,-7		GAEC SCH NO.		PART NO. LDW270-10015-3		GAEC SCH NO.		PART NO. LDW270-10015-1		GAEC SCH NO. 55	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00	2.00	3.00							
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED	B	GRUMMAN REL INFO	
LAST DASH NO. USED	-7	PRIM NO.	(6/1009) MP17
		486	RSW

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 ±.03 ~

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9 1100 | LINE ITEM 9 | DOCUMENTATION TYPE II

DRAWN BY	N. GRAUL 4/16/66	RELIABILITY	F.S. Doyle for L.K. 5/18
LAYOUT BY	N. GRAUL		
CHECKED BY			
SR LEADER	4/18/66		
PROPULSION			
V.D.I. SS		PROJ ENGR	5-19
STRESS	Hildebrand 5-13	REL GROUP	5-21-66
WEIGHT	R. Bell 5/13/66		

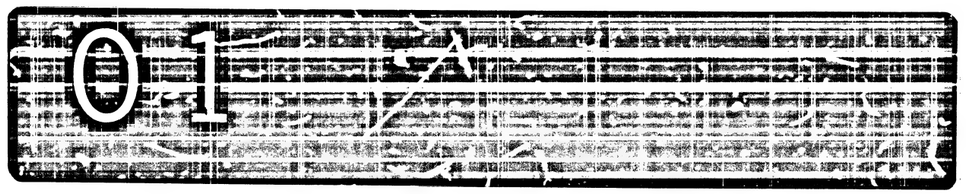
GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

GIRTH RING, WAIST BAND & GUSSETS - TANK-THERMAL SIMULATOR-DESCENT PROPELLANT PRESS. SUBSYSTEM

SIZE	CODE IDENT NO.	
B	26512	LDW270-10015

SCALE NONE | SHEET 1.00 OF 3

ENG 77.1 12-65

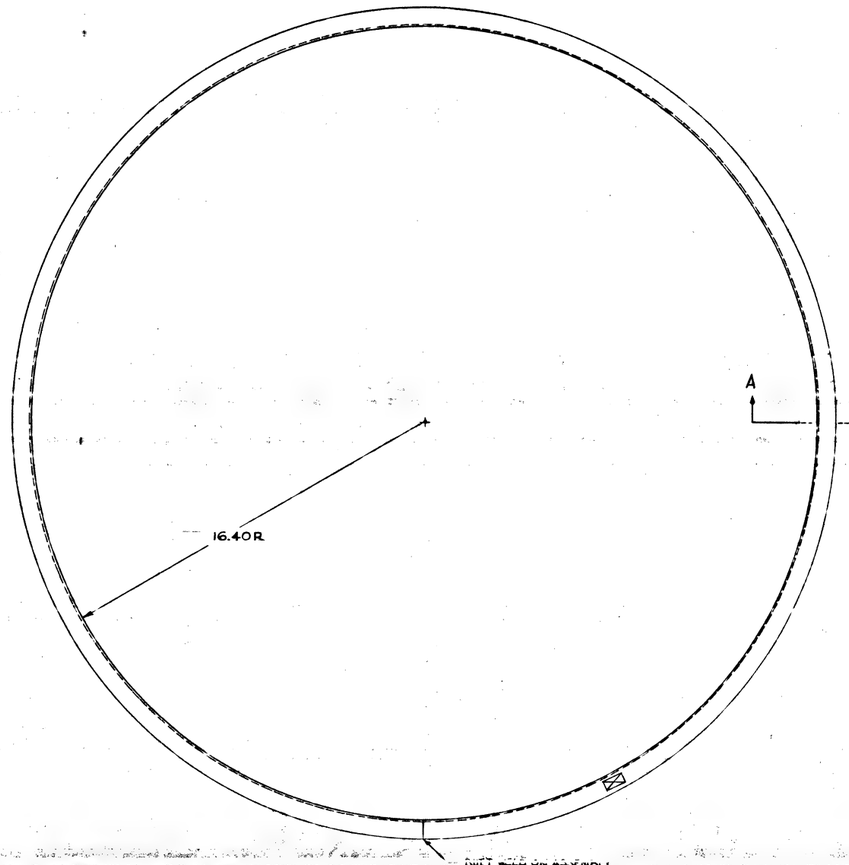


NAS 9-1100

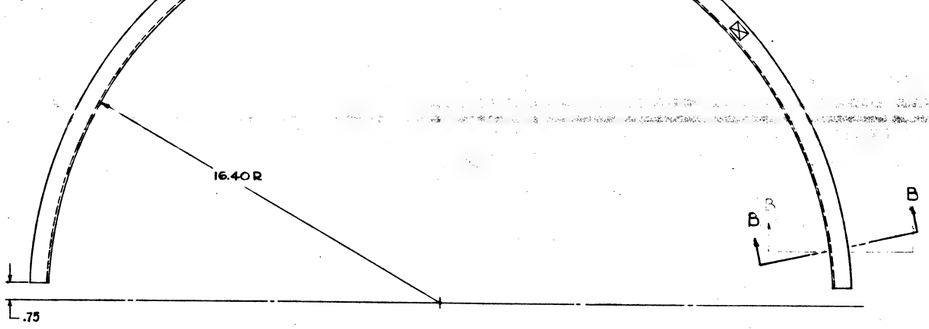
MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

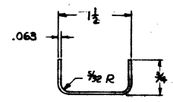
RUBBER STAMP NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY.	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .008 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0004 MAX MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
250 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ⚷ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	



LDW270-10015-1 GIRTH RING



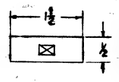
LDW270-10015-3 WAIST BAND



SECTION A-A & B-B
ROTATED 90°
FULL SCALE



LDW270-10015-5 GUSSET



LDW270-10015-7 GUSSET

FULL SCALE



	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK		
LFM	SIZE E	CODE IDENT NO. 26512	LDW270-10015
MODEL OR END ITEM	SCALE 1/2		SHEET 3.00

LDW270-10015

LDW270-10017 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.			LEM	LDW270-28351	LTA-8(18) 24
								PART NO. LDW270-10017-11		GAEC SCH NO. 55	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00	2.00	3.00	1.10						
REV	A			A						
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED		GRUMMAN REL INFO A		
LAST DASH NO. USED	-1	PRIM NO. 6100 9		
		486	MP127A	BT. 6.3

ENG 77.1 12-65

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
~ ±.02 ±1°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100		LINE ITEM 9	DOCUMENTATION TYPE II
DRAWN BY S. Nevin 5-11-66	RELIABILITY		GRUMMAN AIRCRAFT ENGRG CORP
LAYOUT BY S Nevin 5-11-66	MATERIALS	5-15-66	BETHPAGE, L. I., NEW YORK
CHECKED BY			SKIN-TANK THERMAL
G.P. LEADER			SIMULATOR, DESCENT PROPELLANT PRESS. SUB-SYSTEM
PROPULSION		5-13	
VDI	PROJ ENGR	5-27	SIZE B CODE IDENT NO. 26512 LDW270-10017 A
STRESS	REL GROUP	5-27-66	SCALE NONE SHEET 1.00 OF 4
WEIGHTS A. Ezell 5-17-66			

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	STRUCT APPD
A	1	1.00						Ⓡ	SHEET 1.00 OF 4 WAS 3, ADDED SH 1.10 P/N LDW270-10017-11 WAS -1 DWG CORRECTION	NOT REQD	NOT	REQD			

FOR CONTINUATION OF REVISIONS SEE SHEET _____

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW 270-10017	A

SCALE NONE SHEET 1.10

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW270-10017-11	E	SKIN	AL. ALY. SH.	QQ-A-327	6061-O	.028×9×22	NONE	88	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
88	ANODIZE	LSP14-9030

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

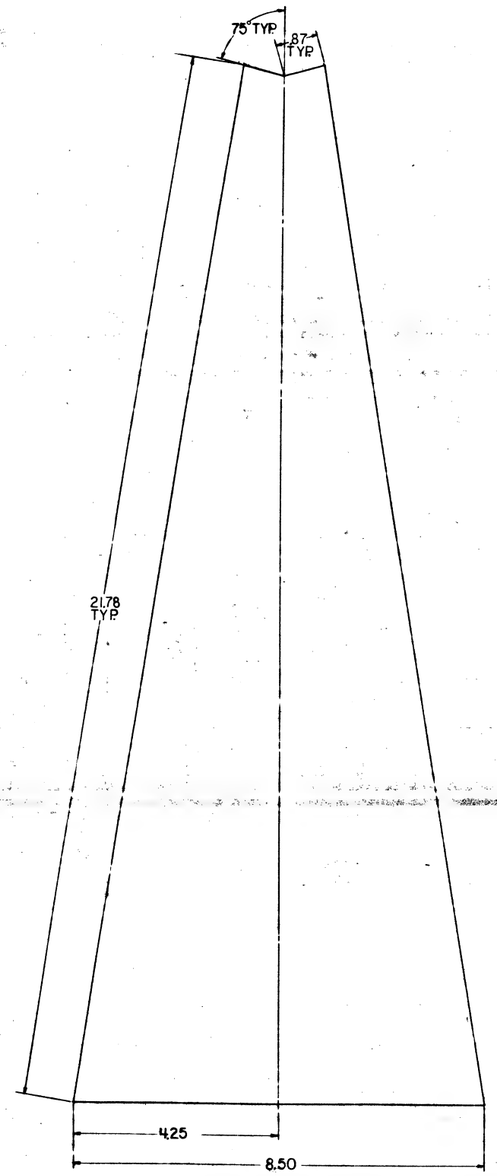
SIZE	CODE IDENT NO.	
B	26512	LDW270-10017

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.	
FILLET AND INSIDE CORNER RADII TOLERANCES .010R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
250 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ∛ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

NOTES:

1-DEOXIDIZE PER LSP14-7020

2-ANODIZE ALL PARTS SIMULTANEOUSLY PER LSP14-9030

3-THE ANODIZED SURFACES SHALL BE KEPT FREE OF ORGANIC CONTAMINANTS.

4-CHECK THE AVERAGE EMITTANCE OF THE ANODIZED SURFACES TO BE BETWEEN 0.30 & 0.50 AT 100°F AS DETERMINED BY A GIER-DUNKLE PORTABLE EMISSOMETER IF NOT WITHIN THIS RANGE NOTIFY ENGINEERING, (PROPULSION GROUP-DESCENT STAGE).

LDW270-10017-11

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L.I., NEW YORK			
LEM	SIZE F	CODE IDENT NO. 26512	LDW270-10017
MODEL OR END ITEM	SCALE 1/4		SHEET 3.00

NAS 9-7100

LDW270-10017

A

LDW270-10019

LEM	LDW270-28352	LTA-8(18)	1 EA	LEM	LDW270-28352	LTA-8(13)	1	LEM	LDW270-23352	LTA 3(13)	÷
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW 270-10019-15,16,17		GAEC SCH NO.		PART NO. LDW 270-10019-13		GAEC SCH NO.		PART NO. LDW270-10019-19		GAEC SCH NO. 55	

2

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00	1.10	2.00	3.00						
REV	A	A	A	A						
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED		GRUMMAN REL INFO A	
LAST DASH NO. USED	-17	PRIM NO.	FS 6(9)
		486	MP-A 9176

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/16 ± .030 ± 1/2°

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100			LINE ITEM I		DOCUMENTATION TYPE II
DRAWN BY	C. Castellano 6-1-66	RELIABILITY		®	GRUMMAN AIRCRAFT ENGRG CORP
LAYOUT BY	A GIMSON				BETHPAGE, L. I., NEW YORK
CHECKED BY	6-7-66				TUBE
GR LEADER					HEAT EXCHANGER SIMULATOR
VEH DES INT					DESCENT PROPULSION
STRUCTURES	6/21/66	PROJ ENGR	28 Jun 66	SIZE	CODE IDENT NO.
STRUCTURES		REL GROUP	6-30-66	B	26512 LDW270-10019 A
WEIGHTS	L. Garcia			SCALE	NONE SHEET 1.00 OF 4

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00, 1.10 2.00, 3.00						E.O. A1	SH. 1 OF 4 WAS 1 OF 3 ADDED SH. 1.10. ON -11, DIM 5½ WAS 4 3/4 (NOT APPLICABLE)	NOT REQ'D	NOT	REQ'D	BRODA 9-6-66	X	X
	2							E.O. A2	ADDED -19 REMOVED -11	LTA-3		-11			
	3	1.10, 2.00, 3.00						E.O. A3	ON-15 IN FLD. DWG. 3 3/4 DIMENSION WAS 5 1/4.	LTA-3, -8	✓				
	4	1.10							REF. E.O. A3 EFFECTIVITY SHOULD BE LTA-8 ONLY. (A) 8z	NOTED	NOT	REQ'D	WN 7-12		

CHG APPROVED	LTR	GROUP LDR	VEH. DES. INT.	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY
	A						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-10019	A

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW270-10019-19	E	TUBE	CRES	LSM14-1001	304L	½ O.D X.027 X 34	NONE	NONE	
		LDW270-10019-17	E	TUBE	CRES	LSM14-1001	304L	½ O.D X.027 X 30	NONE	NONE	
		LDW270-10019 -15	E	TUBE	CRES	LSM14-1001	304L	½ O.D X.027 X 29¼	NONE	NONE	
		LDW270-10019 -13	E	TUBE	CRES	LSM14-1001	304L	2 O.D X.025 X 20	NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

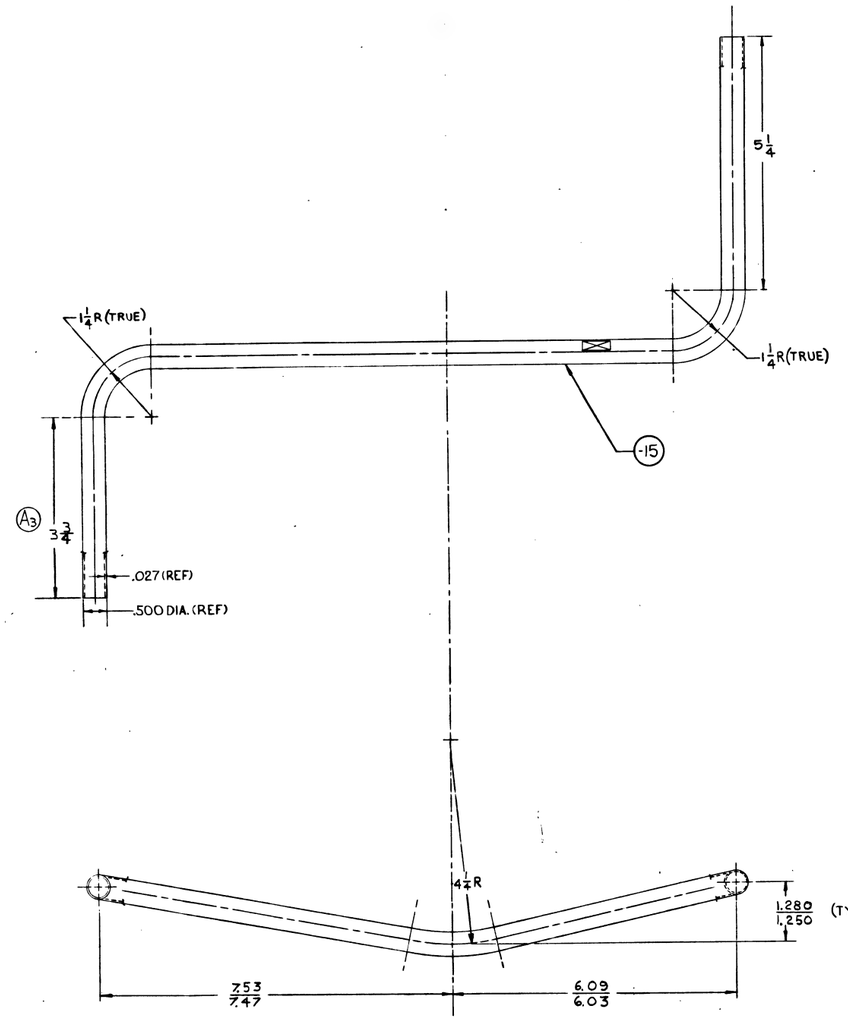
SIZE	CODE IDENT NO.		
B	26512	LDW270-10019	A

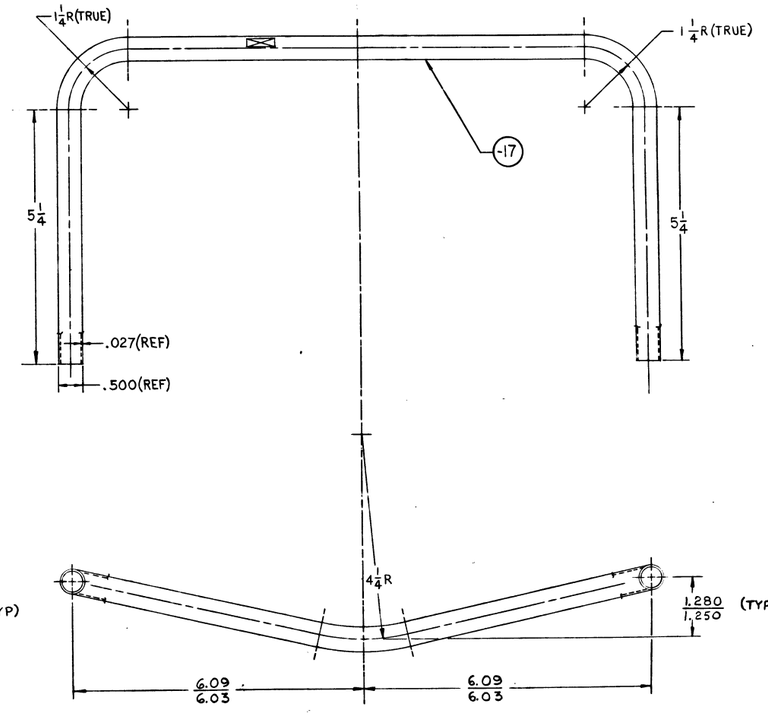
SCALE NONE SHEET 2.00

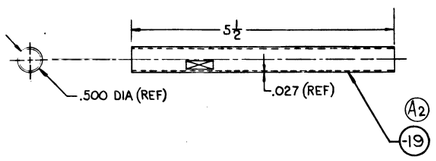
ENG 77.2 7-65

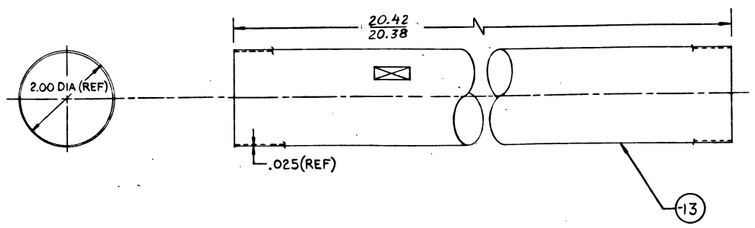
01

NAS 9-1100









MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.	√
FILLET AND INSIDE CORNER RADII TOLERANCES .010R TO .062R ± .010; .063R TO .250R ± .015; OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
250 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LEM	SIZE E	CODE IDENT NO. 26512	LDW270-10019 A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-10019 | EO NO. A2
CONTROL INFO NO. LEM-5-7839

NG 32.1 REV 3-65

1. CREATE -19 TUBE, IDENTICAL TO & TO REPLACE -11 TUBE EXCEPT THAT TUBE LENGTH OF -11 IS $4\frac{3}{4}$ IN. & $5\frac{1}{2}$ IN. IS REQ'D FOR -19.

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	

REASON FOR EO: -11 TUBE TO SHORT

DESCRIPTION OF EO: ADDED -19. REMOVED -11.

GAEC C EO RELEASE: FK

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LTA-3(3)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: REWORK | -11 SCRAP

PRIORITY: C

DRAWING TITLE: TUBE, HEAT EXCHANGER SIMULATOR D/S PROPULSION

DRAWING NO.: LDW270-10019

EO NO.: A2

	APPROVED BY	DATE	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGR	PROJ. ENGR	GOAC
	AEG	8/12/66			AD...	24	CH	[illegible]	[illegible]
	[illegible]	8/12/66			[illegible]	[illegible]	9-26-66	[illegible]	[illegible]
		7-26-66							

ISSUED BY: LIAISON - J. Mc GILL X-6452 SECTION: PROP - THOMPSON GROUP NO. _____ PL 3E

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

LIAISON ENGINEERING #5 ENGINEERING ORDER

DWG. NO. LDW 270-10019 | EO NO. B1

CONTROL INFO NO. LM-5-9087

THIS IS A REVISION OF E.O. A3

REMOVE LTA-3 EFF. FROM E.O. A3

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG

REASON FOR EO: LTA-3 NOT AFFECTED BY ORIGINAL CHANGE PER EO A3

DESCRIPTION OF EO: REF. E.O. A3. REMOVED LTA-3 EFF.

GAEC EO RELEASE: C

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM	LTA-3 (13)		

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO | DISPOSITION OF PARTS: N/A REWORK | SCRAP

PRIORITY: C

DRAWING TITLE: HEAT EXCHANGER TUBE SIMULATOR DESCENT PROP.

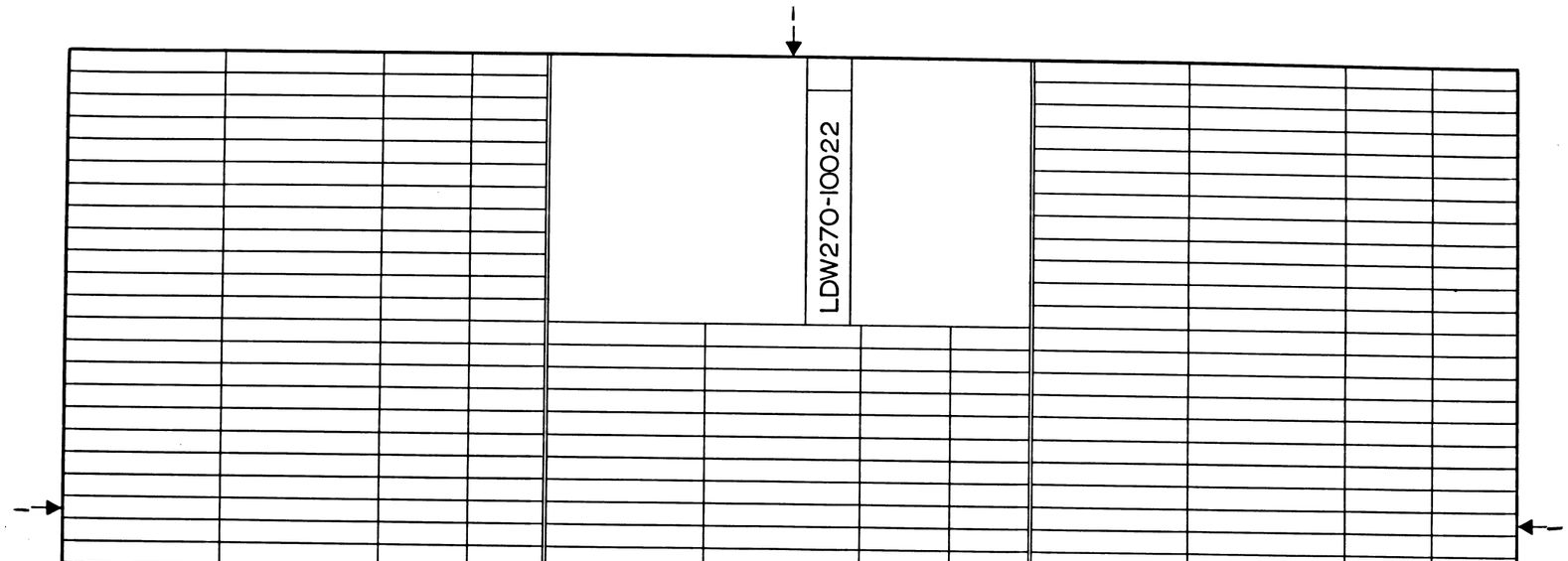
DRAWING NO.: LDW270-10019

EO NO.: B1

APPROVED BY	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
DATE					9/26		

ISSUED BY LIAISON-HEDGES-2017 SECTION PROPULSION GROUP NO. PL

260



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

LEM	LDW270-28352	LTA-8(18)	2EA
LEM	LDW270-23352	LTA-3(13)	2EA

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW270-10022-11&13		GAEC SCH NO. 55	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00		3.00			
REV								
SHEET								
REV								
SHEET								
REV								

LAST SECT LTR USED	
LAST DASH NO. USED	-13

GRUMMAN REL INFO

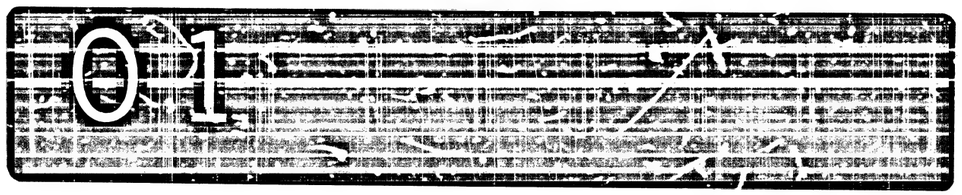
PRIM NO.	FS(00)	6-22-6
486	MP	X

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 .020 ± 1/2°

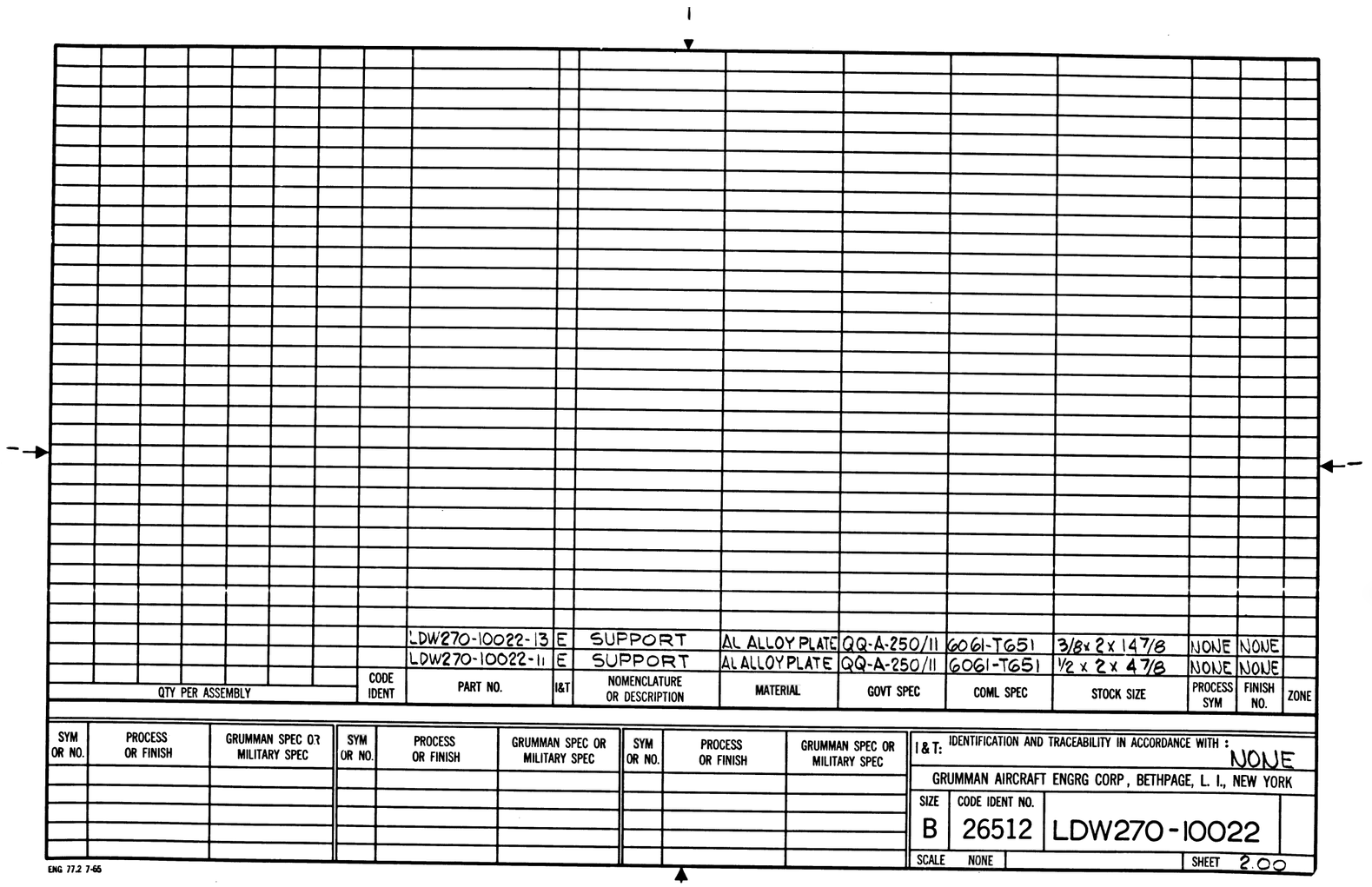
ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO.	NAS9-1100	LINE ITEM # 1	DOCUMENTATION TYPE 2 II
DRAWN BY	A. STERNBERG 6-14-66	RELIABILITY	GRUMMAN AIRCRAFT ENGRG CORP
LAYOUT BY	GIMSON		BETHPAGE, L. I., NEW YORK
CHECKED BY	ARATOLI 6-15-66		SUPPORT
GR LEADER	6-20-66		HEAT EXCHANGER SIMULATOR
VEH DESINT			DESCENT PROPULSION
STRUCTURES	6-21-66	PROJ ENGR	SIZE B / CODE IDENT NO. 26512 / LDW270-10022
STRUCTURES	for	REL GROUP	SCALE NONE / SHEET 1.00 OF 3
WEIGHTS	L Garcia 6/		

ENG 77.1 12-65



NAS 9-1100



QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW270-10022-13	E	SUPPORT	AL ALLOY PLATE	QQ-A-250/11	6061-T651	3/8 x 2 x 14 7/8	NONE	NONE	
		LDW270-10022-11	E	SUPPORT	AL ALLOY PLATE	QQ-A-250/11	6061-T651	1/2 x 2 x 4 7/8	NONE	NONE	

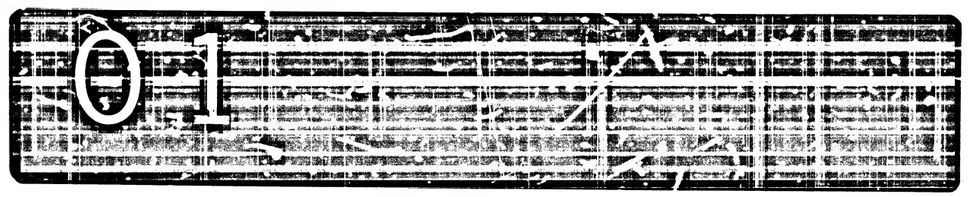
SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

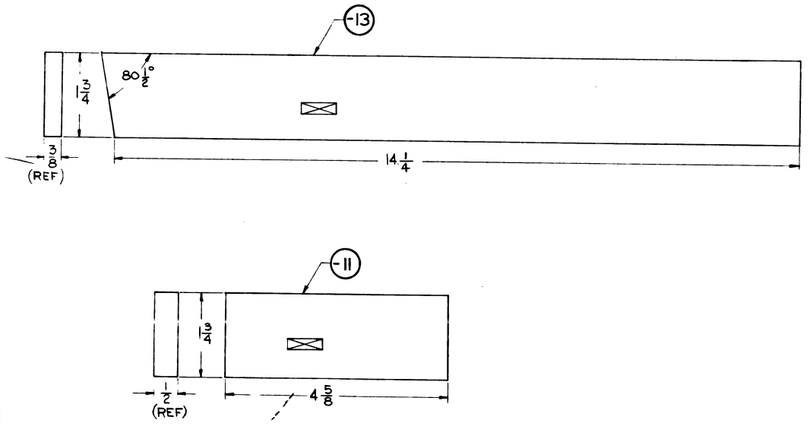
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-10022	
SCALE NONE			SHEET 2.00

ENG 77.2 7-65



NAS 9-1100



MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

CUSTOMER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ~~USE BOTH SIDES IF NECESSARY.~~	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET, AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
500 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ⚡ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
C	26512	LDW270-10022

LEM — MODEL OR END ITEM — SCALE FULL — SHEET 300

LDW270-10022 B

NAS 9-1100

01 A

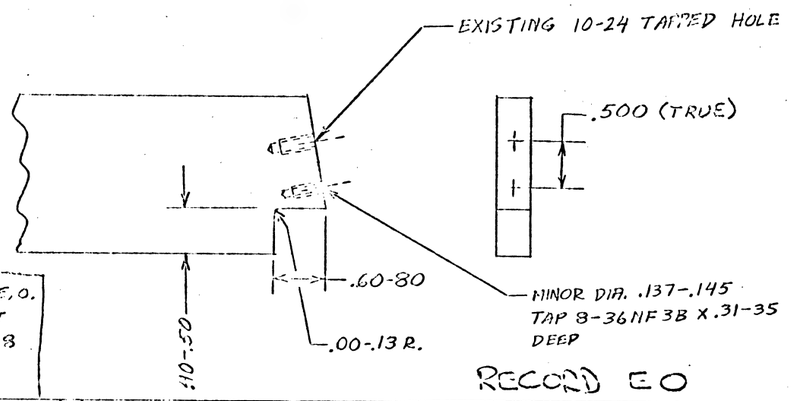
ENG 32-1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LDW270-10022 | EO NO. A1

CONTROL INFO NO. LEM270-613



PRINTING RECORD E.O. THIS REWORK NOT REQD. FOR LTA-3

RECORD EO

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG

REASON FOR EO: INTERFERENCE WITH LTA-3 STRUCTURE

DESCRIPTION OF EO: ADDED DIMS. .40-.50, .60-.80, .500 & .00-.13R. ADDED HOLE: MINOR DIA. .137-.145 TAP 8-36 NF 3B X .31-.35 DEEP. ADDED E.O. TO RECORD E.O. RLR FOR LTA-3

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: CAEC UNIT NO	EFFECTIVITY: SUB CONTR UNIT NO
LEM		LTA-3 (15)	
		LTA-8 (18)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓	✓	✓	

APPROVED BY:	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGR	PROJ ENGR
DATE						

CAEC EO RELEASE: LE 8-9-66

PRIORITY: C

DRAWING TITLE: SUPPORT - HEAT EXCHANGER SIMULATOR - D/S PROPULSION

DRAWING NO.: LDW270-10022

EO NO.: A1

ISSUED BY A. GIMSON - 7935 SECTION PROPULSION GROUP NO. 270 PL 35

NG 32.1 REV 3-65

LIAISON ENGINEERING #5

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-10022 | EO NO. A-2
CONTROL INFO NO. LEM-5-9042

THIS EO CANCELS EO A1

5

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG

REASON FOR EO: ALREADY ACCOMP PER EO A5-LDW270-23352

DESCRIPTION OF EO: CANCELLED EO A1

GAEC EO RELEASE: 11

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
EIA		LTA-3 (13)	
		LTA-8 (13)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: REWORK ✓ | SCRAP
PRIORITY: C

APPROVED BY / DATE: 5-1-66

SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
			5-2-66	5-2-66	5-2-66	5-2-66

DRAWING TITLE: SUPT - HT EXCHANGER - SIMULATOR D/S - PROPULSION
DRAWING NO.: LDW270-10022
EO NO.: A2

ISSUED BY LIAISON - HUBER X6452 SECTION PROPULSION GROUP NO. 270 PL 35

LDW270-10024

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW270-54010	LM-15(43)	1
		LM-14(44)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(38)	1
		LM-7(37)	1
		LM-6(36)	1
		LM-5(35)	1
	LDW270-54010	LM-4(34)	1
LM	LDW270-53010	LM-3(33)	1
PART NO. LDW270-10024-11		GAEC SCH NO. 45	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00		2.00		3.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	
LAST DASH NO. USED	-11

GRUMMAN REL'D INFO
PRIM NO. E009
459 MP-14 12/2/66

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS-9-1100 LINE ITEM #9 DOCUMENTATION TYPE II

DRAWN BY	V. SIBILLA 12-20	RELIABILITY	
LAYOUT BY	E. ARRIETTA 12-20		
CHECKED	A. RATOLI 12-12-66		
GROUP LEADER	R. Nguyen 12/14	PROPULSION	R.D. 12/14/66
VEH DES. INT.	J. Taratin 12/15/66		
STRUCTURES	BW 12-20	PROJ ENGR	12-20
STRUCTURES	12/21	REL GROUP	12/21/66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

WASHER
ASCENT STAGE-ENGINE SPACER

SIZE	CODE IDENT NO.	
B	26512	LDW270-10024

SCALE NONE SHEET 1.00 OF 3

ENG 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY	PART NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
C	LDW270-10024-11	E		WASHER	HR&CRES SH	MIL-S-6721	TYPE 321 ANL	.093 X 2 X 2	NONE	NONE	

CL=CLEANLINESS LEVEL PER LSP-14-2011

SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH NONE

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW270-10024

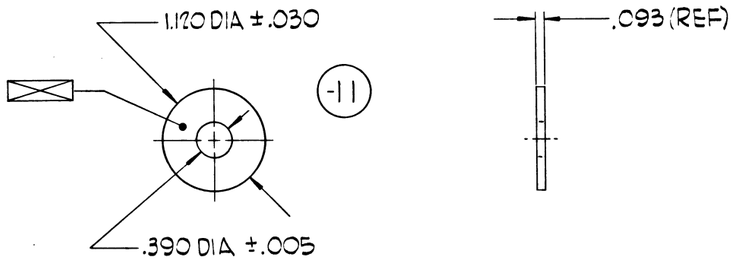
SCALE NONE SHEET 2 OF 2

ENG 77.2 5-64

01

NAS 9-1100

NOTE: NO TOOLING HOLES PERMITTED IN PART.



MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	√	FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.		FXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.		ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.			
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING		REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	√
		SYMBOL √A DENOTES SURFACE TO BE MACHINED	
		TOLERANCE ON FLANGES IS ± 1/32	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.		LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10			
200 FOR ALL DRILLED HOLES			
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS			

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

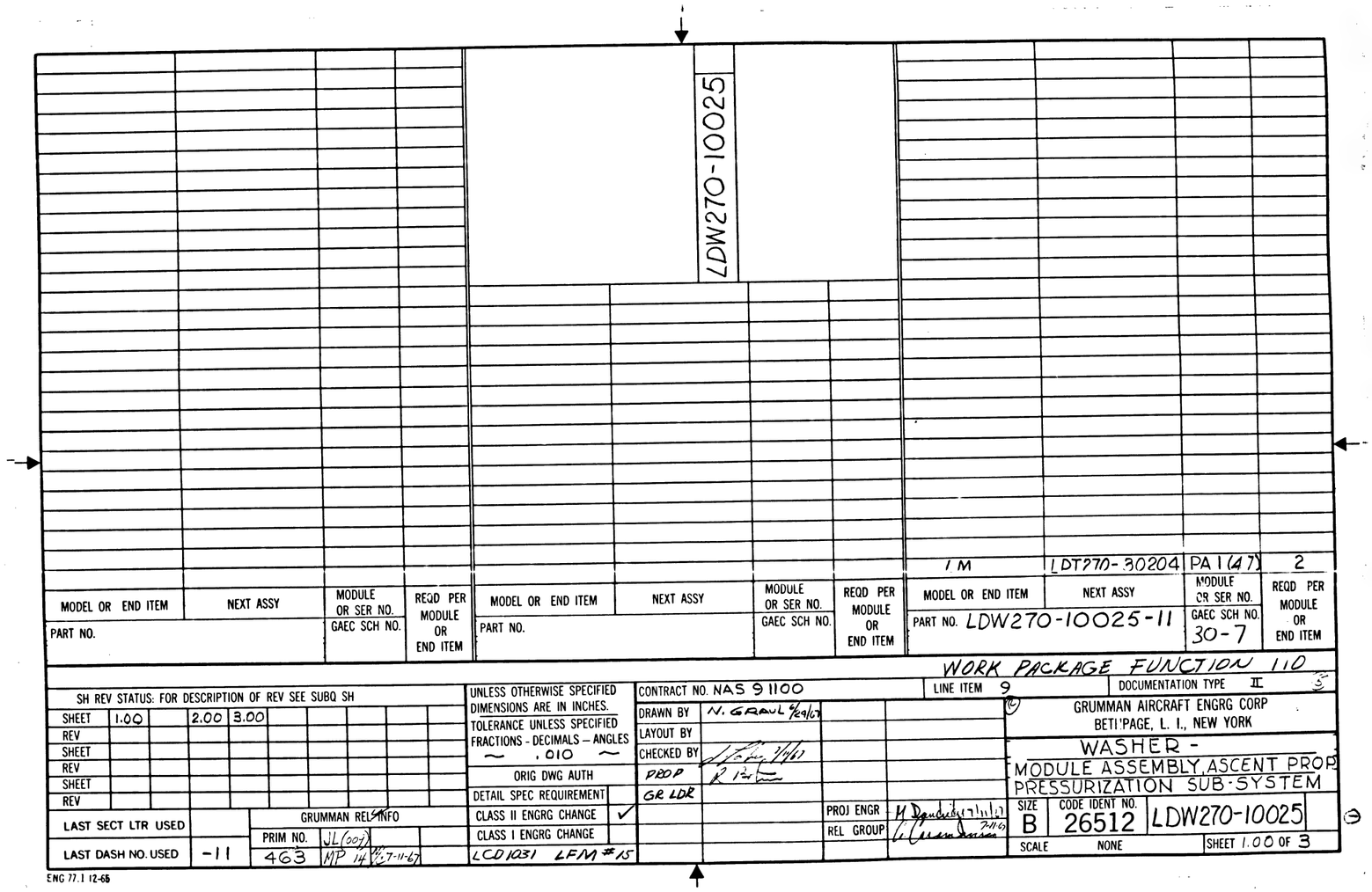
SIZE	CODE IDENT NO.	
B	26512	LDW270-10024

SCALE NONE SHEET 3.00

ENG 73.11 12-64

01

NAS 9-1100



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								1 M	LDT270-30204	PA 1 (47)	2
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW270-10025-11		GAEC SCH NO. 30-7	

WORK PACKAGE FUNCTION 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00		2.00	3.00						
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED	
LAST DASH NO. USED	-11

GRUMMAN REL INFO
PRIM NO. JL(009)
463 MP 14 7-11-67

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
~ .010 ~

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	✓
CLASS I ENGRG CHANGE	
LCD1031 LFM #15	

CONTRACT NO. NAS 9 1100 LINE ITEM 9 DOCUMENTATION TYPE II

DRAWN BY	N. GRAUL 6/9/67	PROJ ENGR	H Dandridge 7/11/67
LAYOUT BY		REL GROUP	L Greenberg 7-11-67
CHECKED BY	7/11/67		
PROD			
GR LDR			

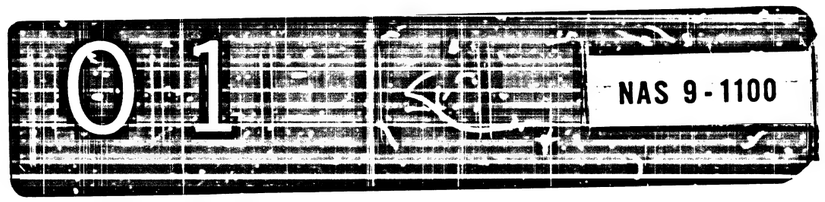
GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

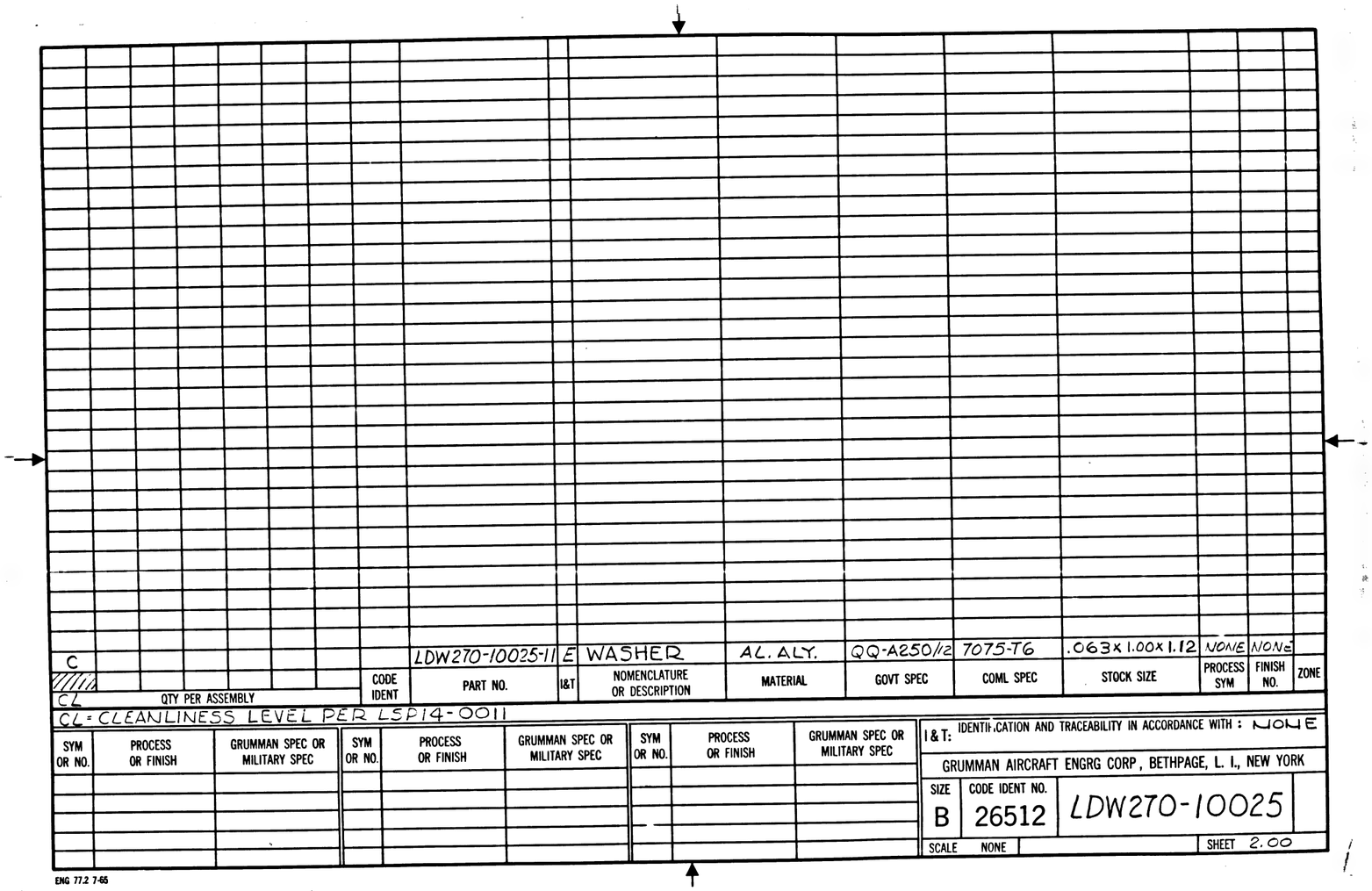
WASHER -
MODULE ASSEMBLY, ASCENT PROP PRESSURIZATION SUB-SYSTEM

SIZE	CODE IDENT NO.	
B	26512	LDW270-10025

SCALE NONE SHEET 1.00 OF 3

ENG 77.1 12-65





QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
C CL		LDW270-10025-11	E	WASHER	AL. ALY.	QQ-A250/12	7075-T6	.063 x 1.00 x 1.12	NONE	NONE	

CL = CLEANLINESS LEVEL PER LSP14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

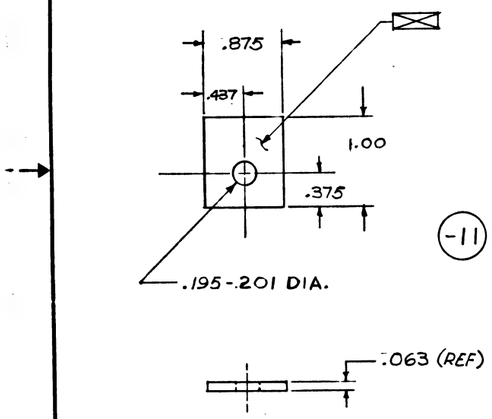
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW270-10025

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01 NAS 9-1100



MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG

RUBBER STAMPPART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊠ USE BOTH SIDES IF NECESSARY.	√	FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.		EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.		ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.			
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING		REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	√
		SYMBOL √ DENOTES SURFACE TO BE MACHINED	
		TOLERANCE ON FLANGES IS ± 1/32	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.		LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10			
200 √ FOR ALL DRILLED HOLES			
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS			

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-10025	
SCALE FULL			SHEET 3.00

ENG 72.11 12-64

Q1

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 10-63 **ENGINEERING ORDER**

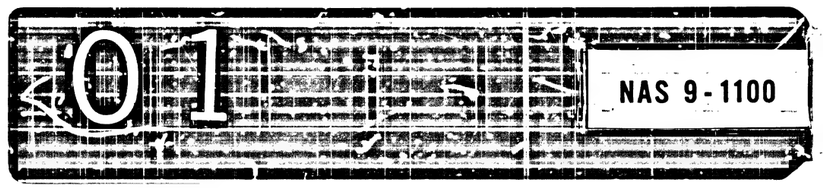
DWG. NO. LDW270-10025		EO NO. A1
CONTROL INFO NO. LM270-1051		

SHT 1.00 ADD TO MODEL BLOCK FOR -11

LM	LDW270-54201	LM4(34)-LM15(45)	2
LM	LDW270-53201	LM3(33)	2
LM	LDW270-52201	LM2(32)	2
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO	REQD PER MODULE OR END ITEM
PART NO: LDW270-10025-11			

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	√	LCD 1031												3
REASON FOR EO: ADD LM2-15 EFF FOR INSTL OF LSC270-721					DESCRIPTION OF EO: SHT 1.00 IN MODEL BLOCK ADDED FOR -11 LM2 THRU LM15 EFF												GAEC EO RELEASE	C
MODEL	EFFECTIVITY			DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY										
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	REVISE DWG	RECORD EO	REWORK	SCRAP	DATE	9/8	9/12/67								
LM		LM2(32)						M	PROP	PROD	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT		
		THRU		PRIORITY	DRAWING TITLE								DRAWING NO.				EO NO.	
		LM15(45)		C	WASHER - MODULE ASSEMBLY, ASCENT PROP. PRESSURIZATION SUB-SYSTEM								LDW270-10025				A1	

ISSUED BY J. PAVLICA x1471 GROUP LM PROPULSION DEPT 357 PLT 25



GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 10-63

DWG. NO. LDW270-10025		EO NO. A2
CONTROL INFO NO. LM270-1051		

SHT 1.00 ADD TO MODEL BLOCK FOR -11

EO NUMBER WAS A1

CJB 9-27-67

LM	LDW270-54201	LM4(34)-LM15(45)	2
LM	LDW270-53201	LM3(33)	2
LM	LDW270-52201	LM2(32)	2
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO	REQD PER MODULE OR END ITEM
PART NO: LDW270-10025-11			

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓ LCD 1031

REASON FOR EO: ADD LM2-15 EFF FOR INSTL OF LSC270-721

DESCRIPTION OF EO: SHT 1.00 IN MODEL BLOCK ADDED FOR -11 LM2 THRU LM15 EFF

GAEC EO RELEASE

MODEL	EFFECTIVITY			DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY								
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	REVISE DWG	RECORD EO	REWORK	SCRAP	DATE	9/18	9/15/67						
LM		LM2(32)		✓		✓		M	PROP	PROP	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
		THRU		PRIORITY		DRAWING TITLE					DRAWING NO.				EO NO.	
		LM15(45)		C		WASHER - MODULE ASSEMBLY, ASCENT PROP. PRESSURIZATION SUB-SYSTEM					LDW270-10025				A2	

ISSUED BY J. PAVLICA x1471

GROUP LM PROPULSION DEPT 357 PLT 25

01

NAS 9-1100

B

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LDW270-10025		EO NO. A3
CONTROL INFO NO. LM 270-1149		

ON SHT 1.00 IN M/B

REVISE AS SHOWN: PA-1(47) QUANTITY 6 WAS 2

LM	LDT270-30204	PA-1(47)	6
MODEL	N/A	MODULE	REQD
LDW270-10025			

LFM

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCU 2019 CCN 067

REASON FOR EO: LM-3 UPDATE ON PA-1(47)

DESCRIPTION OF EO: REVISED PA-1(47) QUANTITY (6 WAS 2 REQD)

GAEC EO RELEASE: 5A 1/6/67

MODEL	EFFECTIVITY: GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	E1 [redacted]	
	LFM 50	PA-1(47)

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: NOT REWORK	REQD SCRAP
✓			

APPROVED BY				RB			
DATE	11/15/66			11/21/66		1/6/67	1/6/67
		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG

PRIORITY: C

DRAWING TITLE: WASHER-MODULE ASSY, ASCENT PROP. PRESS SUB-SYSTEM

DRAWING NO.: LDW270-10025

EO NO. A3

ISSUED BY P.A. CAPPELLI X1471 SECTION PROPULION GROUP NO. 270 PL 25

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-10025 | EO NO. A4
CONTROL INFO NO. LM 270-1307

ENG 32.1 REV 3-65

ON -11

IN M/B ADD:

LM	LDW270-54201	DMSM(77)	2 REQD
LM	LDW270-54201	TEST 75	2 REQD

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG ✓ LCO 3266 LCO 3461 PAA136A (5)

REASON FOR EO
REALLOCATION OF ASCENT PRESS. MODULES

DESCRIPTION OF EO
FOR -11
ADDED: N/A LDW 270-54201 DMSM(77) 2 REQD
& N/A LDW-70-54201 TEST 75 2 REQD

GAEC EO RELEASE
10/1/68

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		DMSM(77)	
LM		TEST 75	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO | DISPOSITION OF PARTS: NOT REQD REWORK | SCRAP
PRIORITY C

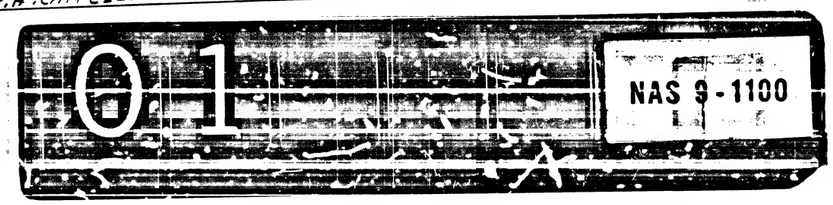
APPROVED BY / DATE: [illegible] 9/16/68; P.J.P. 9/16/68; SUPPORT; RELIAB GROUP; GROUP LEADER; STRESS GROUP; LIAISON ENGRG; PROJ ENGRG 10-1-68

DRAWING TITLE: WASHER - MODULE ASSY. ASCENT PROP. PRESS. SUB-SYSTEM)

DRAWING NO. LDW270-10025

GOVT. EO NO. A4

ISSUED BY P.A. CAPPELLI 1471 SECTION PROPULSION GROUP NO. 270 PL 25



GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 22.2 REV 3-65

DWG. NO. LEO270		EO NO. 80
CONTROL INFO NO. LM270-1369		

REMOVE LM-15(45) EFFECTIVITY FROM THE FOLLOWING DRAWINGS:

DRAWING NO.	*DASH NO	TITLE	CHANGE NO
LDW270P10000	-1	SEE DWG	B4
P10001	-1		C3
M10027	-1		A6
M10039	-11		A7
M10045	-11		A2
M10077	-11-1		A8
-10025	-11		A5
-10030	-1 & -2		A2
-10031	-1, -3 & -5		A3
-23308	-1		B9
-51309	-5		B3
-51401	-1, -3 & -7		C1
-51451	-1, -3, -5, -9, -11 -13 & -15		C1
-51459	-5 & -7		A7
-52302	-1-1		A6
-52306	--1		A6
-52307	-1-1		A4
-52309	-1		B5
-53202	-1-2		A4
-53311	-1 & -2		A3
-54201	-21 & -23		H7
LDW270-54310	-5	SEE DWG	B4

(5)

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENG'RG CHG		LCO 3587	LCRP #1 SHT 1 & 2.

REASON FOR EO: ELIMINATION OF PROPULSION SUB-SYST FROM LM-15 (REF TWX JC32-68-1977 & 2026)

DESCRIPTION OF EO: FOR * REMOVED LM-15 EFFECTIVITY.

GAEC EO RELEASE: JK 12/2/68

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM		LM-15 (45)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓			✓

APPROVED BY	PROJ ENGR	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
J.T.				12/6/68			12/11/68
DATE 12/3/68							12-12-68

PRIORITY: C

DRAWING TITLE: SEE DWG

DRAWING NO.: LEO270

EO NO.: 80

ISSUED BY P. CAPPELLI 1271 SECTION PROPULSION GROUP NO. 270 PL 25

NAS 9-1100

LDW270-10030

									LM	LDW270-54201	LM-15(47) -14(44) -13(43) -12(42) -11(41) -10(40) -9(39)	1 EA
										LDW270-54201 LDW270-51303	-8(38) -15(45) -14(44) -13(43) -12(42) -11(41) -10(40) -9(39)	
									LM	LDW270-51303	LM-8(38)	1 EA

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW270-10030-1&-2		GAEC SCH NO.	

WORK PACKAGE FUNCTION 1.1.8 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00		2.00	3.00	4.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	
LAST DASH NO. USED	-2

GRUMMAN REL INFO
PRIM NO. JK(009) S
463/484 (ME 16) 11/3/68

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS — ANGLES
~ ~ ~

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 3491	
ECP H089	

CONTRACT NO. NAS 9-1100 | LINE ITEM 9 | DOCUMENTATION TYPE II

DRAWN BY	P.N. CAPPELLI	11-9-68		
LAYOUT BY				
CHECKED BY	J. Smith 11/4/68			
S/D LEADER	J. Grunwald 11/6/68			
PROP.	R. Bates 11/6/68		PROJ ENGR	R. Bates 11/6/68
			REL GROUP	J. Marsh 11-6-68

(E) GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CHECK VALVE
PROP. ASCENT & DESCENT
STAGE - HELIUM.

SIZE	CODE IDENT NO.	
B	26512	LDW270-10030

SCALE NONE | SHEET 1.00 OF 4

ENG 77.1 12-65

0 21

NAS 9-1100

	QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
N			LDW270-10030-3	S	CHECK VALVE				MAKE FROM LSC 270-817-4			
N			LDW270-10030-1	S	CHECK VALVE				MAKE FROM LSC 270-817-3			

SEAL PER LSP 14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : LPC 19-2 (GRUMMAN) LPC 19-3 (VENDOR)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW270-10030

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01
NAS 9-1100

NOTES:

1 - CHECK VALVES LSC270-817-3 & -4 SHALL BE SUBJECTED TO A VIBRATION-FLUSH CLEANING IN ACCORDANCE WITH THE FOLLOWING PROCEDURE:

a) VALVE SHALL BE MOUNTED SO THAT THE INLET-OUTLET AXIS IS VERTICAL AND THE FLOW DIRECTION IS DOWN.

b)

FREQUENCY	60 cps ± 15%
AMPLITUDE	± 2 g ± 20%
TIME	5-10 MINUTES
FLOW	2-5 gpm (60-80% FROM OUTLET, REMAINDER THRU TEST PORTS "A" & "B".

c) A MINIMUM OF FOUR (4) FLUSHES FOLLOWED BY A LIQUID PATCH TEST AFTER EACH FLUSH SHALL BE MADE. THE LAST THREE (3) PATCH TESTS SHALL VERIFY A CLEANLINESS LEVEL "N" AS DEFINED IN LSP14-0011.
LESS THAN FOUR (4) FLUSHES MAY BE MADE AND ONLY THE LAST TWO (2) PATCH TESTS CONFORMING LEVEL "N" IF TEST DATA SUBSTANTIATES THAT A STABILIZED LEVEL "N" CLEANLINESS CAN BE ATTAINED AND CONFIRMED WITH FEWER FLUSHES AND LEVEL "N" PATCH TESTS. ANY SUCH CHANGES CAN ONLY BE MADE WITH WRITTEN APPROVAL OF ENGINEERING.

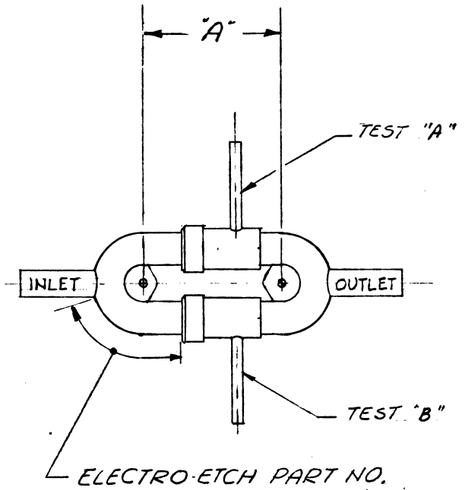
d) AFTER THIS PROCEDURE HAS BEEN ACCOMPLISHED REIDENTIFY VALVES BY ELECTRO-ETCH PROCESS PER LSP14-4706 AS FOLLOWS:
LSC 270-817-3 MARK "LDW 270-10030-1 CL "N"
LSC 270-817-4 MARK "LDW 270-10030-2 CL "N".

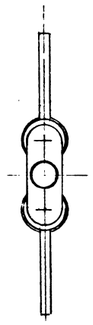
2 - LDW 270-10030-1 & -2 VALVES SHALL BE PIT TESTED PER LPT 270-817

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-10030	
SCALE		SHEET 3.0c	

ENG 73.1 6-64

01 NAS 9-1100



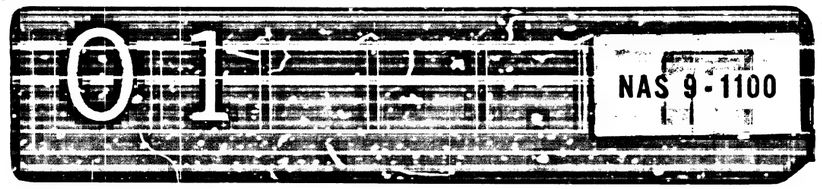


DASH #	DIM. "A"
-1	3.140 (REF)
-2	3.030 (REF)

LDW 270-10030-1 (MADE BY REWORKING LSC 270-817-3 SEE NOTE #1)
LDW 270-10030-2 (MADE BY REWORKING LSC 270-817-4 SEE NOTE #1)

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-10030	
SCALE 1/2		SHEET 4.00	

ENG 72.1 6-64



GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LEO 270 | EO NO. 79

CONTROL INFO NO. LM270-1371

DESCRIPTION OF E.O.

ON DWG SHOWN BELOW; EFFECTIVITY WAS LM-8 THRU LM-15
S/B LM 9-(39) THRU LM-15 (45)

MODEL	PART NO.	TITLE	NEXT ASSY	MODULE	REQD	CHANGE NO
LM	LDW270-54201-23	SEE DWG	LDW270-54200	LM-9 THRU-15	1EA	H6
	LDW270-54201-21					
	LDW270-51309-5		LDW270-51304		1	B2
	LDW270-10030-1		LDW270-51309		1EA	A1
	-2		LDW270-54201		1EA	
	LDW270-10031-1, -3 & -5		LDW270-54201		1EA	A1
LM	LDW270M10077-11-1	SEE DWG	LDW270-54201	LM-9 THRU-15	2	A7

DETAIL SPEC RFQ | CL II ENGRG CHG | CL I ENGRG CHG | X LCD 3491 LCRP #5 ECP H089

REASON FOR EO: EFFECTNITY REVISED PER PROGRAM DIRECTIVE

DESCRIPTION OF EO: SEE ABOVE

GAEC EO RELEASE 12/4/68 (5)

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-8 (38)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: REWORK | SCRAP ✓

APPROVED BY	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
Pruett	Cowan			
DATE 12/5/68	12/9/68		12-4-68	12-10-68
PROP	SUPPORT	RELIAB GROUP		

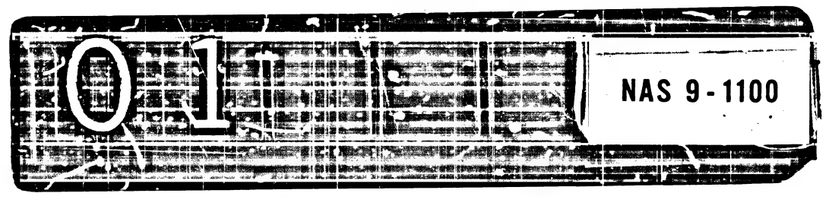
PRIORITY: C

DRAWING TITLE: SEE DWG

DRAWING NO.: LEO270

EO NO.: 79

ISSUED BY P. CAPPELLI SECTION PROPULSION GROUP NO. 270 PL 25



NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.2 REV 3-65

DWG. NO. LEO270 | EO NO. 80
CONTROL INFO NO. LM-270-1369

REMOVE LM-15(45) EFFECTIVITY FROM THE FOLLOWING DRAWINGS:

DRAWING NO.	*DASH NO	TITLE	CHANGE NO
LDW270P10000	-1	SEE DWG	B4
P10001	-1		C3
M10027	-1		A6
M10039	-11		A7
M10045	-11		A2
M10077	-11-1		A8
-10025	-11		A5
-10030	-1 & -2		A2
-10031	-1, -3 & -5		A3
-23308	-1		B9
-51309	-5		B3
-51401	-1, -3 & -7		C1
-51451	-1, -3, -5, -9, -11 -13 & -19		C1
-51459	-5 & -7		A7
-52302	-1-1		A6
-52306	-1		A6
-52307	-1-1		A4
-52309	-1		B5
-53202	-1-2		A4
-53311	-1 & -2		A3
	-		
-54201	-21 & -23		H7
LDW270-54310	-5	SEE DWG	B4

(5)

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | LCO 3587 | LCRP #1 SHT 1 & 2.

REASON FOR EO: ELIMINATION OF PROPULSION SUB-SYST FROM LM-15 (REF TWX JC32-68-1977 & 2028)

DESCRIPTION OF EO: FOR * REMOVED LM-15 EFFECTIVITY.

GAEC EO RELEASE: 12-12-68

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-15 (45)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: REWORK | SCRAP ✓

APPROVED BY	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
DATE 12-11-68			12/11/68			12-12-68

PRIORITY: C
DRAWING TITLE: SEE DWG
DRAWING NO.: LEO270
EO NO.: 80

ISSUED BY P. CAPPELLI 1471 SECTION PROPULSION GROUP NO. 270 PL 25

LDW270-10031			
LM	LDW270-54305	LM15(45)	2
		14(44)	2
		13(43)	2
		12(42)	2
		11(41)	2
		10(40)	2
		9(39)	2
	LDW270-54305	LM8(38)	2
	LDW270-54201	LM15(45)	2
		14(44)	2
		13(43)	2
		12(42)	2
		11(41)	2
		10(40)	2
		9(39)	2
LM	LDW270-54201	LM8(38)	2
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
PART NO. LDW270-10031-5			

LDW270-10031			
LM	LDW270-54305	LM15(45)	2
		14(44)	2
		13(43)	2
		12(42)	2
		11(41)	2
		10(40)	2
		9(39)	2
	LDW270-54305	LM8(38)	2
	LDW270-54201	LM15(45)	2
		14(44)	2
		13(43)	2
		12(42)	2
		11(41)	2
		10(40)	2
		9(39)	2
LM	LDW270-54201	LM8(38)	2
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
PART NO. LDW270-10031-3			

LDW270-10031			
LM	LDW270-54305	LM15(45)	1
		14(44)	1
		13(43)	1
		12(42)	1
		11(41)	1
		10(40)	1
		9(39)	1
	LDW270-54305	LM8(38)	1
	LDW270-54201	LM15(45)	1
		14(44)	1
		13(43)	1
		12(42)	1
		11(41)	1
		10(40)	1
		9(39)	1
LM	LDW270-54201	LM8(38)	1
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
PART NO. LDW270-10031-1			

WORK PACKAGE FUNCTION 118 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH								
SHEET	100		200		300		400	
REV								
SHEET								
REV								
SHEET								
REV								

LAST SECT LTR USED		GRUMMAN REL INFO	
LAST DASH NO. USED	- 5	PRIM NO.	463/434

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 3401, ECP 1089	

CONTRACT NO. NAS 9-1100 LINE ITEM 9 DOCUMENTATION TYPE II

DRAWN BY	P. CHIAPPELLI	11-8-65
LAYOUT BY		
CHECKED BY	S. SZALWINSKI 11-8-65	11-6-65
LEADER	J. Lewitt	11/10/65
PROJ ENGR		11/16/65
REL GROUP	J. Marchese	

(E) GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

COUPLING
PROP. ASCENT & DESCENT
FILL & TEST DISCONNECT

SIZE	CODE IDENT NO.	
B	26512	LDW270-10031

SCALE NONE SHEET 100 OF 4 (-)

ENG 17.1 12-65

01

NAS 9-1100

N								LDW270-10031-5	S	DISCONNECT COUPLING				MALE FROM LSC 270-813-25			
N								LDW270-10031-3	S	DISCONNECT COUPLING				MALE FROM LSC 270-413-24			
N								LDW270-10031-1	S	DISCONNECT COUPLING				MALE FROM LSC 270-813-23			
REQD PER ASSY.	QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
2 L																			

CLEANLINESS LEVEL PER LSP17-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : LPC 19-2 (GRUMMAN) LPC 19-3 (VENDOR)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW270-10031

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTES:

1 – COUPLINGS LSC 270-813-23, -24 & -25 SHALL BE SUBJECTED TO A VIBRATION-FLUSH CLEANING IN ACCORDANCE WITH THE FOLLOWING PROCEDURE:

a) REMOVE CLOSURE AND WITH DISCONNECT IN A VERTICAL POSITION MAINTAIN POPPET OPEN AND DIRECTION OF FLOW DOWN.

b) STEP 1: WITH TUBE END POINTING UP APPLY FREON TF (PCA GRADE) CONFORMING TO REQUIREMENTS OF LSP 14-0020 AND FLOW 1-3 GPM.

c) WHILE UNDERGOING FREON FLOW, VIBRATE DISCONNECT AT THE FOLLOWING LEVEL:

FREQUENCY	60 CPS ± 15%
AMPLITUDE	±2 g ±20%
TIME	5-10 MINUTES.

d) STEP 2: REPEAT THE ABOVE PROCEDURE APPLYING FREON TO POPPET STEM END, TUBE IN DOWN POSITION.

e) AFTER BOTH STEPS OF PROCEDURE HAVE BEEN ACCOMPLISHED, LIQUID PATCH TEST DISCONNECT BY PASSING FLOW FROM POPPET SIDE THRU AND OUT OF TUBE END. REPEAT PROCEDURE UNTILL A MINIMUM OF TWO (2) SUCCESSIVE PATCH TESTS VERIFY A CLEANLINESS LEVEL OF "N" AS DEFINED IN LSP 14-0011.

f) AFTER CLEANLINESS LEVEL "N" HAS BEEN ATTAINED, REIDENTIFY DISCONNECTS BY ELECTRO-ETCH POCESS PER LSP 14-4706 AS FOLLOWS:

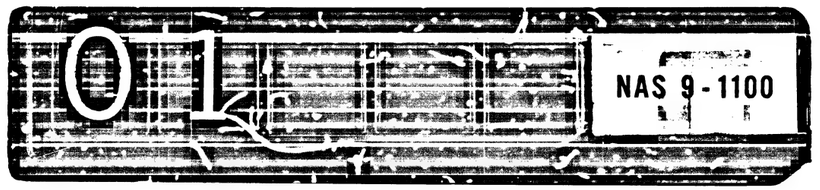
LSC 270-813-23 ETCH LDW 270-10031-1 CL "N"
LSC 270-813-24 ETCH LDW 270-10031-3 CL "N"
LSC 270-813-25 ETCH LDW 270-10031-5 CL "N."

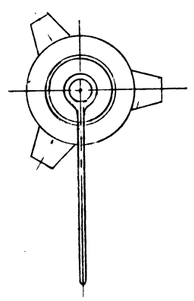
2 – LDW 270-10031-1, -3 & -5 DISCONNECTS SHALL BE PIT TESTED PER LPT 270-813.

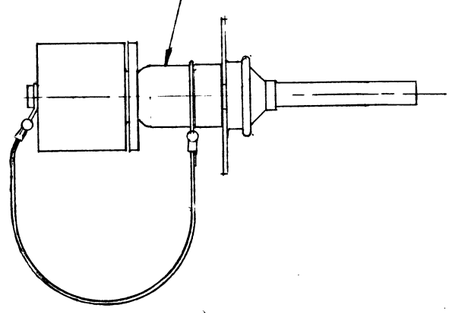
3 – DISCONNECT CLOSURE TO BE FLUSHED WITH FREON INTERNALLY AND EXTERNALLY AFTER TEST PRIOR TO ATTACHMENT.

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW 270-10031	
SCALE		SHEET 3.00	

ENG 73.1 6-64







ELECTRO-ETCH PART NO. AND "CL N" IN THIS AREA WITH 1/8 HIGH CHARACTERS

LDW270-10031-1 (THIS PART MADE BY REWORKING "LSC 270-813-23" SEE NOTE #1)
LDW270-10031-3 (THIS PART MADE BY REWORKING "LSC 270-813-24" SEE NOTE #1)
LDW270-10031-5 (THIS PART MADE BY REWORKING "LSC 270-813-25" SEE NOTE #1)

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-10031	
SCALE 1/1		SHEET 4.00	

ENG 73.1 6-64

Q1

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LEO 270		EO NO. 79
CONTROL INFO NO. LM270-1371		

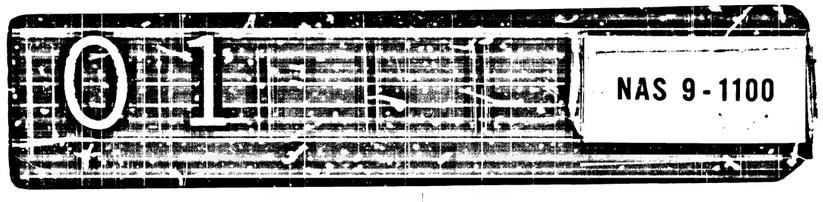
DESCRIPTION OF E.O.

ON DWG SHOWN BELOW; EFFECTIVITY WAS LM-8 THRU LM-15
S/B LM 9-(39) THRU LM-15 (45)

LM ✓	LDW270-54201-23 LDW270-54201-21	SEE DWG	LDW270-54200	LM-9 THRU-15	1 EA	H6
	✓ LDW270-51309-5		LDW270-51304		1	B2
	✓ LDW270-10030 -1 -2		LDW270-51309 LDW270-54201		1 EA 1 EA	A1
	✓ LDW270-10031-1, -3 & -5		LDW270-54201		1 EA	A1
LM	LDW270M10077-11-1	SEE DWG	LDW270-54201	LM-9 THRU-15	2	A7
MODEL	PART NO.	TITLE	NEXT ASSY	MODULE	REQD	CHANGE NO

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	LCD 3491 LCR'D #5 ECP H089											
REASON FOR EO: EFFECTNITY REVISED PER PROGRAM DIRECTIVE					DESCRIPTION OF EO: SEE ABOVE										GAEC EO RELEASE: 12/13/68	
MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG ✓	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP ✓	APPROVED BY	Petti			Comm			Gilmartin	Thal
								DATE	12/9/68			12/9/68			12-9-68	12/10/68
LM		LM-8 (38)						PROP	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG		
				PRIORITY: C	DRAWING TITLE: SEE DWG						DRAWING NO.: LEO 270				EO NO.: 79	

ISSUED BY P. CAPPELLI SECTION PROPULSION GROUP NO. 270 PL 25



ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-10031		EO NO. A2
CONTROL INFO NO. LM 270-1373		

THIS IS A REVISION CHANGE A-1 OF LEO 270-79

LDW 270-10031-1, -3 & -5 LDW 270-54201 LM-9 THRU LM15 · 1 EA REQD

S/B

LDW 270-10031-1 ↓ -3 ↓ -5	LDW 270-54201 ↓	LM-9 THRU-15 ↕ LM-9 THRU-15	1 2 2
LDW 270-10031-1 ↓ -3 ↓ -5	LDW 270-54305 ↓		1 2 2
PART NO	NEXT ASSEMBLY	MODULE	REQD

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCD 3491 ECP H089 LCRP 6-A 5

REASON FOR EO: REVISED QUANTITIES

DESCRIPTION OF EO: REF A-1 CHANGE: REVISED QUANTITIES; FOR N/A LDW270-54201 1 EA S/B -1(1) -3(2) -5(2). ADDED N/A LDW 270-54305 AND QUANTITIES REQD

GAEC EO RELEASE 12-11-68

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-5	
		THRU	
		LM-15	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
		✓	

APPROVED BY	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
P. CAPPELLI			R. Brown			
DATE 12/11/68			12/11/68		12/11/68	12/12/68
PROP						

PRIORITY C

DRAWING TITLE: COUPLING - PROP. ASCENT & DESCENT FILL & TEST DISCONNECT

DRAWING NO. LDW270-10031

EO NO. A2

ISSUED BY P. CAPPELLI 1471 SECTION PROPULSION GROUP NO. 270 PL 25

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.2 REV 3-65

DWG. NO. LEO270 | EO NO. 80
CONTROL INFO NO. LM270-1369

REMOVE LM-15(45) EFFECTIVITY FROM THE FOLLOWING DRAWINGS:

DRAWING NO.	* DASH NO	TITLE	CHANGE NO
LDW270P10000	-1	SEE DWG	B4
P10001	-1		C3
M10027	-1		A6
M10039	-11		A7
M10045	-11		A2
M10077	-11-1		A8
-10025	-11		A5
-10030	-1 & -2		A2
-10031	-1, -3 & -5		A3
-23308	-1		B9
-51309	-5		B3
-51401	-1, -3 & -7		C1
-51451	-1, -3, -5, -9, -11 -13 & -19		C1
-51459	-5 & -7		A7
-52302	-1-1		A6
-52306	-1		A6
-52307	-1-1		A4
-52309	-1		B5
-53202	-1-2		A4
-53311	-1 & -2		A3
-54201	-21 & -23		H7
LDW270-54310	-5	SEE DWG	B4

(5)

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | LCO 3587 LCR0#1 SHT 1 & 2.

REASON FOR EO: ELIMINATION OF PROPULSION SUB-SYST FROM LM-15 (REF TWX JC32-68-19776 2028)

DESCRIPTION OF EO: FOR * REMOVED LM-15 EFFECTIVITY.

GAEC EO RELEASE: 12/4/68 (12-12-68)

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-15 (45)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: REWORK | SCRAP ✓

	APPROVED BY	DATE
RELIAB. GROUP		
SUPPORT		12/3/68
GROUP LEADER		12/4/68
STRESS GROUP		
LIAISON ENGRG		12/4/68
PROJ ENGRG		12/4/68
DONE		12-12-68

PRIORITY: C
DRAWING TITLE: SEE DWG
DRAWING NO.: LEO 270
EO NO.: 80

ISSUED BY P. CAPPELLI 1471 SECTION PROPULSION GROUP NO. 270 PL 25

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG. NO. LDW270-10031 | EO NO. A4
CONTROL INFO NO. LM270-1383

REVISE NOTE 1 AS SHOWN BELOW:

NOTE 1.- b.)

(---- AND FLOW AT 100 PSIG INLET PRESSURE - APPROX. .25 GPM.)

WAS

(---- AND FLOW 1-3 GPM.)

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	/1 LCD 3491 (5)

REASON FOR EO: DISCONNECT CANNOT PASS 1-3 GPM FREON @ FLUSH RIG PRESSURE CAPABILITIES.

DESCRIPTION OF EO: REVISED NOTE #1 TO REDUCE FLOW REQUIREMENTS.

GAEC EO RELEASE: (B) 1/27/70

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM9(SD)	
		THRU	
		LM19(SD)	

DRAWING CHANGE REQD: REVISE DWG ✓; RECORD EO; REWORK; SCRAP
DISPOSITION OF PARTS: NOT REQ'D
PRIORITY: C

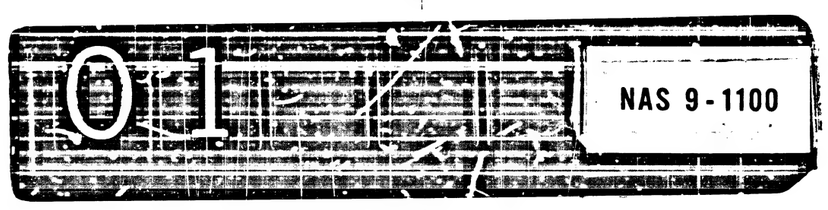
DRAWING TITLE: COUPLING-PROP. ASCENT & DESCENT FILL & TEST DISCONNECT

DRAWING NO.: LDW270-10031

EO NO.: A4

APPROVED BY									
DATE	1/24/69			1/24/69			1/24/69		1-27-69
	PROP	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG		EO NO.

ISSUED BY J. PAVLICA X1471 SECTION LM PROPULSION GROUP NO. 270 PL 25



GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO.		EO NO.
LDW270-10031		A5
CONTROL INFO NO.	LM270-1358	

THIS IS A REVISION OF EO A4

IN FLD OF EO A4 NOTE 1.-6

"... 60-75 psig INLET PRESSURE ----- "

WAS

"---- 100 psig INLET PRESSURE ----- "

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCO 3491 ECP 1089

REASON FOR EO: ALSOP RIG PUMP MOTOR OVERHEATS WHEN RUN AT 100 PSIG CONTINUOUSLY DURING VIBRATE FLUSH OF COUPLING

DESCRIPTION OF EO: REF EO A4 IN NOTE 16 60-75 psig WAS 100 psig

(5) GAEC EO RELEASE: (6) 3-3-69 (10) VK 3-6-69

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM9(39)	
		THRU	
		LM14(44)	

DRAWING CHANGE REQD: ✓ REVISE DWG; RECORD EO

DISPOSITION OF PARTS: ✓ REWORK; SCRAP

PRIORITY: C

DRAWING TITLE: COUPLING - PROP ASCENT & DESCENT FILL & TEST DISCONNECT

DRAWING NO.: LDW270-10031

EO NO.: A5

APPROVED BY						
	Perett			Gellatly		
DATE	2/5/69	—	—	2/5/69	—	—
	PROJ	SUPPORT	RELIAB GROUP	GROUP LEADER	~~STRESS GROUP~~	LIAISON ENGRG

RB 2-5-69 (PROJ ENGRG) (QUAL)

ISSUED BY J. PAVLICA X1471 SECTION LM PROPULSION GROUP NO. 357 PL 25

011

NAS 9-1100

LDW270-10035

LEM

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
	LM	LDW 280-66545 DVT (70)	1
	LEM 346	LDW280-66545 LM4(3A)	1
	LEM 346	LDW280-66545 LM3/3	1
PART NO. LDW270-10035-1		GAEC SCH NO.	

WORK PACKAGE FUNCTION 110 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00		3.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	—	GRUMMAN REL INFO	
LAST DASH NO. USED	-1	PRIM NO. VK(009)	
		486 ME-16 1/17/69	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS — ANGLES
1/64 .010 ± ½°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
	LCD 3732

CONTRACT NO. NAS9-1100 — LINE ITEM — DOCUMENTATION TYPE II

DRAWN BY	J. PAVLICA		
LAYOUT BY	J. PAVLICA		
CHECKED BY			
GR LDR	J. Pirotti 1/17/69		
PROP	R Bitner 1/17/69		
VDI		PROJ ENGR	R Bitner 1/17/69
STRUCT	WJH 1/17/69	REL GROUP	Bitner 1-17-69

(E) GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

DISCONNECT COUPLING ASSEMBLY-DESCENT PROPELLANT PRESSURIZATION SUB-SYSTEM

SIZE	CODE IDENT NO.	
B	26512	LDW270-10035

SCALE NONE — SHEET 1.00 OF 3

ENG 77.1 12-66

01

NAS 9-1100

C.L. QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
L 1		LSC269-220-6	E	ELBOW	SEE NOTE 6						
L 1		LDW270M10088-1	S	DISCONNECT COUPLG	SEE DWG						
C 1		LDW270-10035-11	E	PLATE	CRES STEEL	MIL-S-6721	321 ANN	.125 x 3 x 3	NONE	NONE	
L 1		LDW270-10035-1	S	COUPLING ASSY	(WELDED)				SW		

CLEANLINESS PER LSP 14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
SW	HELIARC WELD	MIL-W-8611

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : LPC19-2 (GRUMMAN); LPC19-3 (VENDER)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW270-10035

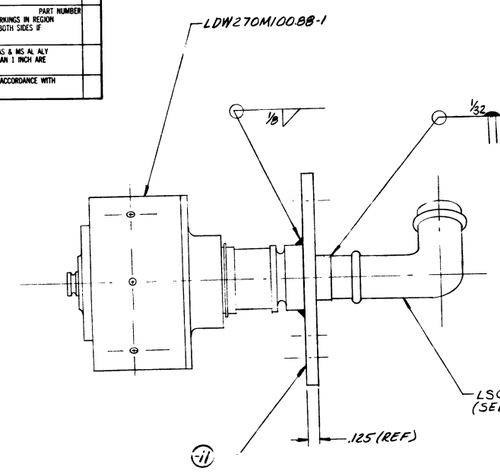
SCALE NONE SHEET 2.00

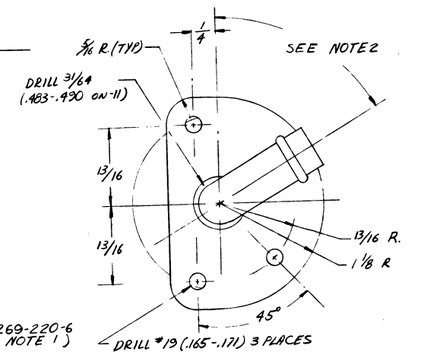
ENG 77.2 7-65

201

NAS 9-1100

SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☐ USE BOTH SIDES IF NECESSARY.	
LENGTHS OF AN NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
INSTALL RIVETS IN ACCORDANCE WITH	





NOTES:

1. REMOVE GOLD BAND FROM LSC269-220-6 FITTING PRIOR TO WELDING.
2. ORIENTATION OF LSC269-220-6 ELBOW SHALL BE DETERMINED FROM INSTALLATION.
3. DURING WELDING OPERATION UTILIZE A FLIGHT HALF DISCONNECT TO ESTABLISH AN ARGON PURGE THRU THE LDW270M100.88-1. (REF. LSC270-813-31)
4. ALL WELDS CRITICAL
5. A HEAT SINK SHALL BE UTILIZED WHEN WELDING THE LDW270-10035-11 TO PREVENT DAMAGE TO TEFLON SEALS & NUT
6. LSC PART SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING.

LDW270-10035-1 DISCONNECT ASS'Y

GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714			
SIZE C	CODE IDENT NO. 26512	LDW270-10035	
SCALE 2 : 1		SHEET 3 OF	

ENG 736 REV 9-67

LDW270-10035E

01
NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW270-10035 | EO NO. A1

CONTROL INFO NO. LM5-21393

IN F/D FOR -1, ADD NOTES 7 & 8 AS FOLLOWS:

"7. HYDRO-STATIC PROOF PRESSURE TEST -1 ASSY TO 2274 PSIG FOR ONE (1) MINUTE. NO LEAKAGE OR PERMANENT DEFORMATION SHALL BE PERMITTED."

"8. HELIUM LEAK TEST -1 ASSY PER LSP-14-19151."

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	LCD 3732
		√	5

REASON FOR EO: ADDED INFORMATION

DESCRIPTION OF EO: IN F/D FOR -1, ADDED NOTES #7 & 8

GAEC EO RELEASE: (R) (V) — JK

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 346	LM-3(33)/LM-4(34)	
LM		DVT (70)	

DRAWING CHANGE REQD: REVISE DWG √ | RECORD EO

DISPOSITION OF PARTS: NOT REQD REWORK | SCRAP

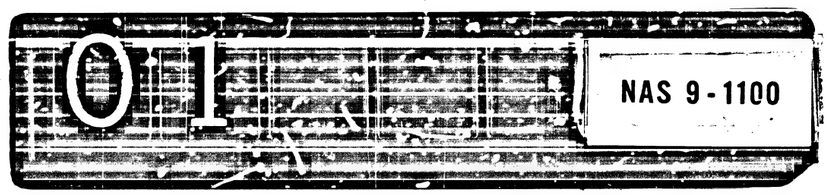
PRIORITY: C

DRAWING TITLE: DISCONNECT COUPLING ASSY-DESCENT PROPELLANT-PRESSURIZATION SUB SYSTEM

	APPROVED BY	DATE	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	DEPT
	[illegible]	1/20/69			1/4/69	—	[illegible]	R.B.L.	Bott
					1/19/69	—	1/22/69	1-19-69	
	PROP								

DRAWING NO. LDW270-10035 | EO NO. A1

ISSUED BY LIAISON J. ZAPPILLO SECTION PROP GROUP NO. 270 PL 25



LDW270-10036

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	RFQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW270-10036-1		GAEC SCH NO.	
								LM	—	QUAL TEST (72)	1
								LFM 504	LDW280-54608	UM6 (36)	1

WORK PACKAGE FUNCTION 118 (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH											
SHEET	1.00		2.00		3.00						
REV											
SHEET											
REV											
SHEET											
REV											

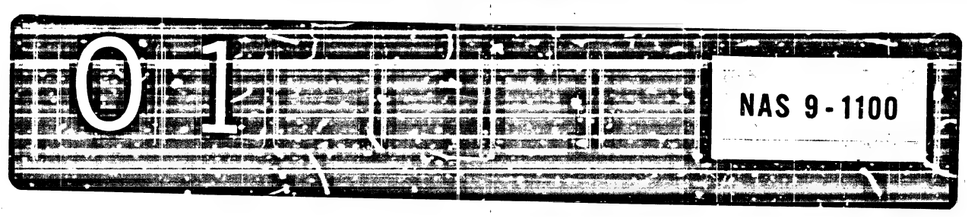
LAST SECT LTR USED	—	GRUMMAN REF INFO	
LAST DASH NO. USED	-1	PRIM NO. (XXXX)	484 ME-16-9/30/69

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS — ANGLES

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 5168	

CONTRACT NO. NAS-9-1100			LINE ITEM	DOCUMENTATION TYPE II
DRAWN BY	J. PAVLICA			GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE, L. I., NEW YORK
LAYOUT BY	J. PAVLICA			
CHECKED BY	L. ATLAS 9-29-69			HEAT EXCHANGER BYPASS ASSY - DESCENT PROPULSION SUB-SYSTEM
GR LDR	J. Rutin 8/15/69			
PROP	J. Parker 7/23/69			
PROP	R. Bart 9/23	PROJ ENGR	H. Gilbert 9/24/69	SIZE B | CODE IDENT NO. 26512 | LDW270-10036
		REL GROUP	9/30/69	SCALE NONE | SHEET 1.00 OF 3

ENG 77.1 12-65



						A/R		PR240-AC	E	LUBRICANT	SEE NOTE 3	LSM 14-6004							
C						2		MS16624-4025		RING-RETAINER	GOVT STD								
L						1		LDW280-17388-3(4)(2)(4)-2		TUBE	SEE DWG								
L						2		LDW270M10036-11		ORIFICE									
L						2		LDW270M10037-11		BODY									
L						2		LDW270M10036-11		COUPLER NUT	SEE DWG								
L								LDW270-10036-1	E	HT EXCH BYP ASSY							SW, PS	NONE	
						-1													
QTY PER ASSEMBLY							CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE			PROCESS SYM	FINISH NO.	ZONE

CL: CLEANLINESS PER LSP14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
SW	FUSION WELDING	MIL-W-8611
PS	PASSIVATE	LSP14-7021

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW270-10036

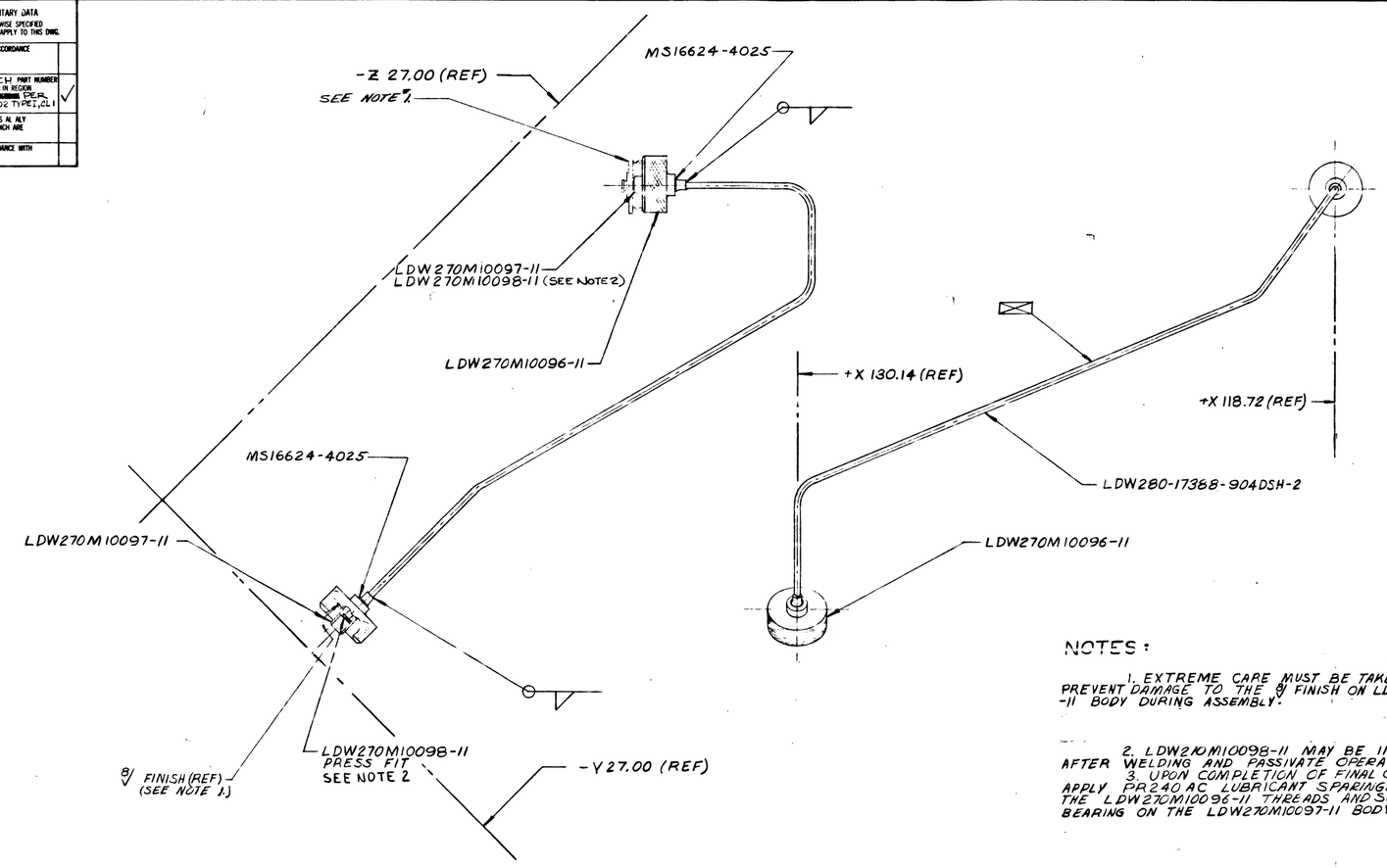
SCALE NONE SHEET 2.00

ENG 77.2 7-65

REPRODUCED AT THE NATIONAL ARCHIVES

NAS 9-1100

SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH:	
ELECTRO ETCH PART NUMBER ~~AND ALL OTHER MARKING~~ IN REGION MARKED PER ~~MIL-STD-130~~ LGP 14-002 TYPE I, CL 1	✓
LENGTHS OF AN, MAS & NAS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL RIVETS IN ACCORDANCE WITH	



NOTES:

1. EXTREME CARE MUST BE TAKEN TO PREVENT DAMAGE TO THE 8/ FINISH ON LDW270M10097-11 BODY DURING ASSEMBLY.

2. LDW270M10098-11 MAY BE INSTALLED AFTER WELDING AND PASSIVATE OPERATIONS.

3. UPON COMPLETION OF FINAL CLEAN APPLY PR2400 AC LUBRICANT SPARINGLY TO THE LDW270M10096-11 THREADS AND SURFACES BEARING ON THE LDW270M10097-11 BODY.

LDW270-10036-1 HEAT EXCHANGER BY-PASS ASSEMBLY

GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714			
SIZE D	CODE IDENT NO 26512	LDW270-10036	
SCALE FULL		SHEET 3.00	

DRG 733 REV 547

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW270-10036 | EO NO. A1

CONTROL INFO NO. LM 270-1411

ADD NOTE *

* UPON COMPLETION OF ASSEMBLY THE PRODUCTION LDW 270-10036-1 HEAT EXCHANGER BY-PASS ASSEMBLY SHALL BE TESTED IN ACCORDANCE WITH LTP270-25. QUALIFICATION TESTING SHALL BE IN ACCORDANCE WITH LTP901-25001

ON SHT 1.00 N/A LDW270-56311 WAS LDW280-54508

SHT 2.00 ADD TO PROCESS SYM ~ XR

XR RADIOGRAPHIC INSPECTION MIL-STD-453

* USE NEXT AVAILABLE NOTE NUMBER

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG ✓ LCD 5168 (5)

REASON FOR EO: CHNG N/A & ADD PIT REQMTS. TR & X-RAY INSPECTION REQMTS

DESCRIPTION OF EO: ADDED NOTE *. N/A LDW270-56311 WAS LDW280-54508; ADDED RADIOGRAPHIC INSPECTION

GAEC EO RELEASE: RLB 10-2-69; VK 10/3/69; RWB 10/2/69; 10/2/69

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
LM	E2	QUAL (72)		✓		✓	
LM	LFM 504	LM6(36)					
				PRIORITY			

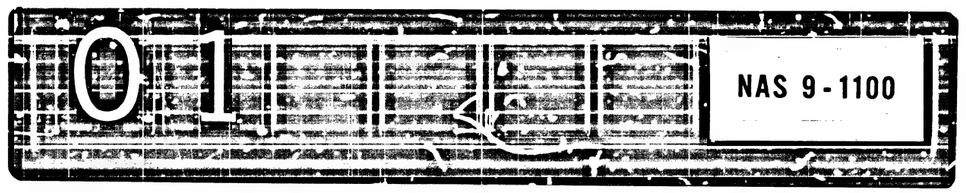
APPROVED BY / DATE: PREP 10/1/69; RWB 10/2/69; 10/1/69; 10/2/69

SUPPORT | RELIAB GROUP | GROUP LEADER | STRESS GROUP | LIAISON ENGRG | PROJ ENGRG

DRAWING TITLE: HEAT-EXCHANGER BY-PASS ASSEMBLY DESCENT PROPULSION SUB-SYSTEM

DRAWING NO. LDW270-10036 | EO NO. A1

ISSUED BY J. PAVLICA X1471 SECTION LM PROPULSION GROUP NO. 351 PL 25



GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LEO 270		EO NO. 90
CONTROL INFO NO. LM 270-1932		

DELETE LM6(36) EFF FOR LFM 504. ADD LM7(37) & LM8(38) FOR LFM 541; ADD LM9(39) EFF

DWG No	DASH NO	QTY PER VEHICLE	DWG TITLE	NEXT ASSEMBLY	EO.#
LDW270-10036	-1	1	HEAT EXCHANGER BY-PASS ASSY DESCENT PROPULSION SUB-SYSTEM	LDW270-51311	A2
LDW270M10096	-11	2	COUPLER NUT-HEAT EXCHANGER BYPASS DESCENT PROP SUB-SYSTEM	LDW270-10036	A2
LDW270M10097	-11	2	BODY-HEAT EXCHANGER BY-PASS DESCENT PROPULSION SUB-SYSTEM	LDW270-10036	A1
LDW270M10098	-11	2	ORIFICE-HEAT EXCHANGER BY-PASS DESCENT PROPULSION SUB-SYSTEM	LDW270-10036	A1

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓ LCO 5263 PKG 2

REASON FOR EO: CCB DECISION - PREVENT PROP LINE OVER PRESSURIZATION

DESCRIPTION OF EO: DELETED LM6(36) EFF FOR LFM 504 ADDED LM7 & LM8 FOR LFM 541. ADDED LM9

(5)

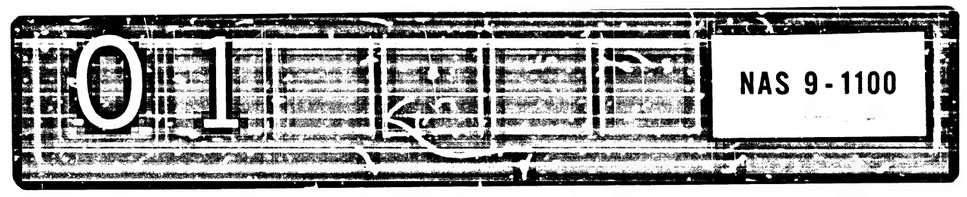
GAEC EO RELEASE: SNB 12/3/69; JK 1/6/70; 1/13 Lowman; 11/25 11/4/70

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO. EI	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 504	LM6(36)	
LM	LFM 541	LM7(37) & LM8(38)	
LM		LM9(39)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: NOT REWORK	REQ'D SCRAP	PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
✓				C	NOTED	LEO 270	90

APPROVED BY	PROP	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	CONF
DATE								

ISSUED BY J. PAVLICA X1471 010670 SECTION LM PROPULSION GROUP NO. 270 PL 25



LDW270-10037

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM

C.L.	QTY PER ASSEMBLY -3	QTY PER ASSEMBLY -1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		1		GS830CV25-6	E	SLEEVE	GRUMMAN STD						
	1			GS830CV25-2	E	SLEEVE	GRUMMAN STD						
L	1	1		LDW270P10021-11	E	ADAPTER	SEE DWG						
L	1	1		LDW270P100204	E	INSERT	SEE DWG						
L	1	1		LDW270P10013-11	E	CLOSURE	SEE DWG						
L				LDW270-10037-3	E	VENT ASSY OX							
L				LDW270-10037-1	E	VENT ASSY FUEL							

C.L. CLEANLINESS LEVEL PER LSP14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

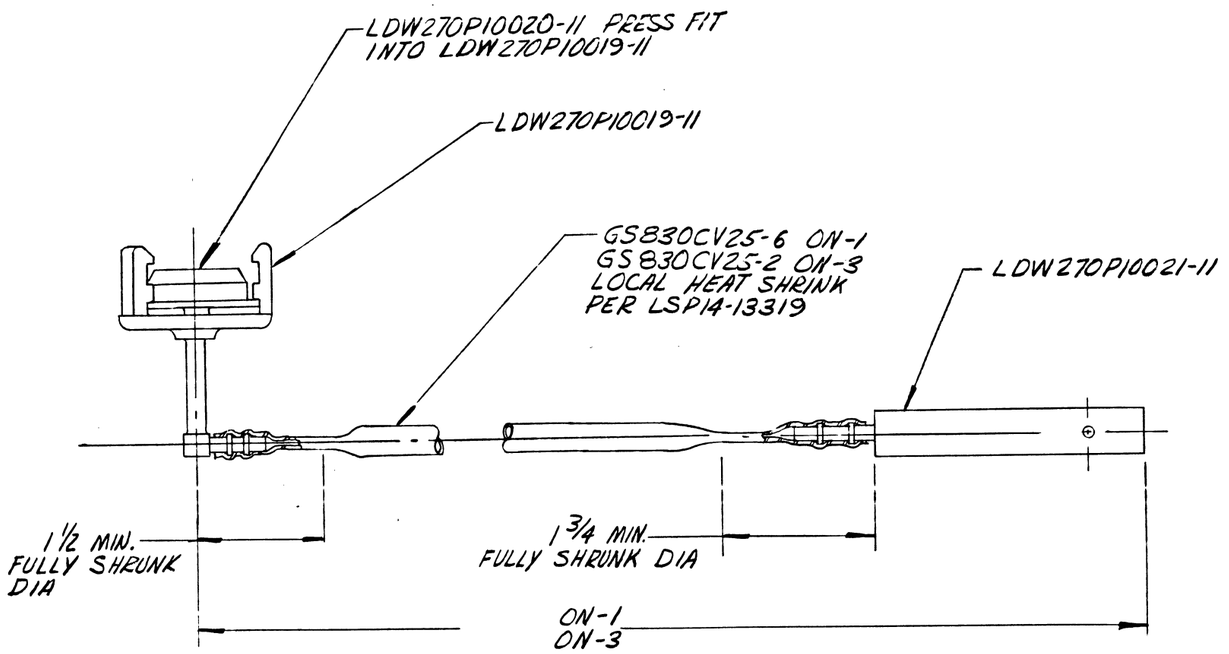
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW270-10037

SCALE NONE SHEET 200

ENG 77.2 7-65

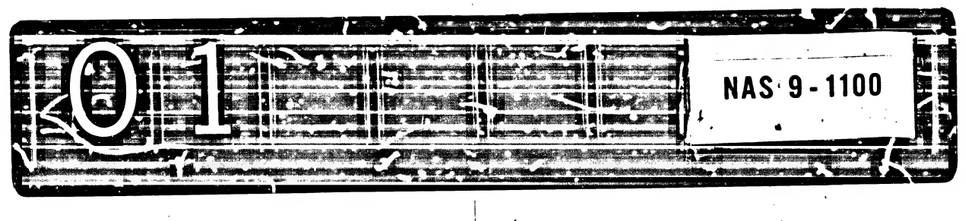
01 NAS 9-1100



LDW270-10037-1 ASSY
-3 ASSY

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-10037	
SCALE FULL		SHEET 3.00	

ENG 73.1 6-64

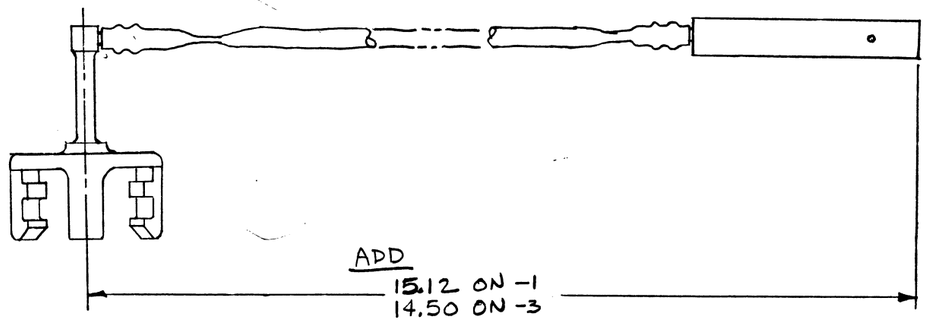


GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO.	EO NO.
LDW270-10037	A1
CONTROL INFO NO. LM270-1455	



DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCD 5626A PKG 1

REASON FOR EO: ADD FINAL ASSY LENGTHS FOR -1 AND -3 ASSEMBLIES OMITTED IN ERROR

DESCRIPTION OF EO: IN FIELD OF DWG ADD DIMENSIONS 13.94 FOR-1 AND 14.50 FOR-3

GAEC EO RELEASE: (R) 11-12-70

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 616	LM8(38), LM10(40)	
LM		LM9(39)	
LM		LM11(41) THRU LM13(43)	

DRAWING CHANGE REQD: REVISE DWG ✓ — RECORD EO

DISPOSITION OF PARTS: ✓ REWORK — SCRAP

PRIORITY: C

DRAWING TITLE: SPRING CAVITY VENT ASSEMBLY-ASCENT PROPELLANT PRESSURIZATION RELIEF VALVE

DRAWING NO.: LDW270-10037

EO NO.: A1

APPROVED BY								
DATE	11/12/70			11/12/70			11/12/70	11-12-70
	PROP	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ. ENGRG	

ISSUED BY F. J. ARTUS X1926/7 SECTION LM PROPULSION GROUP NO. 0345 PL 025

01

NAS 9-1100

LDW270-10038

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.	
								LFM430-62230-014			
								LDW430-62230	LDW430-62230	4	1
								LDW270-1003B-1			

WORK PACKAGE FUNCTION # 118

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	2.00	3.00	4.00	5.00				
REV									
SHEET									
REV									
SHEET									
REV									

		GRUMMAN REL INFO
LAST SECT LTR USED	A	PRIM NO.
LAST DASH NO. USED	-3	463

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/64 ± .010 ± 1/2°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCO 5748 PAG 1	

CONTRACT NO. NAS 9-1100 LINE ITEM DOCUMENTATION TYPE II

DRAWN BY	J. PAVLICA 5/7/71		
LAYOUT BY	J. PAVLICA 5/7/71		
CHECKED BY	5-12-71		
GLP LDR	5/7/71		
PROP.	5/7/71		
GSE	5/10/71	PROJ ENGR	5-12-71
STRESS	5-10-71	REL GROUP	5-12-71

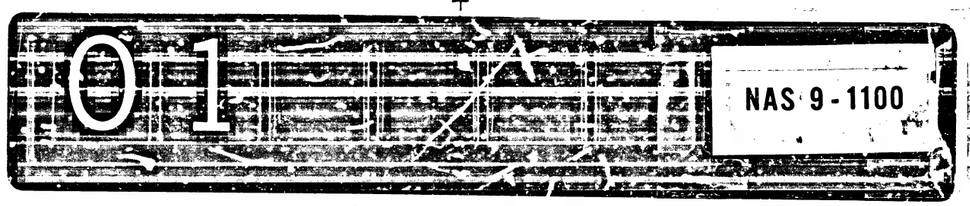
© GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

DISCONNECT COUPLING - GSE GROUND HALF - APS REGULATOR TESTING.

SIZE	CODE IDENT NO.	
B	26512	LDW270-10038

SCALE NONE SHEET 1.00 OF 5

ENG 77.1 12-65



C.L.	QTY PER ASSEMBLY						CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
C						2		MS24665-151	E	COTTER PIN	GOVT STD						
C						2		MS20664C2	E	BALL END	GOVT STD						
C						A/R		MIL-C-5424	E	CABLE 1/32 DIA	GOVT STD						
L						ALT		LSC270-813-237	S	DISCONNECT CPLG	SEE NOTE 1						
L						1		LSC270-813-236	S	DISCONNECT CPLG	SEE NOTE 1						
L					1			LSC270-813-133	S	DISCONNECT CPLG	SEE NOTE 1						
N						1		LDW270-10038-3	S	DISCONNECT CPLG				LSC270-813-133	NONE	NONE	
N								LDW270-10038-1	S	DISCONNECT CPLG				LSC270-813-236	NONE	NONE	
					-3	-1											

CLEANLINESS LEVEL PER LSP14-0011 C

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

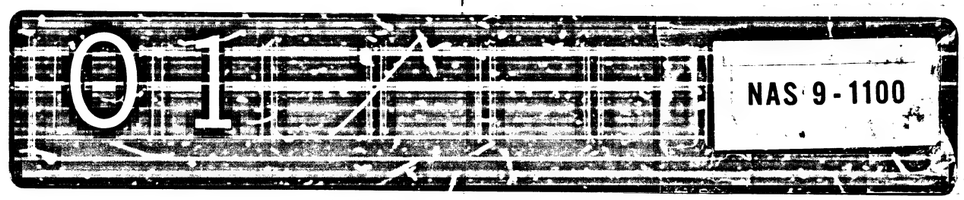
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : LPC 19-2 (GRUMMAN); LPC 19-3 (VENDOR)

GRUMMAN AEROSPACE CORPORATION , BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW270-10038

SCALE NONE SHEET 2.00

ENG 77.2 7-64



NOTES:

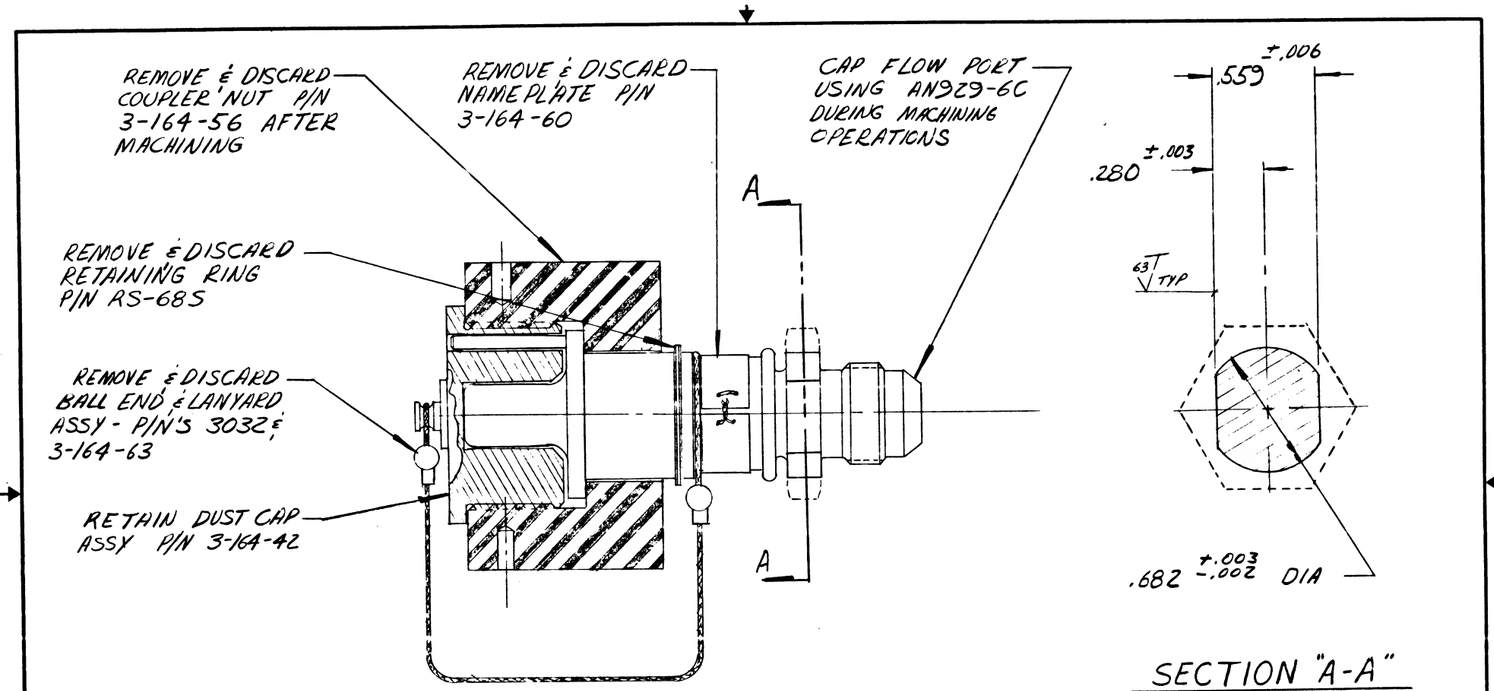
1. LSC PART, SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING.
2. UPON COMPLETION OF MACHINING OPERATIONS, FREON FLUSH THE -3 FOR 3-5 MINUTES USING FREON TF (PCA GRADE). LIQUID PATCH TEST PER LSP14-19401. VERIFY COMPLIANCE WITH LSP14-0011 C LEVEL "N".
3. LSC270-813-237 MAY BE USED AS AN ALTERNATE FOR LSC270-813-236
4. ELECTRO ETCH PART Nº AND S/N PER LSP14-4706 IN AREA MARKED ⊠ USING 1/8" HIGH CHARACTERS.
5. PACKAGE THE -1 ASSY PER LSP14-009
6. VENDOR P/N'S SHOWN REFER TO SCHULZ TOOL & MFG CO. DWG Nº 3-164-2 ; CODE IDENT 82267

GRUMMAN AEROSPACE CORPORATION BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-10038	
SCALE NONE		SHEET 3.00	

ENG 72.1 6-64

01

NAS 9-1100



SECTION "A-A"

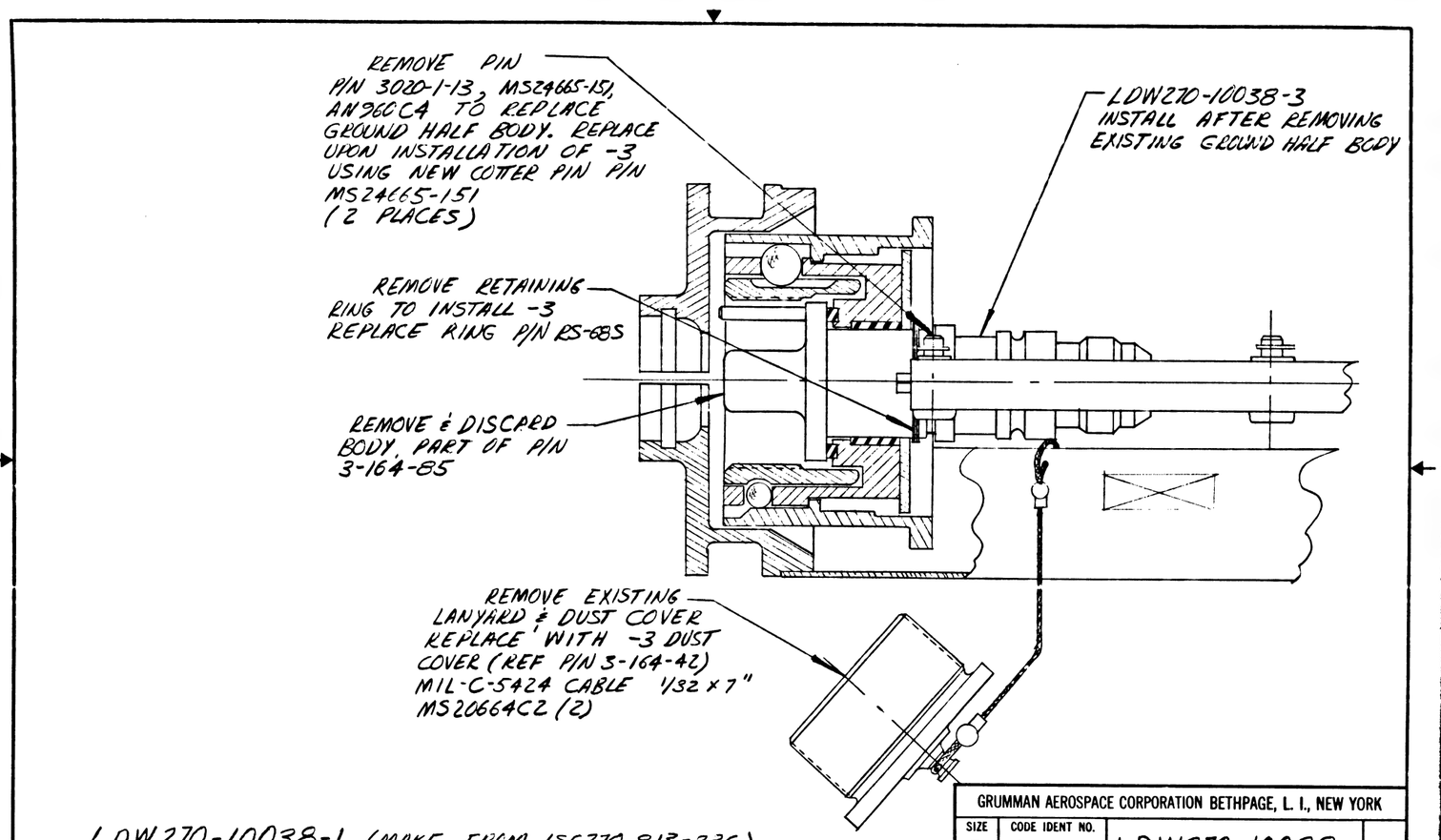
LDW270-10038-3 (MAKE FROM LSC270-813-133)

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-10038	
SCALE 2/1		SHEET 4.00	

ENG 72.1 6-64

0-1

NAS 9-1100



LDW270-10038-1 (MAKE FROM LSC270-813-236)

GRUMMAN AEROSPACE CORPORATION BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW270-10038

SCALE 2/1 SHEET 5.00

ENG 73.1 6-64

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

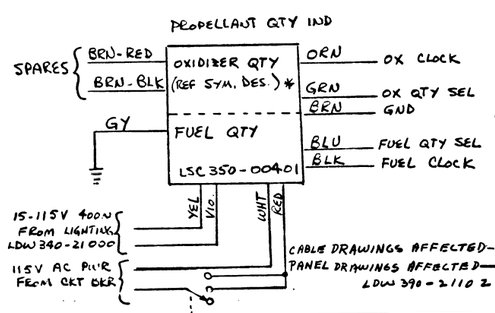
ENGINEERING ORDER

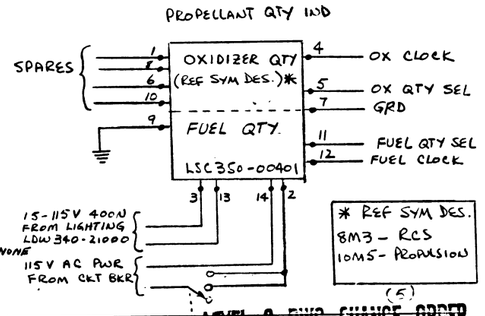
DWG. NO. LEO-350- | EO NO. 1

CONTROL INFO NO. LDW 390-228

DWG NO.	EO LTR	TITLE
LDW 310-28000	A	LEVEL 3 SCHEMATIC LTA-8 REACTION CONTROL SUBSYSTEM
LDW 270-21000	B	LEVEL 3 SCHEMATIC LTA-1 PROPULSION SUBSYSTEM
LDW 340-21000	C	LEVEL 3 SCHEMATIC LTA-1 CREW PROVISIONS SUB SYSTEM
LSK 390-1294	B	LEVEL 3 SCHEMATIC ESI REACTION CONTROL SUBSYSTEM

FROM ← CHANGE → TO





LEVEL 3 DWG CHANGE ORDER
FOR ENGRG INFO ONLY

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG

REASON FOR EO: MAKE LEVEL 3 DRAWING CONFORM TO EXISTING HARDWARE (DWG CORR.)

DESCRIPTION OF EO: POWER & SIGNAL INPUTS CHANGED TO DIFFERENT TERMINALS OF METER HEADER

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		ES1 LTA-1 LTA-8	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO | DISPOSITION OF PARTS: NOT REWORK | REQD SCRAP

PRIORITY: E

DRAWING TITLE: NOTED

APPROVED BY / DATE: W. Gilruth 1-11-65; G.S. 1/11/65; Owen F. Owen 1/11/65; Elect Pwr 1/10/66; Support Sys; Rel'd Group; Group Leader; Stress Group; Weights Engrg; Proj Engrg; Proj Engr 1-12-66

DRAWING NO. LEO-350-

EO NO. 1

ISSUED BY [signature] X1685 SECTION DISPLAYS GROUP NO. 350 PL 25

01

NAS 9-1100

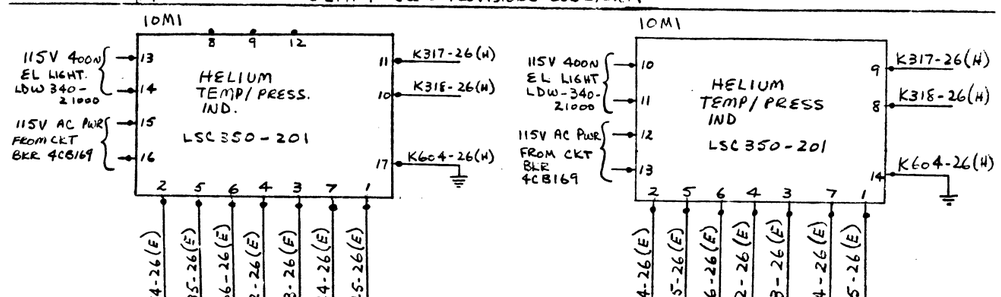
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 22.1 REV 3-65

ENGINEERING ORDER

DWG NO.	TITLE
LDW 270-21000 B2	LEVEL 3 SCHEMATIC LTA-1 PROPULSION SUBSYSTEM
LDW 340-21000 B2	LEVEL 3 SCHEMATIC LTA-1 CREW PROVISIONS SUBSYSTEM

DWG NO. LEO-350- | EO NO. 2
CONTROL INFO NO. LDW 340-229
E.O. #



CHANGE FROM ← → TO

CABLE DRAWINGS AFFECTED - NONE
PANEL DRAWINGS AFFECTED - LDW 340-21101

LEVEL 3 DWG CHANGE ORDER FOR ENGRG INFO ONLY

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG

(5)

REASON FOR EO
MAKE LEVEL III DRAWING CONFORM TO EXISTING HARDWARE (DWG CORR)

DESCRIPTION OF EO
POWER & SIGNAL INPUTS CHANGED TO DIFFERENT TERMINALS OF 10M1 HEADER

(2) GAEC EO RELEASE: APP'D VE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LTA-1	

DRAWING CHANGE REQD	DISPOSITION OF PARTS	APPROVED BY	DATE
✓ REVISE DWG	UOT REWORK	ESED SCRAP	1/10/66
RECORD EO			

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
E	NOTED	LEO-350	2

GROUP LEADER	STAGE GROUP	LUNAR ENGRG	PROJ ENGRG
FROP.	CREW PROJ	SS PROJ ENGRG	1-12-66

ISSUED BY [signature] X1685 SECTION DISPLAYS GROUP NO. 350 PL 25

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 322 10 63

DWG. NO. LDW 270 21000 | EO NO. C1
CONTROL INFO NO. LDW 390-331

ISSUED

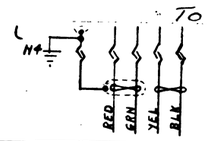
(1)

On sheet 7, Zone 63B, and B/M1, change meter part number

From	To
LSC 350-00401-04	LSC 350-00401-03-1

(2) on sheet 7, Zone 67A, change wiring between switch 1051 and P55A-

From ... To



cable dwgs affected - none
Panel dwgs affected - none

Level 3 Dwg. change order for Engg info only

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG

REASON FOR EO: To make drawing agree with VENDORS P/N
EMI request
MCR 448 approval.
Did not agree with cabling

DESCRIPTION OF EO: Corrected Meter part number from -00401-04 to -00401-03-1
corrected wire shielding from 4 wire to 3 wire shielded at 1051.
Added GSE connector information to J55E
revised location of quick disconnects and shield bonds

GAEC C EO RELEASE: 4/19/66

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LTA1	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: NOT REWORK | Reed SCRAP

	DESIGN	CHECK	GROUP LEADER	STRESS GROUP	PROJ. ENGRG.
APPROVED BY	JEA 4/19/66	RW 4/19/66			RW 4/19/66
DATE	4-20-66	5-4-66			5-5 PM Engr. 20 Apr 66
	4/19/66	4/19/66			4-21-66

PRIORITY: E
DRAWING TITLE: Schematic Level 3 - LTA-1 Propulsion Subsystem
DRAWING NO.: LDW 270-21000
EO NO.: C1

ISSUED BY Ron Williams X4849 GROUP 270 Propulsion Plant 35

263

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 22.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LEO 270 | EO NO. 4

CONTROL INFO NO. LDW390-369

Drawing No.	CAGE Ltr	Title
LDW 270-21000 ✓	C3	Schematic - Level 3 - LTA-1 - Propulsion Subsystem
LDW 270-28000 ✓	A2	Schematic - Level 3 - LTA-8 - Propulsion Subsystem
LDW 270-51000 ✓	B1	Schematic - Level 3 - LEM-1 - Propulsion Subsystem

In the field and BM, change GQ 3616P to GQ 3666P and change nomenclature from --- Fuel Tank #1 --- To --- Fuel Tank #2 --- in the following places:

On LDW 270-21000, sh. 6.00, Zone 46C and sh. 2.00 reference designation 10MT20.
On LDW 270-51000, sh. 2.01 and sh. 6.00, Zone 46C
On LDW 270-28000, sh 2.01 and sh. 8.00, Zone 50C.

In the field, delete (-4) line from GQ 3616P Diff. pressure transducer to #1 Fuel Tank. Add (-4) line from Diff. pressure transducer to #2 Fuel Tank. Delete GQ 3616P; Add GQ 3666P in the following places: On LDW 270-21000 - Sh 8.00, Zone 56C
-28000 - Sh 5.00, Zone 19C
-51000 - Sh 8.00, Zone 7C

cable dwgs affected - LDW 390-21654
-LDW 390-28654

Level 3 dwgs affected - LDW 360-21507
-28507
-51507

Panel dwgs affected - None

- For Engrg info only -

5

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG

REASON FOR EO: changed per MCR 468

DESCRIPTION OF EO: (-4) line was between GQ 3616P and #1 Fuel Tank GQ 3666P was GQ 3616P and --- Fuel Tank #2 --- was --- Fuel Tank #1 ---

EJR EO RELEASE: 5 | GAEC: C

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LTA-1 (11)	
		LTA-8 (18)	
		LEM-1 (31)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO | REWORK | DISPOSITION OF PARTS: Not Eng'd | SCRAP

APPROVED BY: DATE 4-28-66

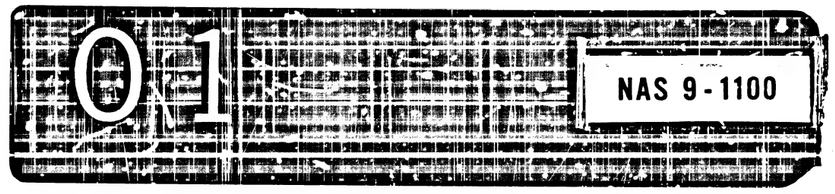
PRIORITY: E

DRAWING TITLE: Noted

DRAWING NO.: LEO-270-

EO NO. 4

ISSUED BY Ron Williams, #4849/Barney Zang, #1471 SECTION Propulsion GROUP NO. 270 PL 35



ENG 22.1 REV 3-75

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE ~~IDENT~~ NO. 26512
ENGINEERING ORDER

DWG. NO. LDW 270-21000 | EO NO. D2
CONTROL INFO NO. LDW 390-1269

ON SH 2.00 & SH 7.00 CORRECT PART NOS. AS FOLLOWS:

REF DESIGNATION	PART NO.	WAS PART NO.
10FL1 THRU 10FL3	LSC350-80401 -1	LSC350-80401-02
10FL4	LSC350-80402	LSC350-80402-02
10M5	LSC350-00401 -2	LSC350-00401-03-1
10S8	EX1005-461	LSC350-83-10201

ISSUED ISSUED ISSUED

MASTER FILE COPY
Do Not Remove From Office
See J. Pearce - Grumman

PNL DWG AFFECTED LDW340-21130

DETAIL SPEC NO | CL II ENGRG CHG | CL I ENGRG CHG

REASON FOR EO: LAV390-595

DESCRIPTION OF EO: PT NOS. LSC350-80401-01, LSC350-80402-01, LSC350-00401-02, EX1005-461 WERE "---02", "---02", "---03" & LSC350-83-10201 RESP.

GAEC EO RELEASE: 7-13-66

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LTA-1 (11)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: REWORK NOT | SCRAP REQD
APPROVED BY: DATE 7-13-66

RLW				Hills		
7-13-66				7-13-66		
EPS	PROP	>A&T				
RESPONS GROUP	GROUP LEADER	STRESS GROUP	PROJ ENGRG			
		D&C				

PRIORITY: E
DRAWING TITLE: SCHEMATIC-LEVEL 3 LTA-1 PROPULSION SUBSYSTEM
DRAWING NO: LDW 270-21000
EO NO. D2

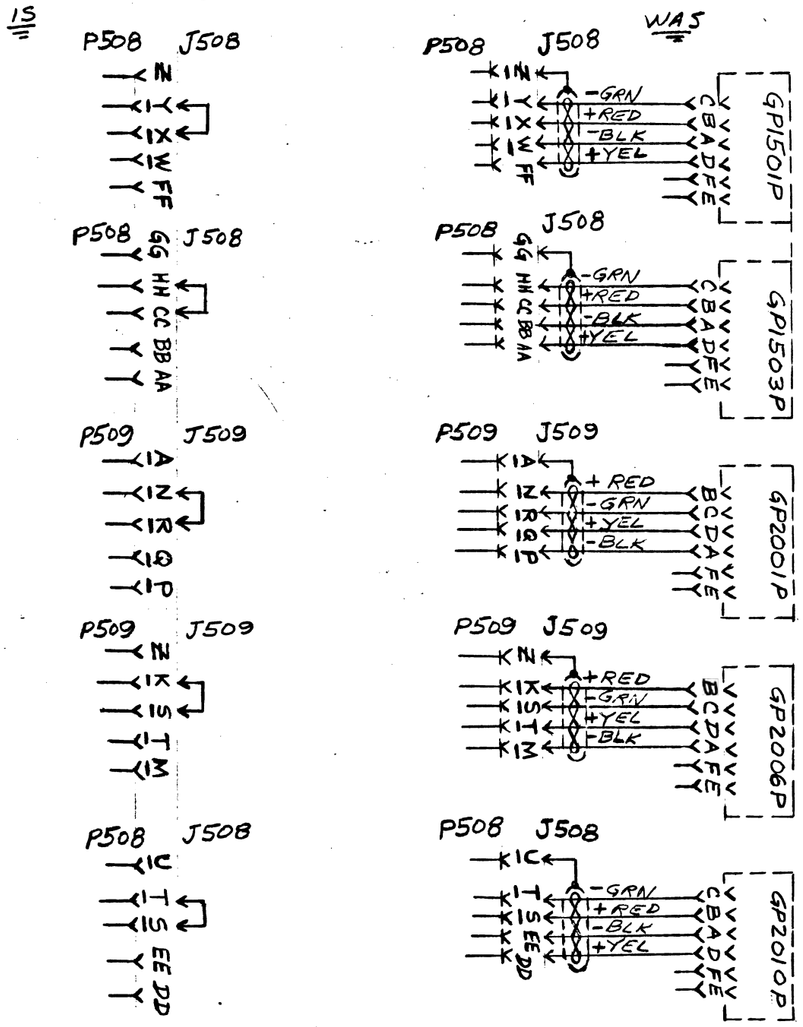
ISSUED BY Ron Williams #4849 SECTION Propulsion GROUP NO. 270 PL 55

ENG 22.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-21000 | EO NO. E 3
CONTROL INFO NO. LDW390-1897-2/2

DELETE MEASUREMENTS AND ADD JUMPERS TO J508 & J509 AS FOLLOWS:
(SH 5.00 ZONES A30, A31, A32, A33



ALSO REMOVED THESE 5 MEASUREMENTS FROM SH. 9.00 ZONES 4 & 5
PANELS AFFECTED None
CABLES AFFECTED None

LEVEL 3 DWG CHANGE ORDER FOR ENGRG INFO ONLY (S)

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG

REASON FOR EO: MCR 616

DESCRIPTION OF EO: DELETED MEASUREMENTS GP1501P, GP1503P, GP2001P, GP2006P & GP2010P. ADDED JUMPERS TO J508 & J509 FOR INSTR. SIGNALS.

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LEM		LTA-1 (11)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: NOT REQ'D | REWORK | SCRAP

APPROVED BY						
	Fig Engr	Kass	Dept Hd			
DATE	9/6/66	10-5-66	10-7-66	10-14-66	10-27-66	
	EPS	PROP	SAEI			RELEASE
		Supervisor	GROUP LEADER	ALSON ENGRG	PROJ ENGRG	

PRIORITY: E
DRAWING TITLE: SCHEMATIC LEVEL 3 LTA-1 PROPULSION SUBSYSTEM
DRAWING NO.: LDW270-21000
EO NO.: E 3

GAEC EO RELEASE: 10/27/66

ISSUED BY A.T. ARROYO X-6420 SECTION EPS-LIVEWIRE GROUP NO. 390 PL 35

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-21010 | EO NO. A1
CONTROL INFO NO. LEM270-602

IN THE F/D & B/M DELETE -3 ASCENT ENGINE ASSY THAT CONSISTS OF LSC270-00500-51 ASCENT ENGINE, -11,-13,-15,-17 TUBE ASSYS, AN924-4S NUT, AN919-1C UNION (2), AN784-2C TEE & AN83454 TEE, DELETE -11,-13,-15 TUBE ASSYS THAT CONSIST OF -21,-23,-25 TUBES RESPECTIVELY, MS20819-2C SLEEVE (2EA) & AN818-2C NUT (2EA), & DELETE -17 TUBE ASSY THAT CONSISTS OF -27 TUBE, MS20819-4C SLEEVE (2) & AN818-4C NUT (2).
IN F/D & B/M TO -1 ASCENT ENGINE INSTL ADD: LSC270-00500-51 ASCENT ENGINE.
IN THE NOTES SHT 3.00 DELETE NOTES 2,3, & 4.

5

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG

REASON FOR EO: ENGINE Δ P LINES RETRO-FIT NOT REQD. FOR LTA-1

DESCRIPTION OF EO: "DELETED-3,-11,-13,-15,-17, NOTES 2,3 & 4. ADDED LSC270-00500-51 TO -1

GAEC EO RELEASE: [K] 8-9-66

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LTA-1 (11)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO | DISPOSITION OF PARTS: REWORK ✓ | SCRAP

PRIORITY: C

DRAWING TITLE: ASCENT ENGINE INSTALLATION LTA-1

DRAWING NO.: LDW270-21010

EO NO.: A1

APPROVED BY	DATE	
		RMC
	8/3	8-9
PROF		

GROUP LEADER | STRESS GROUP | LIAISON ENGRG | PROJ ENGRG | GOVT

RELIAB GROUP | SUPPORT ENGRG

ISSUED BY S. SCIARROTTA 8-3-66 x1471 SECTION PROPULSION GROUP NO. 345 PL 35

265

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-21010 | EO NO. A V
CONTROL INFO NO. LM270-731

ENG 32.2 REV 3-65

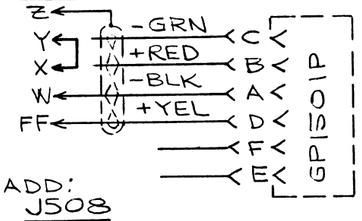
*DESCRIPTION OF E.O.

IN THE F/D & B/M SHTS 2.00 & 4.00 FROM THE -1 ASCENT ENGINE INSTALLATION DELETE: LSC270-00500-51 ASCENT ENGINE

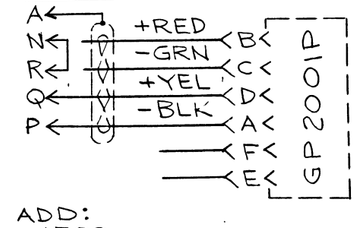
IN THE F/D & B/M SHTS 2.00 & 4.00 TO THE -1 ASCENT ENGINE INSTALLATION ADD: -5 ASCENT ENGINE ASSY, ALSO TO THE -5 ASCENT ENGINE ASSY ADD: LSC270-00500-51 ASCENT ENGINE.

IN THE F/D SHT 4.00 TO LSC270-00500-51 ASCENT ENGINE ADD REQUIREMENT TO REVISE WIRING & ADD JUMPERS TO J508 & J509 CONNECTORS AS SHOWN

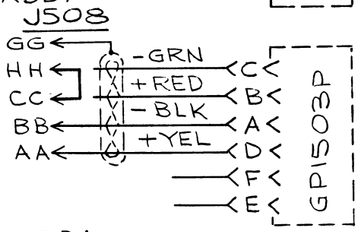
ADD:
J508



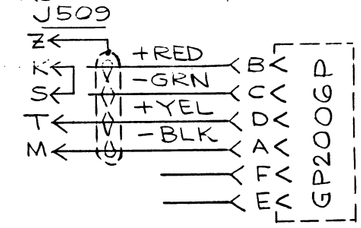
ADD:
J509



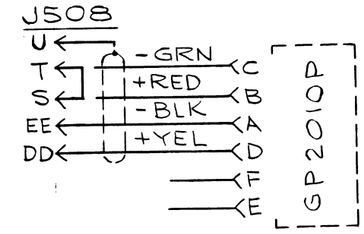
ADD:
J508



ADD:
J509



ADD:
J508



ADD:
"ON LSC270-00500-51 ASCENT ENGINE REVISE WIRING & ADD JUMPERS TO J508 & J509 CONNECTORS AS SHOWN"

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG

REASON FOR EO: MCRGIG-ELECTRICAL INPUT TO BY-PASS TRANSDUCER

DESCRIPTION OF EO: * SEE ABOVE

GAEC C.O. EO RELEASE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	DATE	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
LM		LTA-1 (11)						2 PROP	11/1/66			11/9/66			11-14-66	11-27-66

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	ASCENT ENGINE LTA-1 INSTALLATION	LDW270-21010	A V

ISSUED BY S. SCIARROTTA 11-9-66 x1471 SECTION PROPULSION GROUP NO. 345 PL 35

NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1, 1.10						EO A1	ON-1 IN MOD BLOCK, CHGD N/A FOR LEM 1, 2, & 3. WAS: LDW 280-28001. SH 1 OF 4 WAS SH 1 OF 3. ADD SH 1.10	LEM 1 (31) LEM 2 (32) LEM 3 (33)	NOT	REQ'D	V. SIBILIA CARTSEL 6-8-66		
B	1	1, 1.10 & 3	4A					EO-B1	IN THE F/D SH 4.00 CHANGED CALLOUT TO READ "FOR ELECTRICAL INSTL SEE, LTM 280-25557 FOR LTA-1, LDW 280-51359 FOR LEM-1, LDW 280-52359 FOR LEM-2, LDW 280-53359 FOR LEM-3", WAS "FOR ELECTRICAL INSTL LTA-1 SEE LTM 280-25557, LEM-1, LEM-2, & LEM-3 SEE LDW 280-28359."	LTA-1 (11) LEM-1 (31) LEM-2 (32) LEM-3 (33)	NOT	REQ'D.	V. SIBILIA 8-17-66		
	2								REF EO-B1, IN THE F/D SH. 4.00 SHOULD BE SH. 3.00	NOT REQ'D					

CHG APPROVED	LTR	GROUP LDR	PROP.	V. D. I	STRESS	WEIGHTS	RELIABILITY
	A						
	B						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW 270-21011	B

SCALE NONE SHEET 1.10

ENG 77.18 3-66

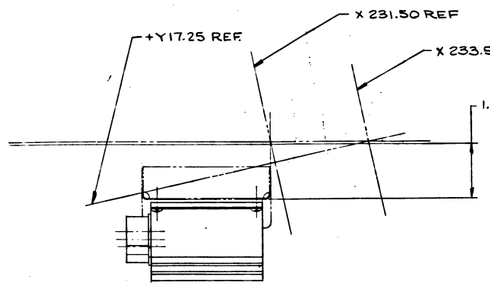
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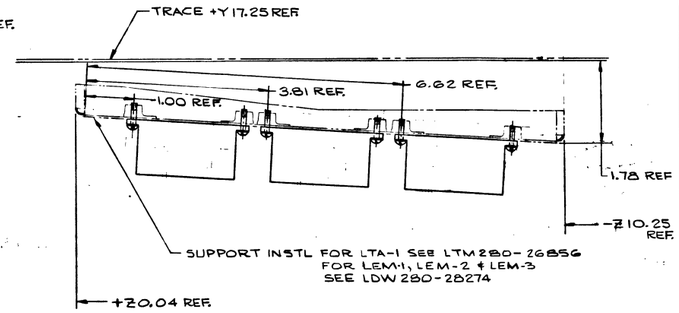
NAS 9-1100

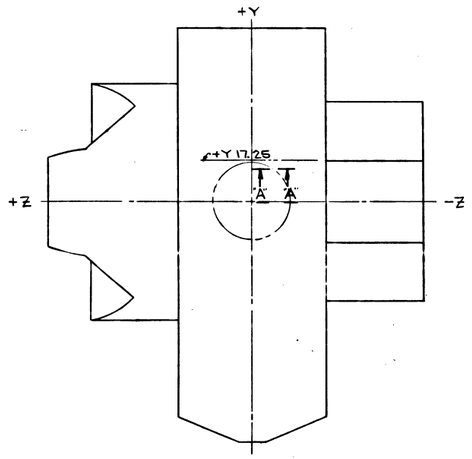
NOTES:

1- COMMERCIAL PART - SEE SPECIFICATION DRAWING No. LSC270-00500 BEFORE ORDERING.

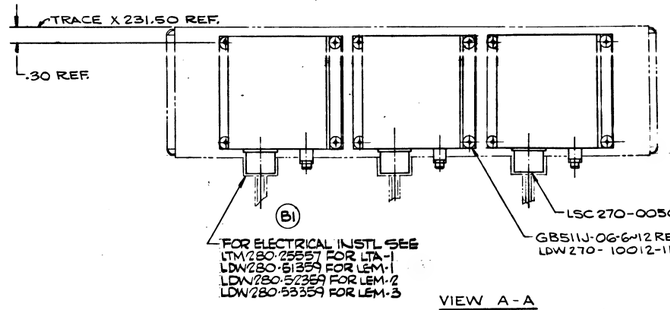
2- BAC PART B258-472185-3 CAN BE USED AS AN ALTERNATE FOR LSC 270-00500-200 ON LTA-1 RIG ONLY.







PLAN VIEW
1/20 SCALE
ASCENT STAGE
FOR ENGINEERING REFERENCE ONLY



VIEW A-A

-1 VIBRATORY SENSOR AMPLIFIER INSTL.

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

- PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.
- FILLET AND INSIDE CORNER RADII TOLERANCES .018R TO .062R ± .010; .063R TO .250R ± .015; OVER .250R ± .030
- DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.
- EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
- DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACE: MARKED WITH DOUBLE ASTERISK.
- MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
- DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
- HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
- ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. .10 ALLOWANCE FOR PLATING IN HOLES
- 125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
- 250 √ FOR ALL DRILLED HOLES
- REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
- INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
- SYMBOL √ DENOTES SURFACE TO BE MACHINED
- UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
- LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
- TOLERANCE ON LOFTED DELINEATIONS IS

LEM-3 (33)	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L.I., NEW YORK			
LEM-2 (32)	SIZE D	CODE IDENT NO. 26512	LDW270-21011	B
LEM-1 (31)				
LTA-1 (11)				
MODEL OR END ITEM	SCALE 1/1		SHEET 3.00	

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
12		GBS11J-06-6		BOLT	GRUM.STD.						
3		LSC270-00500-200	S	AMPLIFIER	SEE NOTE*1&2						
12		LDW270-10012-11	E	WASHER	SEE DWG.						
- 1		LDW270-21011-1	E	AMPLIFIER INSTL							

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW270-21011

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-21011		EO NO. C1
CONTROL INFO NO. LM270-752		

*DESCRIPTION OF E.O.

IN THE F/D SHT 3.00 CHGD NOTE #2

NOW:

2. BAC PART 8258-472185-3 CAN BE USED AS AN ALTERNATE FOR LSC270-00500-200 ON LTA-1 RIG AND LM-1 VEHICLE ONLY.

WAS:

2. BAC PART 8258-472185-3 CAN BE USED AS AN ALTERNATE FOR LSC270-00500-200 ON LTA-1 RIG ONLY.

P&S FEAT

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG

REASON FOR EO: THE 8258-472185-3 ALTERNATE IS TO BE USED ON LM-1

DESCRIPTION OF EO: * SEE ABOVE

GAEC EO RELEASE: FR 12/6/66

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA-1(11) &	
		LM-1 (31)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
		NOT REQD	

APPROVED BY	DATE	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
M. Dan	12/6/66			12/6/66			12/6/66
6	PROP						

PRIORITY: C

DRAWING TITLE: VIBRATORY SENSOR AMPLIFIER INSTL - A/S

DRAWING NO.: LDW270-21011

EO NO.: C1

ISSUED BY S. SCIARROTTA 12-6-66 X1471 SECTION PROPULSION GROUP NO. 345 PL 35

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LDW270-2101 | EO NO. C2
CONTROL INFO NO. LM-5-9869

ON-1 IN FLD. & B/m GB511J-06-6 (12) S/B GB511J-06-3 (12).

RELEASED BY LIAISON

PARTIAL RECORD E.O. NOT REQ'D. ON LTA-1 (11)

5

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG

REASON FOR EO: TO CORRECT HRDWR. CALLOUT.

DESCRIPTION OF EO: ON-1 GB511J-06-3 (12) WAS GB511J-06-6(12) ADDED TO RECORD BLOCK FOR LTA-1 (11).

GAEC EO RELEASE: 16

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM	LM-1 (31) THRU LM-3 (33)	LTA-1 (11)	

DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP

APPROVED BY											
				RB	HHE		RMC				
DATE				1/9/66	12-8-66	12-7-66	12-15-66				
6			SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY: C

DRAWING TITLE: VIBRATORY SENSOR AMPLIFIER INSTL.-ASCENT STAGE

DRAWING NO.: LDW270-21011

EO NO.: C2

ISSUED BY: LIAISON J. JARVIS x6952 SECTION: PROP. GROUP NO. 270 PL 35

01

NAS 9-1100

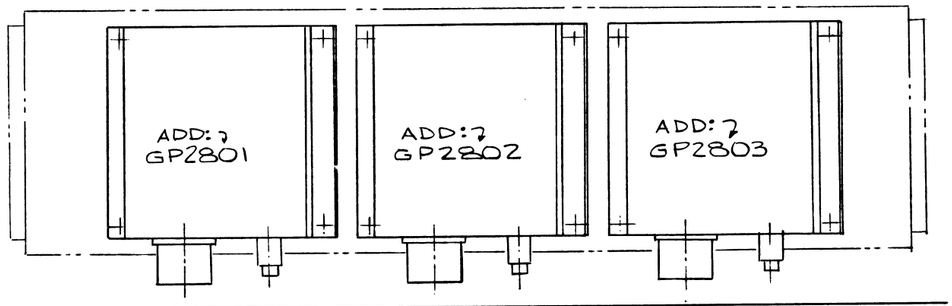
B

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 22.1 REV 3-65

DWG. NO.	LDW270-21011		EO NO. C3
CONTROL INFO NO.	LM270-779		

IN THE F/D SHT 4.00 ADD CALLOUTS "GP2801, GP2802 & GP2803" AS SHOWN BELOW.



DETAIL SPEC REQ		Cl II ENGRG CHG		Cl I ENGRG CHG	

REASON FOR EO: ADDED INFORMATION

DESCRIPTION OF EO: IN THE F/D SHT 4.00 ADD CALLOUTS "GP2801, GP2802 & GP2803"

GAEC EO RELEASE: FR 1/12/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA-1 (11)	
		LM-1(31) LM-2(32)	
		& LM-3(33)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
		NONE	

APPROVED BY								
M. D. [illegible]				R.J.S.	CW			
DATE	1/9/67			1/5/67	1/11/67		1/12/67	1/12/67
G	PROP	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	VIBRATORY SENSOR AMPLIFIER INSTL - A/S	LDW270-21011	C3

ISSUED BY S. SCIARROTTA x1471 SECTION PROPULSION GROUP NO. 345 PL 35

01 NAS 9-1100

ENG 32.1 REV 3-65

B

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LDW270-21011		EO NO. C4
CONTROL INFO NO. LM270-832		

* {ON -1 DELETE LM-1, LM-2 & LM-3 EFFECT.
IN THE F/D DELETE REF. ELECTRICAL & SUPPORT INFORM. LM-1, LM-2 & LM-3

DETAIL SPEC REQ	CL II ENGRG CHG	✓ CL I ENGRG CHG	LCD -1202	5

REASON FOR EO: AMPLIFIERS TO BE CALLED OUT ON LDW270-51010 & 53010

DESCRIPTION OF EO: SEE ABOVE *

GAEC EO RELEASE: JK 5/10/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-1(31)	
		LM-2(32)	
		LM-3(33)	

DRAWING CHANGE REQD: ✓ REVISE DWG; RECORD EO
DISPOSITION OF PARTS: ✓ REWORK; SCRAP

APPROVED BY	DATE	PROP.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
[signature]	5/9/67	6			5/3/67	5-8-67		5/10/67

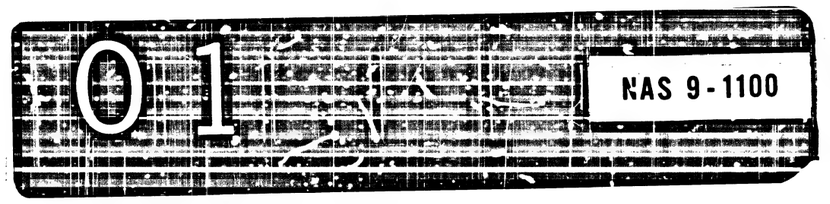
PRIORITY: C

DRAWING TITLE: VIBRATORY SENSOR AMPLIFIER INSTL - ASCENT STAGE

DRAWING NO.: LDW270-21011

EO NO.: C4

4-27-67 ISSUED BY S. SCIARROTTA X1471 SECTION PROPULSION GROUP NO. 345 PL 25



LDW270-21301 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.					
								LEM	LDW270-21300	LTA-1 (11)	1
								PART NO. LDW270-21301-1		GAEC SCH NO. 55	

2

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00	2.00	3.00							
REV	A	A	A							
SHEET	1.10									
REV	A									
SHEET										
REV										

LAST SECT LTR USED	
LAST DASH NO. USED	-1

GRUMMAN REL INFO A
PRIM NO. VE(609) 486 MP 12 RS 4.5

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9 1100 LINE ITEM 9 DOCUMENTATION TYPE III

DRAWN BY	N. GRAUL 3/30/66	Rel.	4/4
LAYOUT BY	N GRAUL 3/30/66		
CHECKED BY	H. Davidson 3/30/66		
WTS	3/30/66	PROJ ENGR	4-12-66
		REL GROUP	4-15-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

MODULE ASSEMBLY - DESCENT PROPELLANT PRESSURIZATION SUBSYSTEM

SIZE	CODE IDENT NO.		
B	25512	LDW270-21301	A

SCALE NONE SHEET 1.00 OF 4

NG 77.1 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00, 1.10 2.00 & 3.00					✓	E0A1	SH 1 OF 4 WAS SH 1 OF 3 ADDED SH 1.10. IN FIELD AND B/M AN735-32 WAS AN735-16	LTA-1 (11)	✓				

CHG APPROVED	LTR	GROUP LDR	WEIGHTS	RELIABILITY
	A			

ENG 77.16 3-68

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-21301	A

SCALE NONE SHEET 1.10

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
3		AN960D416	E	WASHER	STD PART						
7		AN960D10L		WASHER							
2		AN815-2		UNION							
2		AN735-32		CLAMP							
2		AN520-10-7		SCREW							
5		AN520-10-5		SCREW							
3		AN4-6A		BOLT							
7		MS21042L3		NUT							
3		MS21042L4		NUT	STD PART						
1		GC12H-16		CLAMP	GRUMMAN STD						
4		GC12H-8		CLAMP	GRUMMAN STD						
1		AE5062398A8A1		TEE	SEE NOTE 1						
1		LSK270-1029-1		TEE - SPECIAL	SEE DWG						
1		LMU270-80013-1		REDUCING VALVE M/U							
1		LMU270-80005-1		FILTER - MOCKUP							
1		LDW360-21286-1		TRANSDUCER INSTL							
1		LDW280-17388-072-2		TUBE							
1		LDW280-17388-071-2		TUBE							
1		LDW280-17388-070-8		TUBE							
1		LDW280-17388-069-8		TUBE							
1		LDW280-21579-1	E	SUPPORT ASSY	SEE DWG						
2		LSC270 713-3	S	SOLE LATCH VALVE	SEE NOTE 2						
1		LSC269-222-8	E	TEE	SEE NOTE 1						
2		LSC269-218-8	E	UNION	SEE NOTE 1						
		LDW270-21301-1	S	MODULE ASSY							
-1											

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : LPC-19-2 (GRUMMAN) LPC19-3 (VENDOR)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

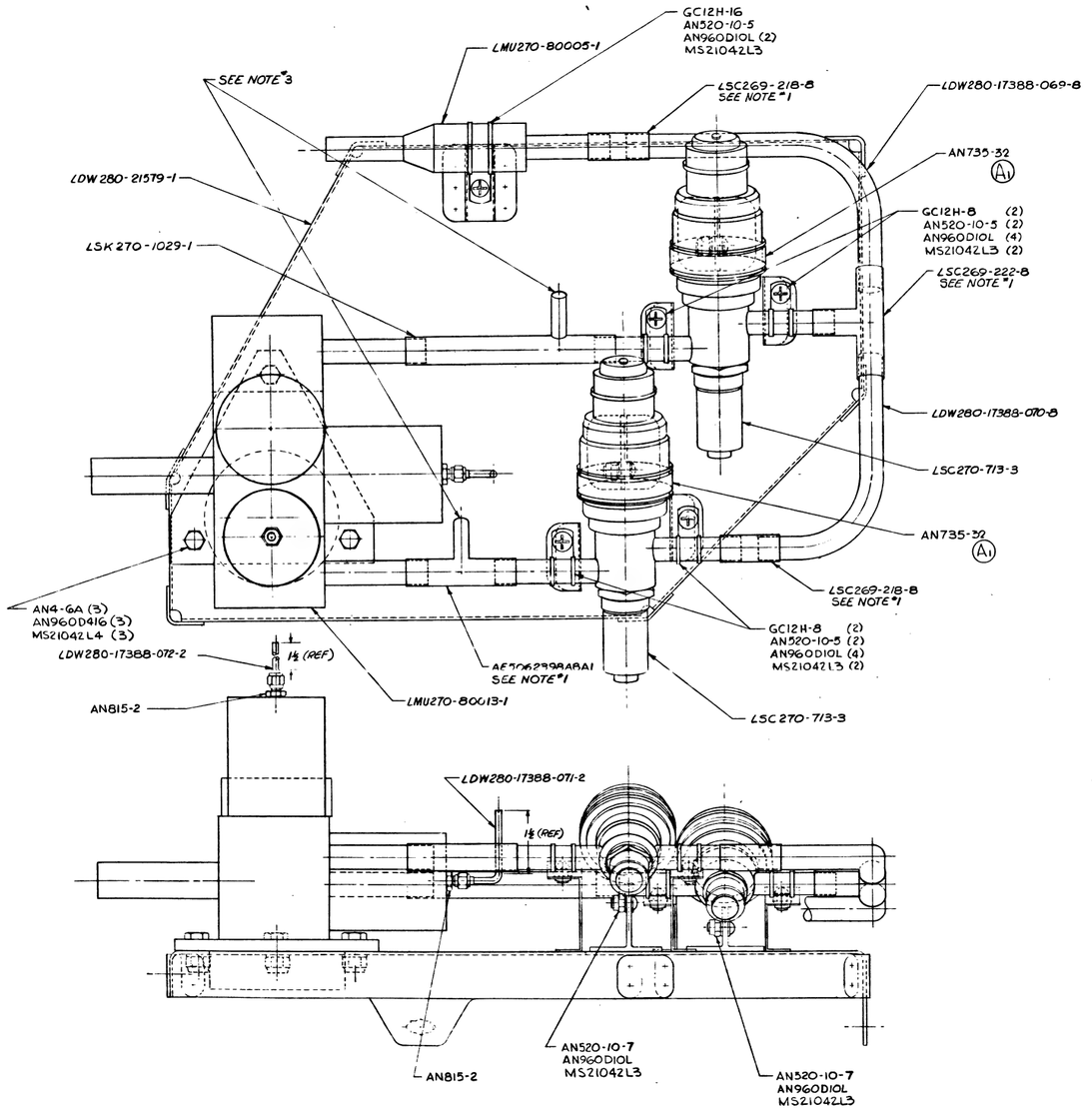
SIZE	CODE IDENT NO.		
B	26512	LDW270-21301	A

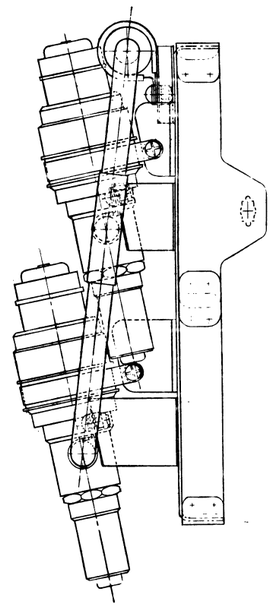
SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100





MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.	
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO 28R ± .010; .063R TO .75R ± .015; OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL F DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

NOTES:

1. MOCK-UP FITTINGS MAY BE USED.
2. COMMERCIAL PART SEE SPECIFICATION CONTROL DRAWING LSC270-713 BEFORE ORDERING.
3. FOR EXACT ORIENTATION OF TEE AND INSTALLATION OF PRESSURE TRANSDUCER SEE DWG LDW360-21286.

NAS 9-1100

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK		
LEM	SIZE E	CODE IDENT NO. 26512	LDW270-21301 A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00

LDW270-21301A

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LDW270-21402 | EO NO. A1

CONTROL INFO NO. LEM 270-666

IN F/D & B/M REVISE AS FOLLOWS:

ON -1 LSC 270-801-9 WAS LSC 270-801-3

ON-3 LSC 270-801-10 WAS LSC 270-801-4

5

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG

REASON FOR EO: TO AGREE WITH SPEC CONTROL DWG

DESCRIPTION OF EO: ON -1 ASSY LSC 270-801-9 WAS LSC270-801-3
ON -3 ASSY LSC 270-801-10 WAS LSC270-801-4

GAEC EO RELEASE: FR 9/30/66

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
LM		LTA-1 (11)		✓		✓	

APPROVED BY								
DATE	9-28-66	10/6/66	—	-2-	—	—	RMC 9-29	
	PROP	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	LEVEL DETECTOR INSTL PROPULSION FEED SYSTEM PROPELLANT TK-ASCENT	LDW270-21402	A1

ISSUED BY B. J. ZANG X1472 SECTION PROPULSION DESIGN GROUP NO. 270 PL 35

01

NAS 9-1100

LDW270-21451 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-21600	LTA-1(11)	1 EA
PART NO. LDW270-21451-15 & -21		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-21510	LTA-1(11)	1 EA
PART NO. LDW270-21451-13, -17, -19, -23 & -25.		GAEC SCH NO.	

2

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00	1.10	2.00	3.00						
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED	G
LAST DASH NO. USED	-25

GRUMMAN REL INFO A
PRIM NO. MP-A 7-14-66
470 VE(DOD)

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS — ANGLES	
ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS9-1100		LINE ITEM 9	DOCUMENTATION TYPE III
DRAWN BY	E.BALSON 2-10-66		
LAYOUT BY	E.BALSON		
CHECKED BY	BZ		
GR. LDR	LGO N. DANNENHOFFER		
PPOP	R.L.T.		
STRUCT		PROJ ENGR	J.ALBERT D/C 3-29-66
VEH. DES	JW JWS.	REL GROUP	CHUCK IFF 3-30-66
WT	T. KNOPEN 3-25-66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

DISCONNECT INSTL
DESCENT PROPULSION FEED SYSTEM

SIZE	CODE IDENT NO.	
B	26512	LDW270-21451 A

SCALE NONE SHEET 1.00 OF 4

ENG 77.1 12-65

SUPERSEDES LDW 270-21451 N.C.

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	SH CHG LTR	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	QUAL APPD
										RETRACED N/C LAST REV N/C. ADDED SHEET 1.10 SHEET 1.00 OF 4 WAS 1.00 OF 3	E.BALSON	7-8-66				
A	1	2.00 3.00	F/D B/M						E0 A1	ON SHEET 2 & 3 PART NO. LMU270-80010-3 WAS LMU270-80010-1.	LTA-1(11)	NOT REQD.		E. BALSON 7-8-66		
	2	3.00	9A							IN F/D ON REFERENCE DIAGRAM, QUAD IV:- REMOVED VIEWS B-B & C-C & ADDED E-E F-F & G-G. REMOVED LDW280-21591(REF) LDW280-21553(REF). ADDED LDW280-23587(REF) & LDW280-25694(REF). IN QUAD III:- REMOVED LDW280-21553(REF) & LDW280-21583(REF) & ADDED LDW280-25680(REF) & LDW280-23630(REF). ADDED VIEWS B-B & C-C.		NOT REQD.				
	3	2.00 3.00	F/D B/M							REMOVED -1, -3, -5, -7, -9 & -11 INSTLS. ADDED -13, -15, -17 -19, -21, -23 & -25 INSTLS.		✓				
	4	1.0	M/B							IN MODEL BLOCK N/A LDW280-21608 FOR -15 & -21 WAS FOR -3 & -7. REMOVED N/A LDW280-21553, LDW280-21591, LDW280-21583 FOR -1, -5, -9 & -11. ADDED N/A LDW280-21510 FOR -13, -17, -19, -23 & -25. JG		NOT REQD.				

CONTINUATION OF REVISIONS SEE SHEET

5-64

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-21451	A
SCALE NONE			SHEET 1.10

Q1

NAS 9-1100

-25	-23	-21	-19	-17	-15	-13	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
QTY PER ASSEMBLY																	
	3							MS21043-3		NUT	STD PART						
9	6		9	9		3		AN960D10L		WASHER	STD PART						
9	3		9	9		3		AN520C10-R8		SCREW	STD PART						
	1							LSK270-2027-7		COUPLING ASSY	SEE DWG						
						1		LSK270-2027-5		↕	↕						
		1						LSK270-2026-3									
					1			LSK270-2026-1		↕	↕						
3		1	3	3	1			LMU270-80010-3		COUPLING ASSY	SEE DWG						
								LDW270-21451-25		DISCONNECT INSTL							3-B
								-23		↕							4-A
								-21									5-B
								-19									6-A
								-17									8-A
								-15		↕							7-B
								LDW270-21451-13	E	DISCONNECT INSTL							9-A

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

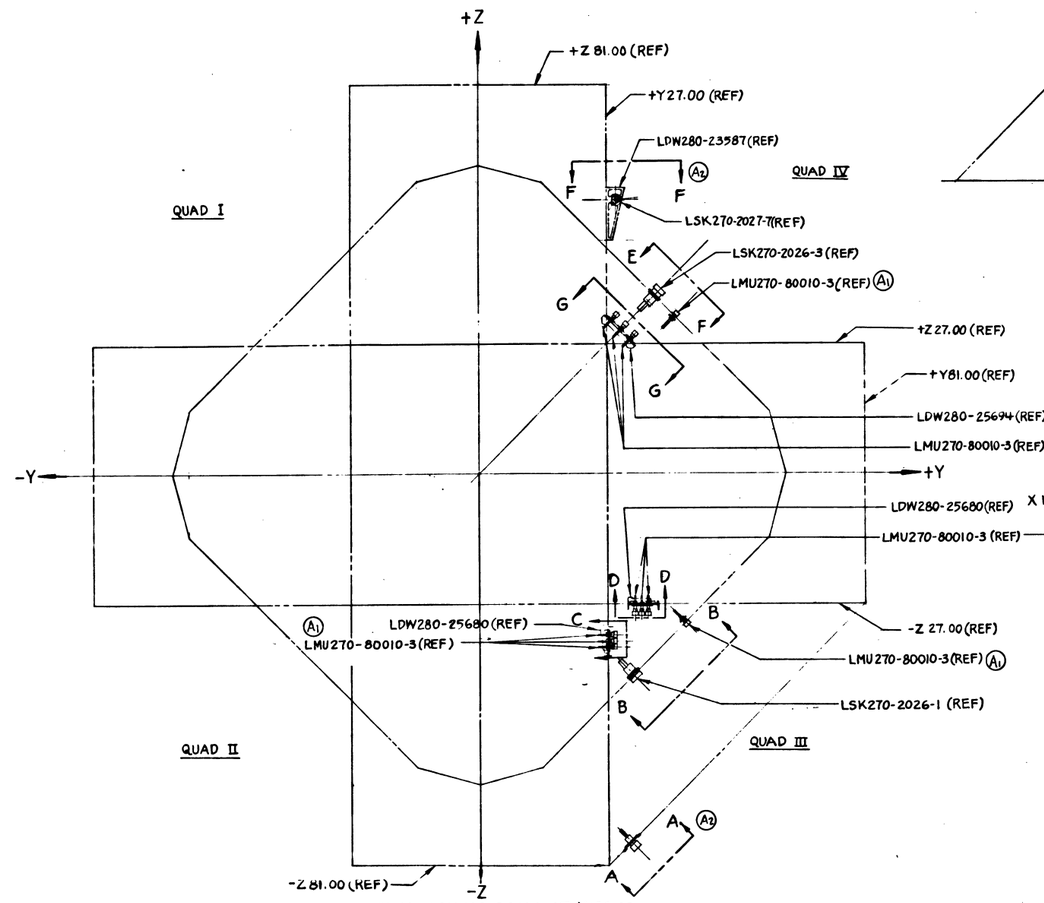
SIZE	CODE IDENT NO.		
B	26512	LDW270-21451	A

SCALE NONE SHEET 2.00

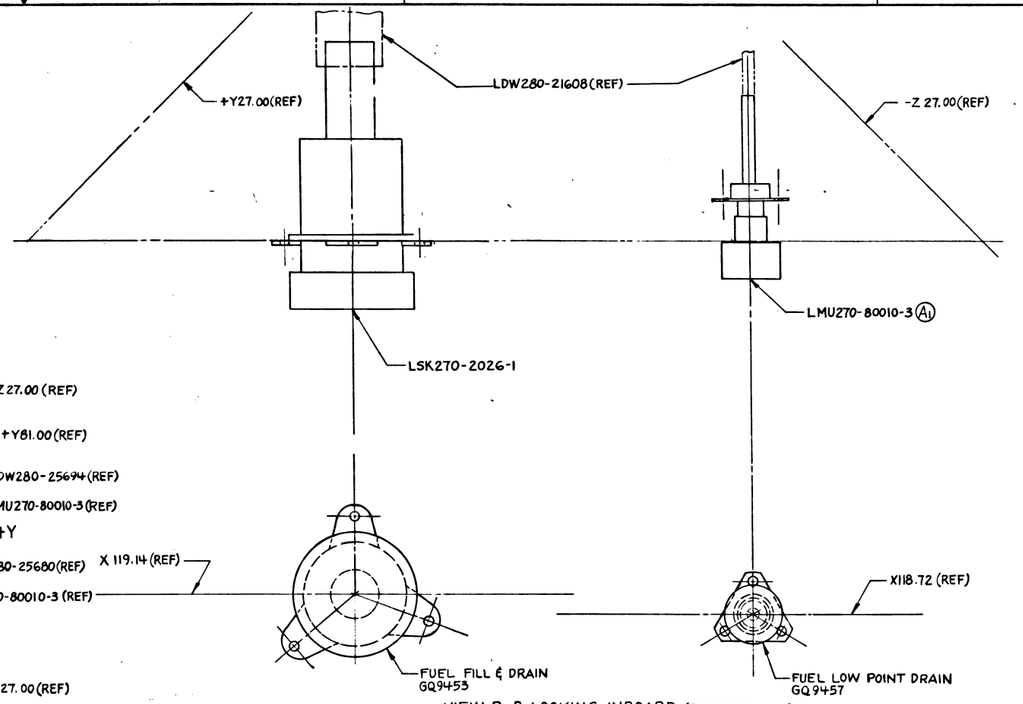
77.2 7-65

01

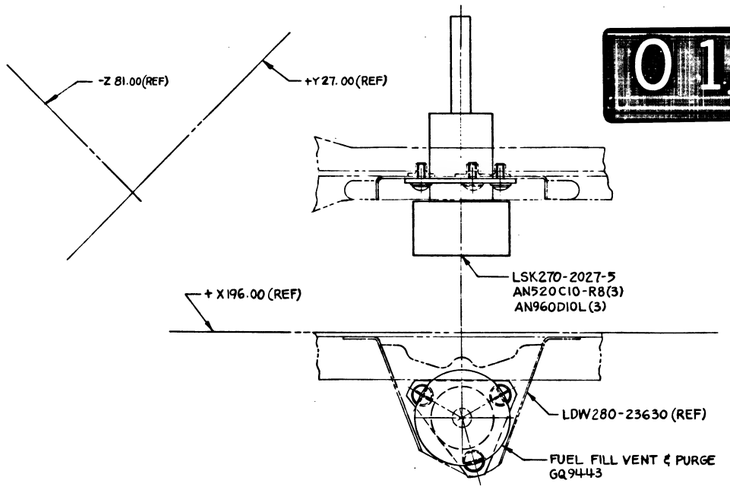
NAS 9-1100



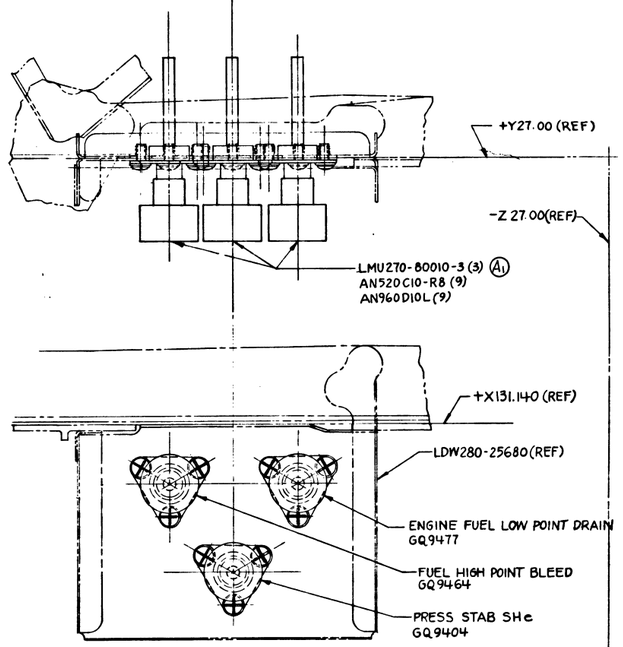
VIEW LOOKING DOWN AT X196.00
1/10 SCALE
FOR ENGINEERING REFERENCE



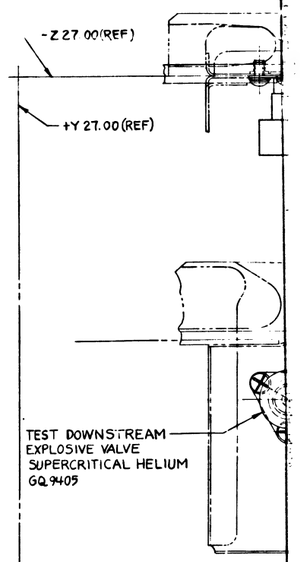
VIEW B-B LOOKING INBOARD (ROTATED 45°)
(FULL SCALE)
(ZONE 9B SHEET NO. 3)
LDW270-21451-15 INSTL. A3



VIEW A-A LOOKING INBOARD (ROTATED 45°)
(FULL SCALE)
(ZONE 9B SHEET NO. 3)
LDW270-21451-13INSTL A3



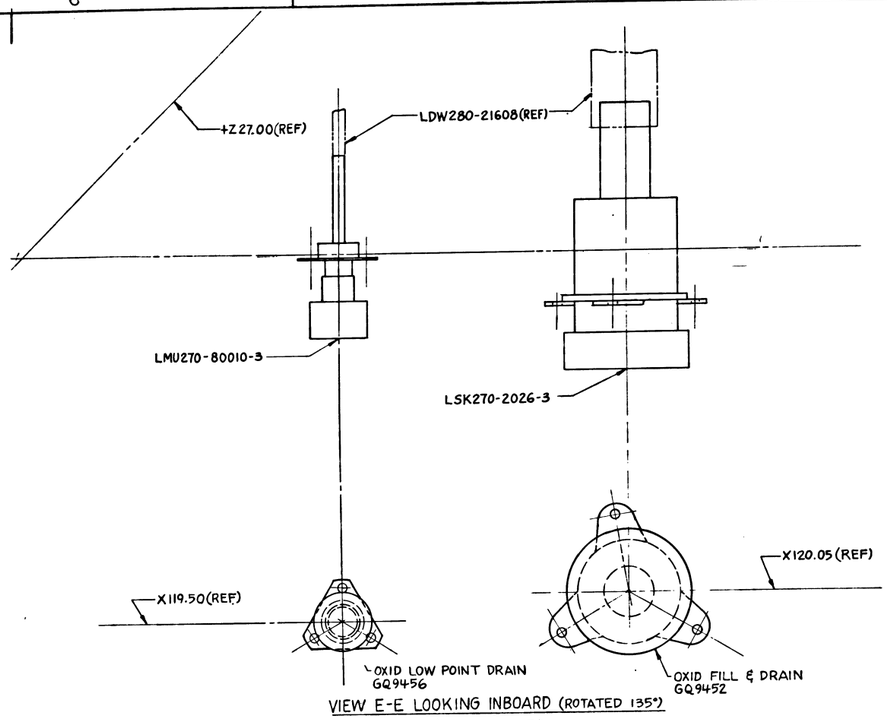
VIEW C-C LOOKING LEFT (ROTATED 90°)
(FULL SCALE)
(ZONE 9B SHEET NO. 3)
LDW270-21451-17 INSTL A3



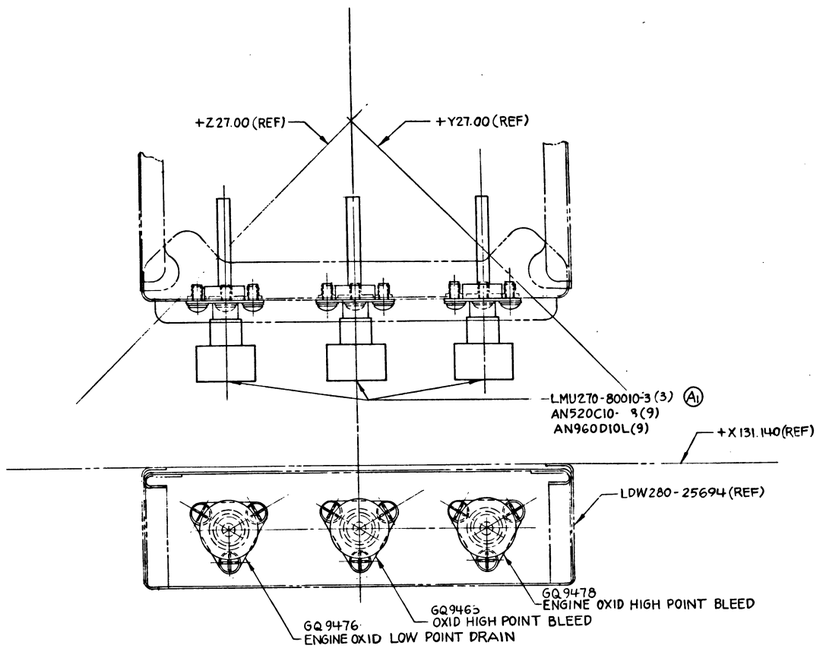
01/03 NAS 9-1100

CODE IDENT 26512	
LDW270-21451	SHT 3.00

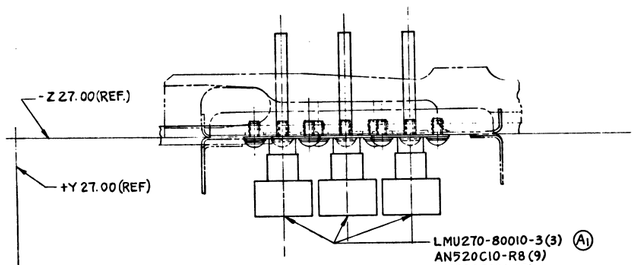


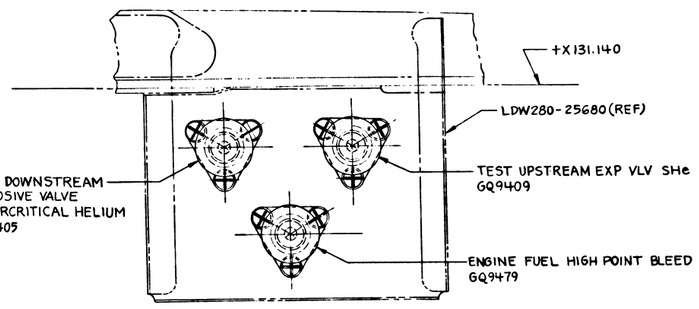


VIEW E-E LOOKING INBOARD (ROTATED 135°)
(FULL SCALE)
(ZONE 9C SHEET NO.3)
LDW270-21451-21 INSTL. (A3)

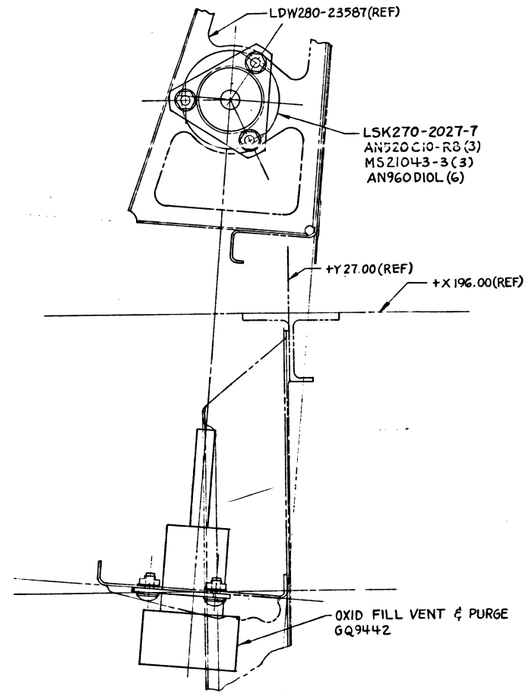


VIEW G-G LOOKING INBOARD (ROTATED 135°)
(FULL SCALE)
(ZONE 9C SHEET NO.3)
LDW270-21451-25 INSTL. (A3)





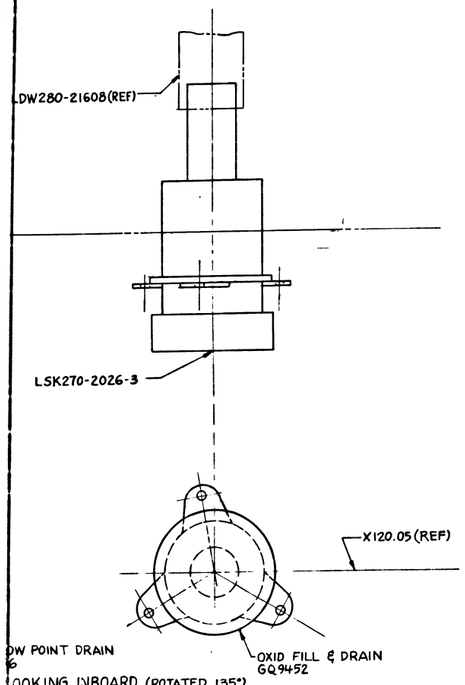
VIEW D-D LOOKING FWD
(FULL SCALE)
(ZONE 9B SHEET NO. 3)
LDW270-21451-19 INSTL. (A3)



VIEW F-F LOOKING AFT (ROTATED 180°)
(FULL SCALE)
(ZONE 9C SHEET NO. 3)
LDW270-21451-23 INSTL. (A3)

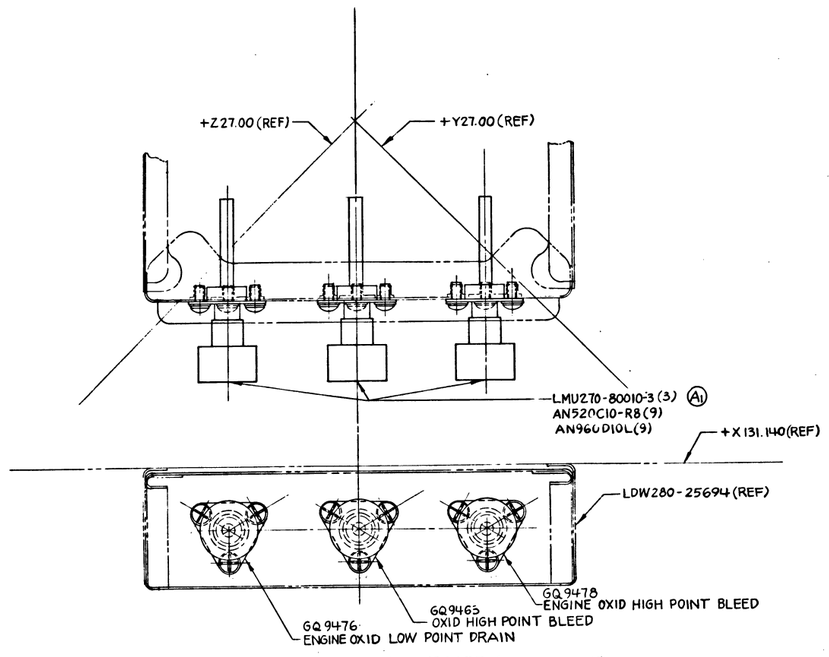
NOTES:
1. COMMERCIAL PART-SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING.

02/03 NAS 9-1100



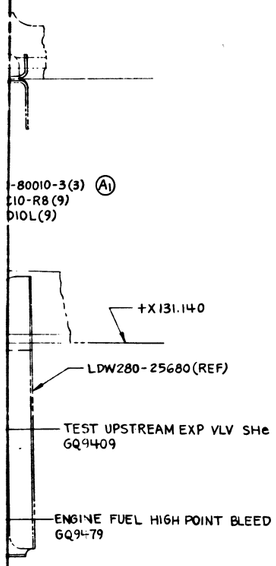
OW POINT DRAIN
6

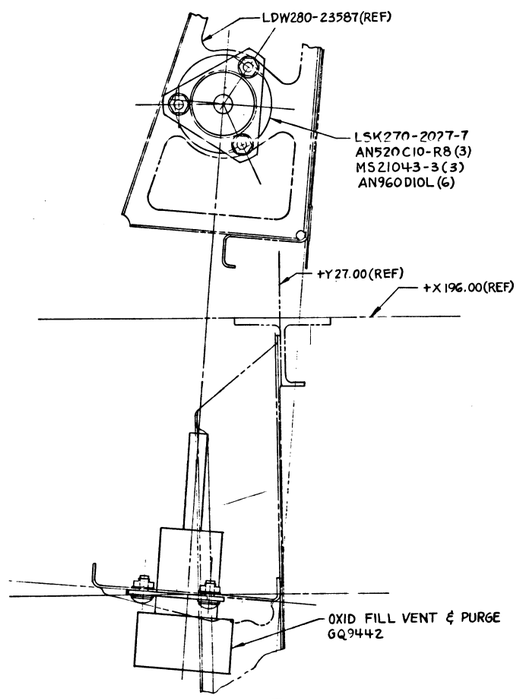
OOKING INBOARD (ROTATED 135°)
(FULL SCALE)
(ZONE 9C SHEET NO.3)
V270-21451-21 INSTL. (A3)



VIEW G-G LOOKING INBOARD (ROTATED 135°)
(FULL SCALE)
(ZONE 9C SHEET NO.3)
LDW270-21451-25 INSTL. (A3)

-80010-3(3) (A1)
10-R8(9)
D10L(9)





VIEW F-F LOOKING AFT (ROTATED 180°)
(FULL SCALE)
(ZONE 9C SHEET NO.3)
LDW270-21451-23 INSTL. (A3)

(A3)

NOTES:
1. COMMERCIAL PART-SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING.

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.	
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .020	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
250 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ∛ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

DWG SIZE 34 X 22

PRINTING INTO UNIT

FULL SIZE SHEET AREA (36 X 22) = 792 SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL) = 396 SQ. FT.

PRINT TRIM LINE

03/03 NAS 9-1100

CODE IDENT 26512	
LDW270-21451	SHT 3.00

LEM	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK		
	SIZE J	CODE IDENT NO. 26512	LDW270-21451 A
MODEL OR END ITEM	SCALE		SHEET 3.00

LDW270-21451 A B
LDW270-21451 A A

3-K

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENGINEERING ORDER

DWG NO. LDW270-21453 | EO NO. A1
CONTROL INFO NO. LEM 270-538

REVISE MODEL BLOCK AS SHOWN FOR -1:

N/A LDW280-21508 (WAS) LDW280-21510

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | 2

REASON FOR EO: TO SHOW CORRECT N/ASSY

DESCRIPTION OF EO: REVISED N/A FOR LTA-1(11) (WAS) LDW280-21510

GAEC EO RELEASE: APPROVED 6-24-66

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LTA-1 (11)	

DRAWING CHANGE REQD: ✓ REVISE DWG | RECORD EO

DISPOSITION OF PARTS: NOT REQD REWORK | NOT REQD SCRAP

APPROVED BY		SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
	DATE	VDI					

PRIORITY: C

DRAWING TITLE: GAGING SYSTEM CONTROL BOX INSTL DESCENT STAGE-PROPELLANT TANK

DRAWING NO.: LDW270-21453 | EO NO. A1

ISSUED BY B. J. ZANG X1472 SECTION PROPULSION-DESIGN GROUP NO. 345 PL 35

268

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

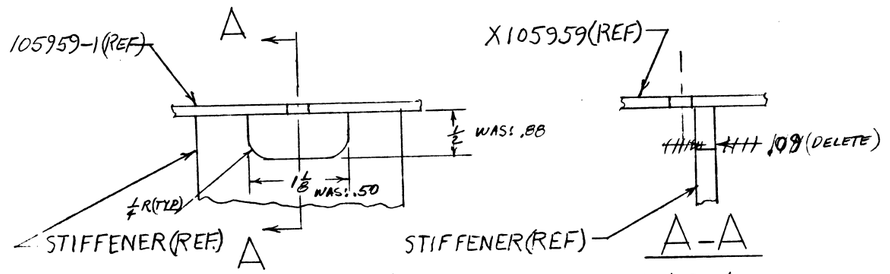
ENG 32.1 REV 3-65 **ENGINEERING ORDER**

DWG. NO. LDW270-22000 | EO NO. C2

CONTROL INFO NO. LM-5-9992

ON - 3 INSTL

REUSE BRKT ASSY (ZONE 7A) AS FOLLOWS:



IN REWORK NOTE ON FLD/DWG, DELETE NOTES A & B & ADD:
"MACHINE CLEARANCE THRU STIFFENER AS SHOWN"

RELEASED BY LIAISON

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG

REASON FOR EO: TO PROVIDE ADDITIONAL CLEARANCE FOR NUT & WRENCH

DESCRIPTION OF EO: ON - 3 INSTL. IN FLD (ZONE 7A) 1/8 WAS .50, 1/4 WAS .88 ADDED & R (TYP). IN SECT A-A DELETED .09 & REVISED PICTURE TO SHOW CUT THRU STIFFENER. DELETED NOTE A & B ADDED "NOTE: MACHINE CLEARANCE THRU STIFFENER AS SHOWN".

GAEC EO RELEASE: 5

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA-2 A/R	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO | DISPOSITION OF PARTS: REWORK ✓ | SCRAP

PRIORITY: C

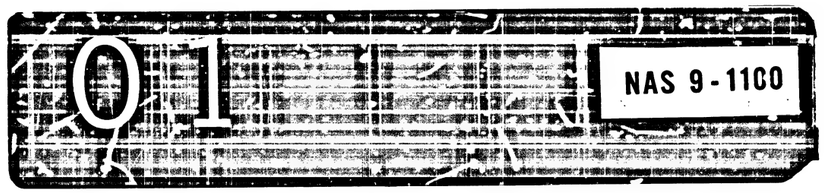
DRAWING TITLE: INSTALLATION - T.R.W. DESCENT ENGINE

DRAWING NO.: LDW270-22000

EO NO.: C2

APPROVED BY	DATE	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
	/			RD	12/12/6	12-12	12-13-66

ISSUED BY LIAISON, P. HUSTED, 6452 SECTION PROP. GROUP NO. PL 35



C

ENG 22.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-22000 | EO NO. C3
CONTROL INFO NO. Lm-5-12229

CANCEL E.O. C1

RELEASED BY LIAISON

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG

REASON FOR EO: LSC 270-6-12 ENGINE NOT USED.

DESCRIPTION OF EO: CANCELLED E.O. C1 AND PART CREATED THEREON.

GAEC EO RELEASE: 5 — 6 — 7 — ENGR.

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA-2R	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
↘			✓

APPROVED BY							
DATE							
	1			SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
						RM	—	[illegible]	RHL(C)	[illegible]
						7/1/67	—	1-24	1-27-67	[illegible]

PRIORITY: C

DRAWING TITLE: INSTALLATION DESCENT ENGINE

DRAWING NO.: LDW270-22000

EO NO.: C3

ISSUED BY: LIAISON J. JARVIS

SECTION: PROP.

GROUP NO.: 270 PL: 35

01

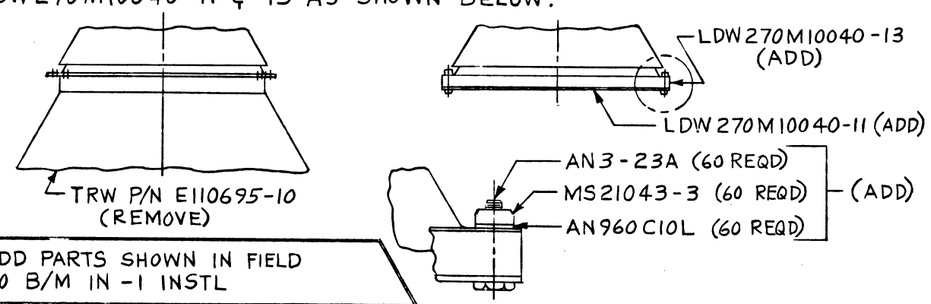
NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512 *
ENGINEERING ORDER

ENG 22.1 REV 3-65

DWG. NO. LDW270-22000 | EO NO. C4
CONTROL INFO NO. LM 270-992

ON SH. 3.00, ZONE 6A: REMOVE ENGINE NOZZLE EXTENSION, TRW PART NO. E110695-10 AND ASSOCIATED HARDWARE, AND ADD COVER PLATE LDW270M10040-11 & -13 AS SHOWN BELOW:



ADD PARTS SHOWN IN FIELD TO B/M IN -1 INSTL

ON SH. 1.00, REVISE N/A:
LDW280-22510 WAS LDW280-22000

DETAIL SPEC REQ		CL II ENGRG CHG	✓	CL I ENGRG CHG		LCD 1872	LFM 34	5

REASON FOR EO
TO PREVENT CHAMBER ABLATIVE LINER FROM FALLING OUT DURING LAUNCH AND BOOST VIBRATION

ON-1
DESCRIPTION OF EO
REMOVED NOZZLE EXTSION (TRW P/N E110695-10) ADDED TO-1: (60) AN3-23A; (60) AN960C10L; (60) MS21043-3; (1) LDW270M10040-11 -13; REVISED N/A: LDW280-22510 WAS LDW280-22000

GAEC EO RELEASE: VK 7-27-67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA-2R(12)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		✓	

APPROVED BY	—	—		—	—	
DATE	7/18/67	—	—	7/18/67	—	—
	PROP	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG

Matthew Bolt 7-27-67
PROJ ENGRG

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	INSTL - DESCENT ENGINE	LDW270-22000	C4

ISSUED BY E. RIMMAUDO X1471 7-18-67 SECTION PROPULSION GROUP NO. 270 PL 25

01
NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		LEM	LDW280-23001	LTA-3(13)	1
								PART NO. LDW270-23010-1		GAEC SCH NO. 43	

(3)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	1.10	2.00	3.00	4.00				
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

		GRUMMAN REL INFO A	
LAST SECT LTR USED	A	PRIM NO.	VE(009)
LAST DASH NO. USED	-1	459	MP 17

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100 | LINE ITEM 009 | DOCUMENTATION TYPE III

DRAWN BY	SCIARROTTA 12/19/65	Rel	3/17
LAYOUT BY			
CHECKED BY			
GRP LDR.			
PROP.		W?	J. Kaufman 3/4/66
PROP.		PROJ ENGR	
V.D.I.		REL GROUP	
STRUC.	R. Hildreman 3/15	RELEASE	3-22-66

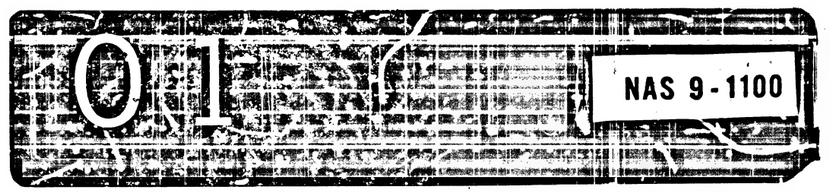
GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ASCENT ENGINE LTA-3 INSTALLATION

SIZE	CODE IDENT NO.		
E	26512	LDW270-23010	A

SCALE NONE | SHEET 1.00 OF 5

ENG 77.1 9-64



REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG CHGR	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1, 1.10, 2, 3	6C					EOA1 (A)	IN FLD # B/MON-1 ADDED AN960C10L(12), NAS653V4(12) # DELETED NAS1006-14A(3), REPLACED WITH NAS-1273-16(3), ADDED REF. PICTURE OF LDW280-16000-5341-535. SH. 1 OF 5 WAS SH. 1 OF 4, ADDED SH. 1.10.	LTA-3(13)	✓		GARY KORDES 9-2-66		

CHG APPROVED	LTR	GROUP LDR	PROP.	PROP.	VEH. DES. INT	STRUCTURES	RELIABILITY					
	A											

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-23010	A

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01 NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
12		NAS653V4	E	BOLT	STD. PART						
12		AN960C10L	E	WASHER	STD. PART						
3		NAS1273-16	E	BOLT	STD. PART						
3		MS21043-6	E	NUT	STD. PART						
3		AN960C616	E	WASHER	STD. PART						
3		LDW270-10011-11	E	WASHER	SEE DWG.						
1		LSC270-0050052	S	ASCENT ENGINE	SEE NOTE #2						
-1		LDW270-23010-1	E	ASCENT ENG. INSTL.							

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

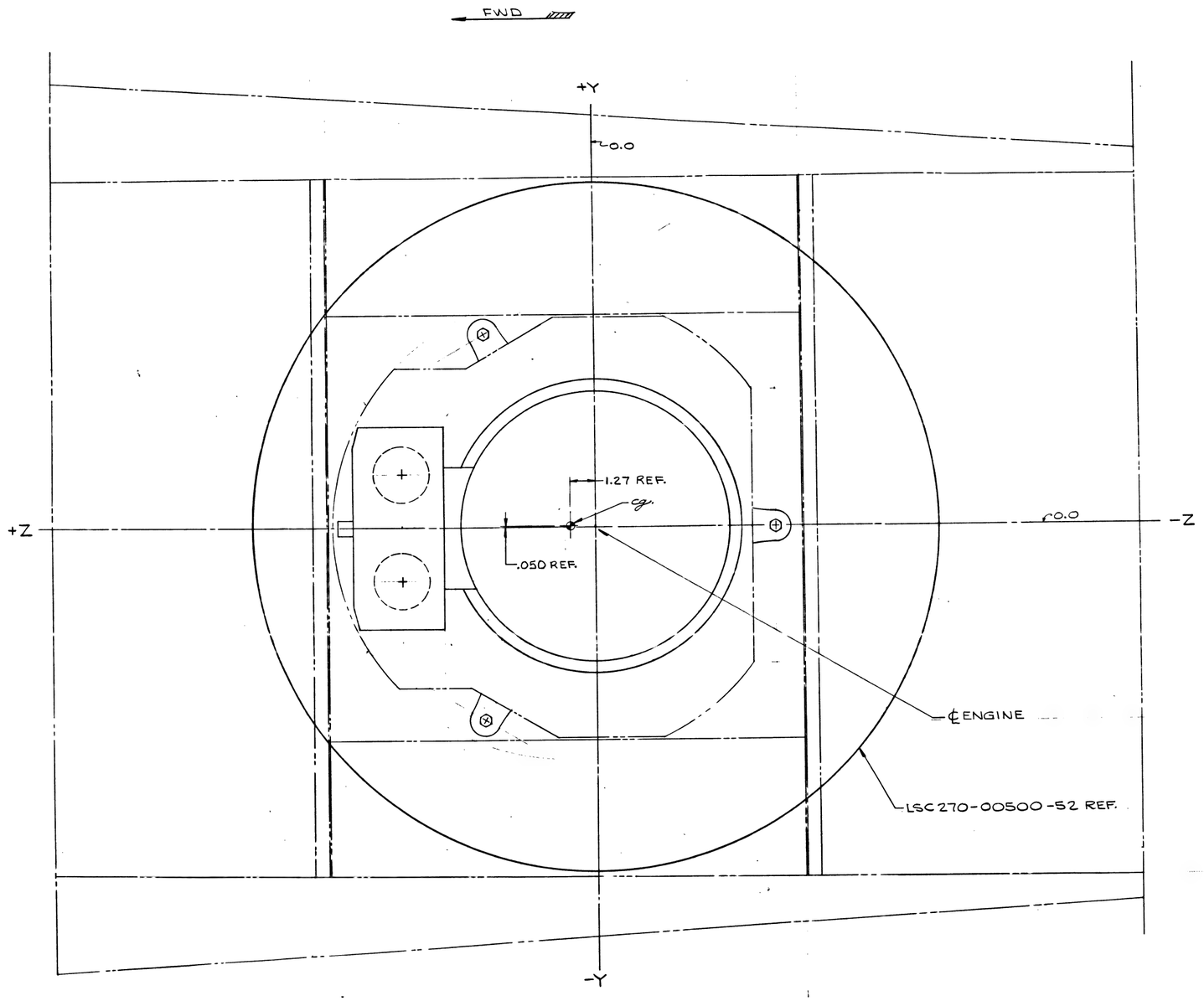
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-23010	A

SCALE NONE SHEET 2.00

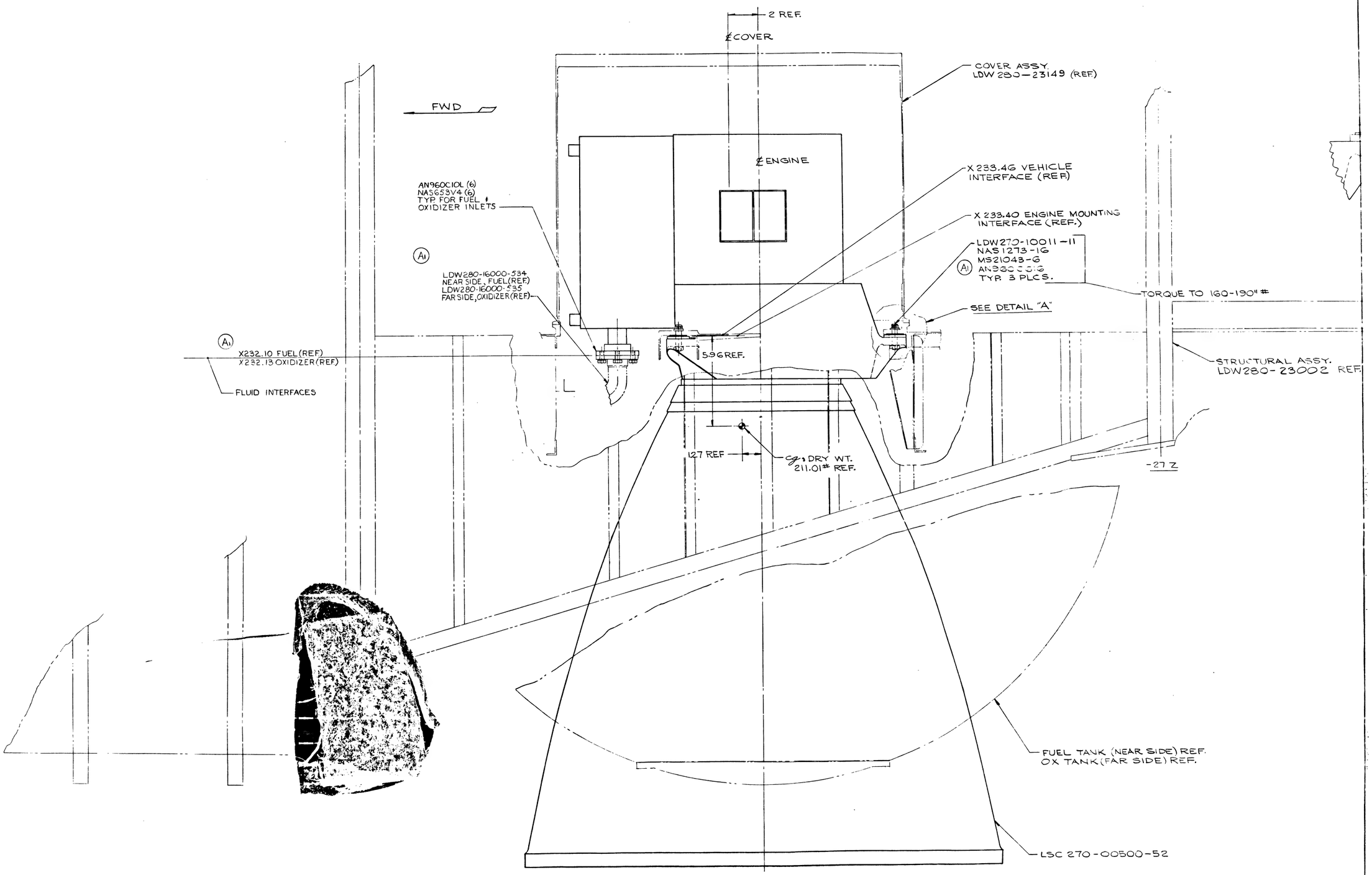
ENG 77.2 7-65

01 NAS 9-1100



PLAN VIEW

CODE IDENT. No. 26512
LDW270-23010 SHT 3.00



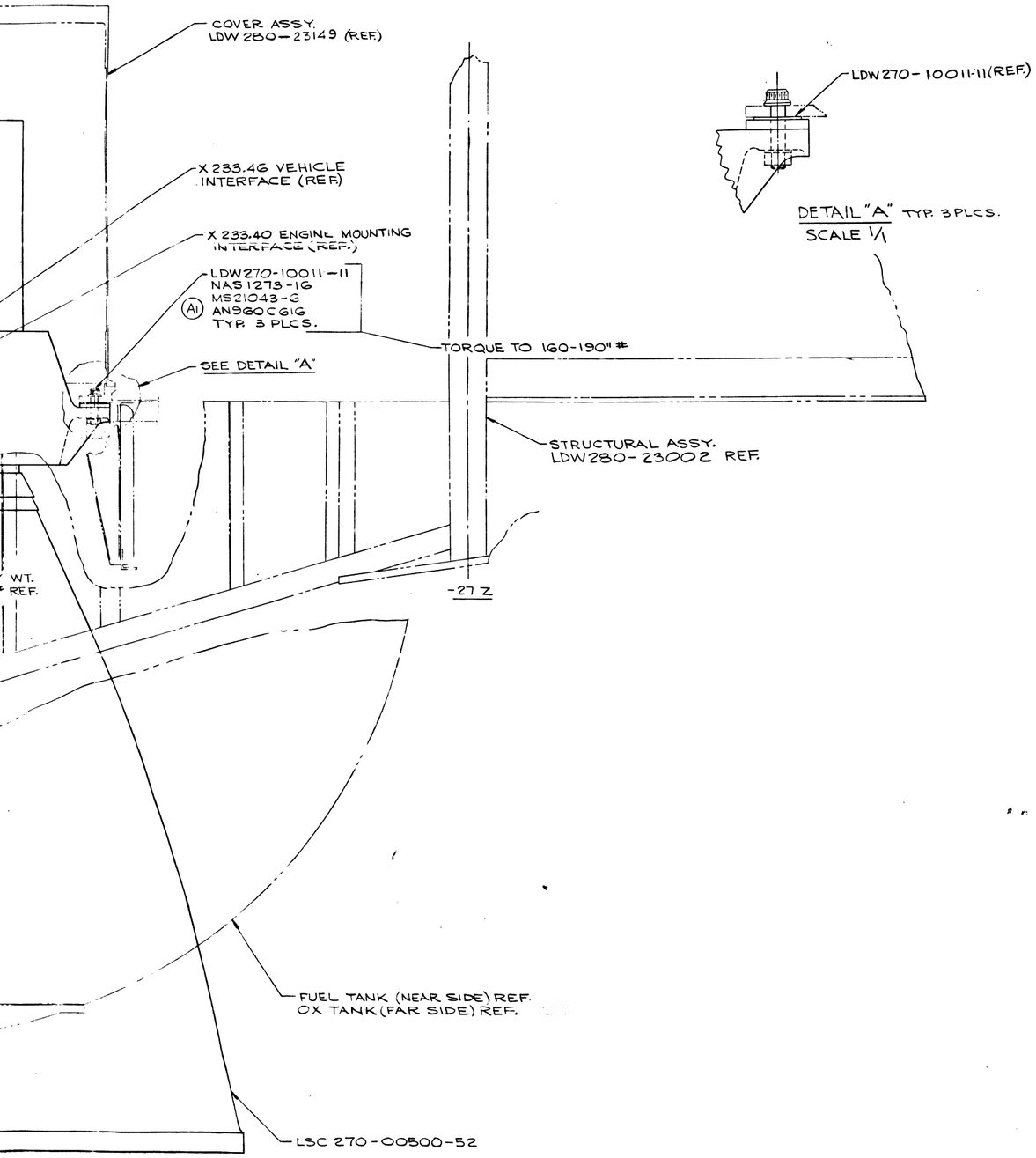
SIDE ELEV.
VIEW LOOKING INB'D.
L.H. SIDE

-1 ENGINE INSTL.

CODE IDENT. No. 28512
LDW270-23010 SHT. 230

02-03 NAS 9-1100

CODE IDENT. No. 28512
LDW270-23010 SHT. 230



DETAIL "A" TYP. 3 PLCS.
SCALE 1/1

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

- PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY.
- FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010; .063R TO .250R ± .015; OVER .250R ± .030
- DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.
- EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
- DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
- MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
- DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
- HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
- ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
- 125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
- 250 FOR ALL DRILLED HOLES
- REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
- INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
- SYMBOL ✓ DENOTES SURFACE TO BE MACHINED
- UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
- LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
- TOLERANCE ON LOFTED DELINEATIONS IS

DWG SIZE 34 X 12.5 — D — C

PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X) = SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL) = SQ. FT.
PRINT TRIM LINE

B LDW270-23010A
A LDW270-23010A

03703 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE J	CODE IDENT NO. 26512	LDW270-23010	A
MODEL OR END ITEM	SCALE 1/2	SHEET 3.00	

CODE IDENT. No. 26512
LDW270-23010 SHT 3.00

3FR

NOTES:

1. FOR HANDLING OF ENGINE SEE DWG'S. (LDW420-63200 & LDW420-63300).

2. COMMERCIAL PART - SEE SPECIFICATION CONTROL DRAWING # LSC270-00500 BEFORE ORDERING.

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-23010	
SCALE ——		SHEET 4.00	

V.1 6-64

01

NAS 9-1100

LDW270-23020

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
PART NO.			

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
PART NO.			

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
LM	LDW280-23001	LTA-3(13)	1
PART NO. LDW270-23020-1			

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00		2.00	3.00	4.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	B	GRUMMAN REL INFO C	
LAST DASH NO. USED	-1	PRIM NO.	H.F-009
		459	MP-16 2/13/69

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
	LCD 1422

CONTRACT NO. NAS 9-1100 | LINE ITEM 009 | DOCUMENTATION TYPE II

DRAWN BY	HORNE 1-9-68	WTS	
LAYOUT BY			
CHECKED BY	[illegible] 1-9-68		
GRP LDR	[illegible] 1/10/68		
PROP	[illegible] 1/10/68		
VDI	[illegible]	PROJ ENGR	[illegible]
STRUCT	[illegible]	REL GROUP	[illegible] 2/13-68

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ENGINE INSTALLATION
ASCENT STAGE - LTA-3

SIZE	CODE IDENT NO.	
B	26512	LDW270-23020
SCALE NONE		SHEET 1.00 OF 4

ENG 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY	PART NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
3	GW502F-6C	E		WASHER	GRUMMAN STD						
3	MS24665-302			COTTER PIN	STD. PART						
3	AN310C6			NUT	STD. PART						
3	LDW280M111155-5			WASHER	SEE DWG						9C
1	LDW280M111547-5			BOLT	↕						9A
2	LDW280M111547-3			BOLT							9C
2	LDW280M11085-1			SPHERICAL WASHER							9C
3	LDW280M11084-1			SPHERICAL WASHER							9B
3	LDW280M11083-1			SPHERICAL WASHER	SEE DWG						9B
1	LSC270-00500-52			ASCENT ENGINE	SEE NOTE 4						
-1	LDW270-23020-1	E		ENGINE INSTL.					NONE	NONE	5A

SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH NONE

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW270-23020

SCALE NONE SHEET 2.00

ENG 77.2 5-64

01A

NAS 9-1100

NOTES:

1. FOR HANDLING OF ENGINE SEE DWG'S. (LDW420-63200 & LDW420-63300)
2. PRIOR TO INSTALLING BOLTS COAT THREADS WITH PR240AC LUBRICANT PER LSM-14-6004.
3. PROGRESSIVELY TORQUE BOLTS IN ROTATION TO INDICATED LEVEL.
4. COMMERCIAL PART-SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING.

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-23020	
SCALE NONE		SHEET 3.00	

ENG 79.1 6-64

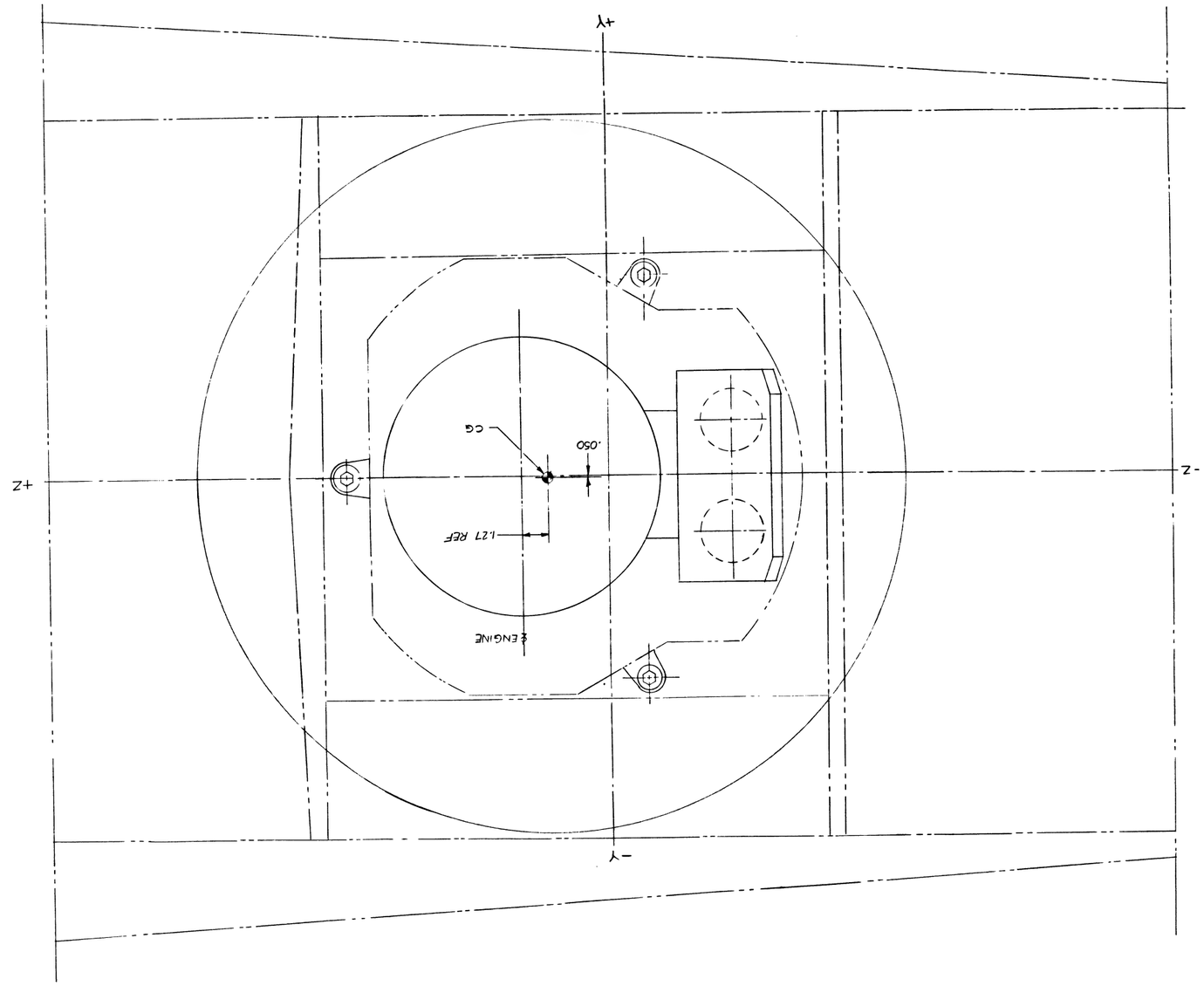
NAS 9-1100

CODE IDENT No 26512 SHT 400 LDW270-23020

01/03 NAS 9-1100

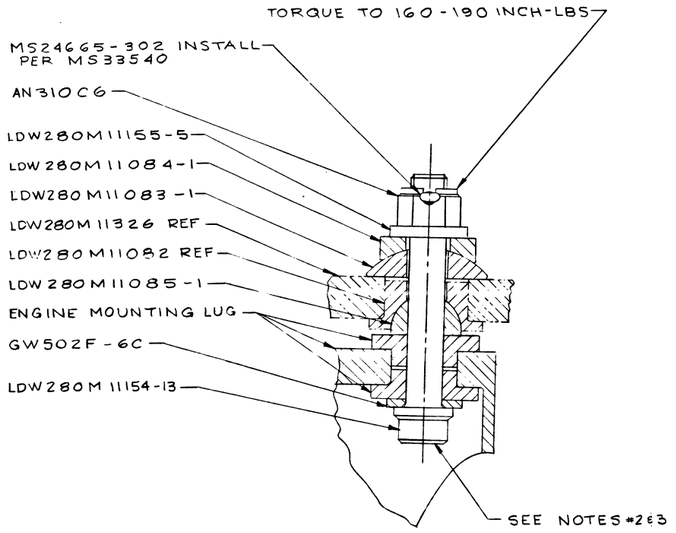
VIEW LOOKING DOWN

FWD

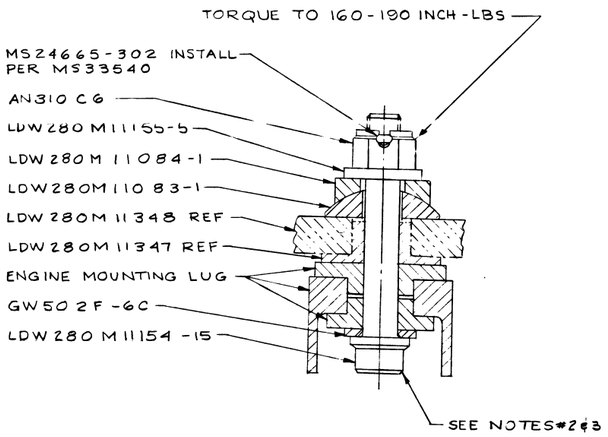


MS24665-302 INSTA
PER MS33540
AN310C6
LDW280M11155-5
LDW280M11084-1
LDW280M11083-1
LDW280M11326 REF
LDW280M11082 REF
LDW280M11085-1
ENGINE MOUNTING LUG
GW502F-6C
LDW280M11154-13

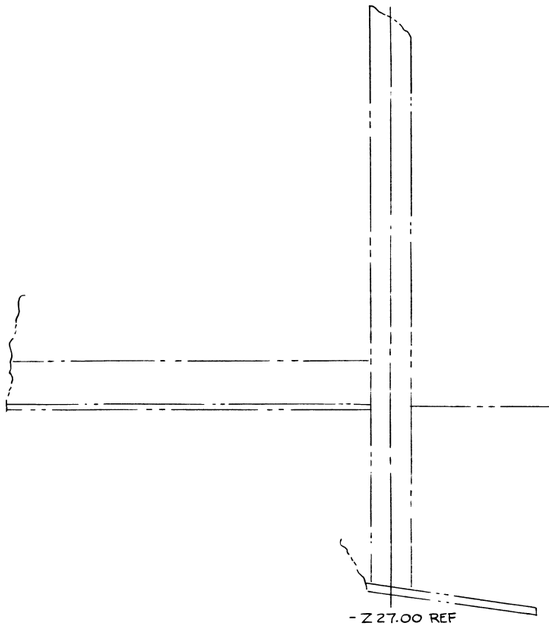
MS24665-302 INS
PER MS33540
AN310C6
LDW280M11155-5
LDW280M11084-1
LDW280M11083-1
LDW280M11348 REF
LDW280M11347 R
ENGINE MOUNTING L
GW502F-6C
LDW280M11154-

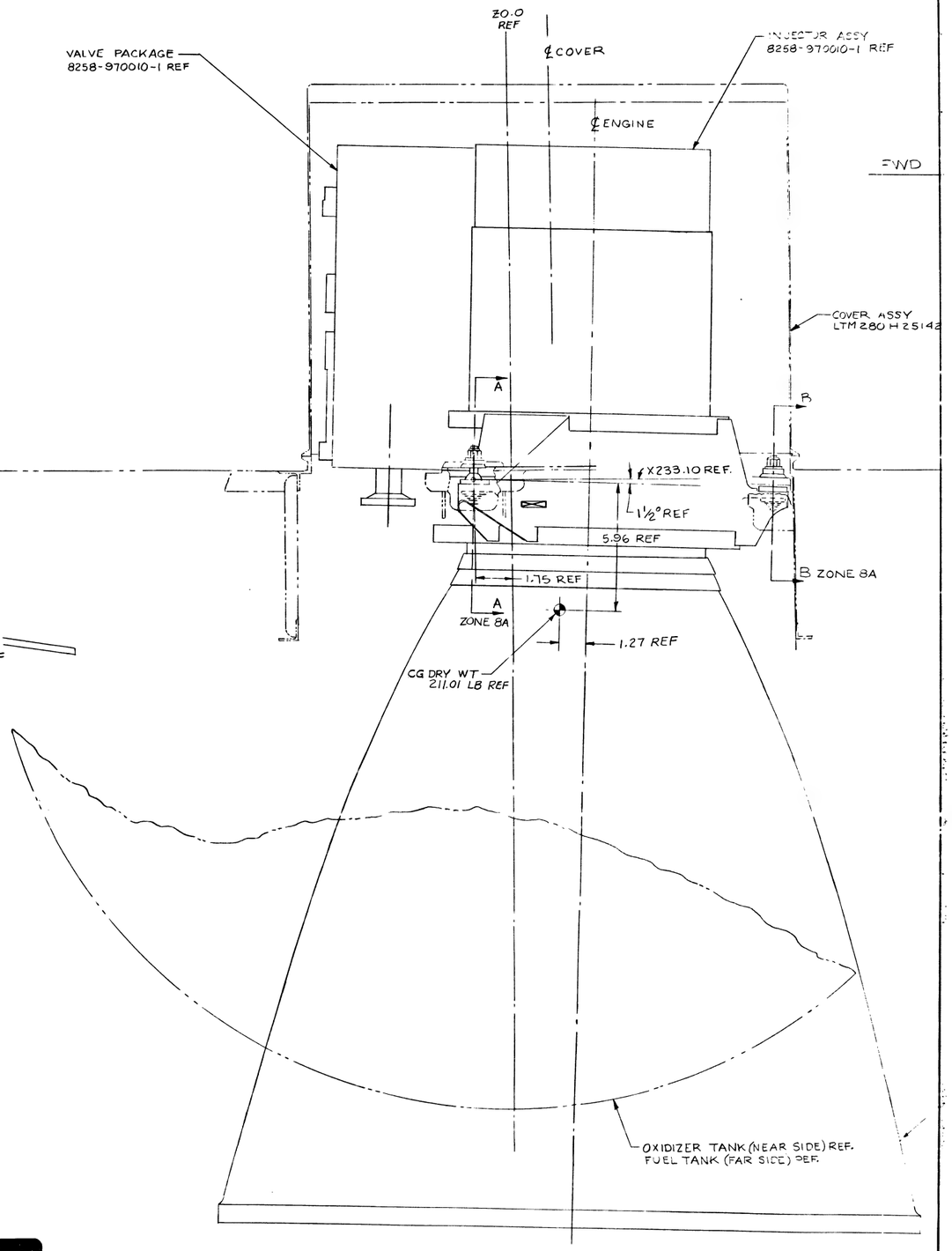


SECT. A-A ZONE 5B
SCALE 2/1
TYP FAR& NEAR SIDE



SECT. B-B ZONE 5B
SCALE 2/1



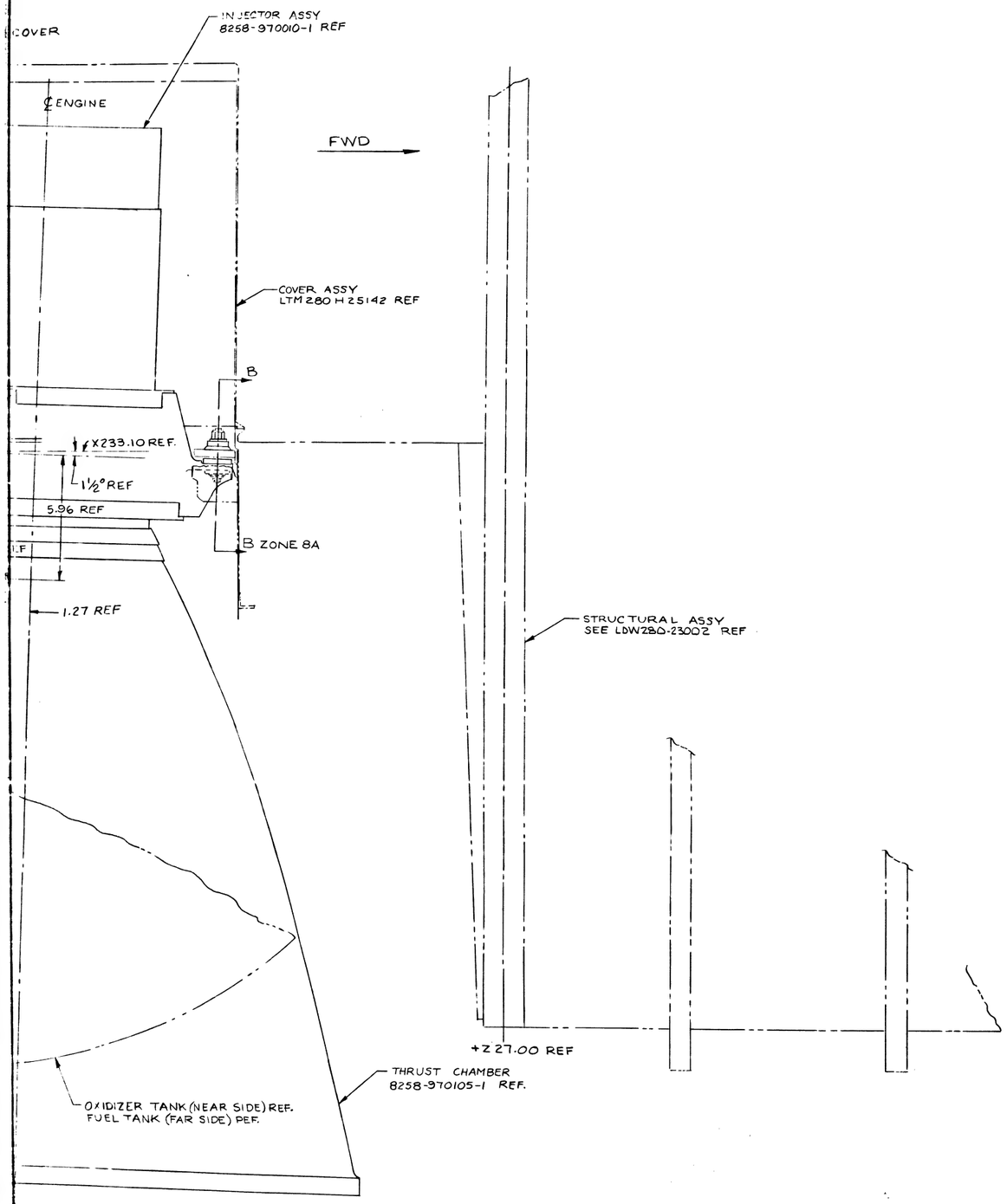


LDW270-23020-1 INSTL

VIEW LOOKING INBD.
R.H. SIDE

02/03R NAS 9-1100

COVER



MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.

W.K. STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010; .063R TO .250R ± .015; OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
500 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ⚡ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

DWG SIZE D 34 X 50

PRINTING INFO ONLY
FULL SIZE SHEET AREA (34 X 50) = 35 SQ FT.
1/2 SIZE SHEET AREA (1/4 OF FULL) = 8.7 SQ FT.

PRINT TRIM LINE

20-1 INSTL

NG INBD.
DE

CODE IDENT No 26512
LDW270-23020 SHT 4.00

03703 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
D	26512	LDW270-23020

LM MODEL OR END ITEM | SCALE 1/2 NONE | SHEET 4.00

B LDW270-23020

A LDW270-23020

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LEM	LDW 270-23500	LTA 3	1
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW 270-23100-1		GAEC SCH NO. 50-1	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	2.00	3.00	1.10					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

VIEW LAST ~~SECT~~ LTR USED	C-C
LAST DASH NO. USED	-1

GRUMMAN REL INFO A
PRIM NO. 470 (009) MP-A 8-29-6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS-9-1100 LINE ITEM # 9 DOCUMENTATION TYPE III

DRAWN BY	E. RIMMAUDO	12-8-65
LAYOUT BY		
CHECKED BY		12/10/65
GROUP LEADER		12/10/65
PROP		12/10/65
STRUCT		12/10/65
VDI		PROJ ENGR
		REL GROUP

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

INSTALLATION - DESCENT ENGINE

SIZE	CODE IDENT NO.		
B	26512	LDW 270-23100	A

SCALE 1/4 NONE SHEET 1.00 OF 4

ENG 77.1 9-64

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	~~DEPT~~ APPD
A	1	1.00							REVISED STATUS BLOCK: ADDED 1.10	LTA-3	✓		ZANG 26AUG 1966		
	2	2.00 3.00	3B					A 1	NAS654V7(8) (WAS) NAS654V6(8)						
	3		3A						IN F/D & B/M ADDED LDW280M17469(2) PLATE						
	4								CHANGED COMM. PARTS TO GAEC APPROVED STANDARDS						
	5		3A 7A-C					(R)	IN F/D & B/M LOCKWIRE MS20995NC32 (WAS) MS20995C32						

FOR CONTINUATION OF REVISIONS SEE SHEET _____

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
P	26512	LDW270-23100	A
SCALE NONE		SHEET 1.10	

ENG 77.3 5-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		SEE NOTE 2		SHIM							
1		GS13AJ-505	E	SEAL "O" RING TEFLON	GRUMMAN STD						
1		GS13AJ-504	E	↓	↓						
2		GS13AJ-502	E	SEAL "O" RING TEFLON	GRUMMAN STD						
4		NAS1272H34	E	BOLT	STD PART						
4		NAS1272H11	E	BOLT	↓						
10		NAS654V18	E	BOLT							
11		NAS654V9	E	BOLT							
8		NAS654V7	E	BOLT							
27		MS21043-4	E	NUT							
AS REQ'D		MS20995NC32	E	LOCKWIRE							
8		AN960D5½L	E	WASHER							
29		AN960D416	E	WASHER							
1		AN919-3C	E	REDUCER							
1		AN815-4C	E	UNION	↓						
2		AN815-2C	E	UNION	STD PART						
1	11982	LSC270-00600-7	S	ENGINE-DESCENT	SEE NOTE #1						
10		LDW280M17472-1	E	BUSHING	SEE DWG						
2		LDW280M17469-1	E	PLATE	SEE DWG						
		LDW270-23100-1	E	INSTL-DES. ENG							

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH :

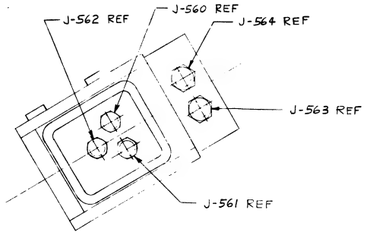
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW 270-23100	A

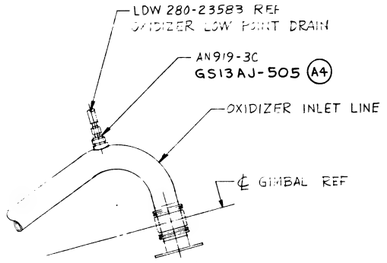
SCALE NONE SHEET 2.00

VG 77.2 7-65

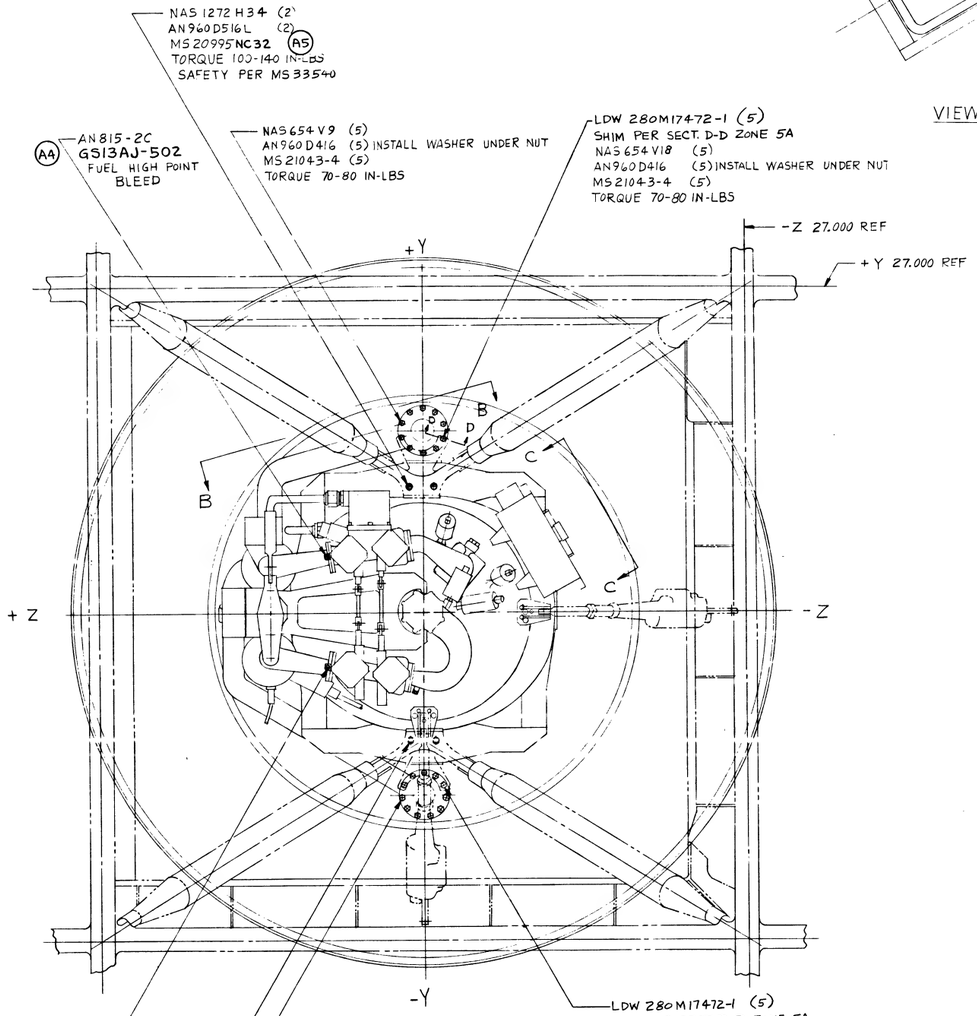
NAS 9-1100



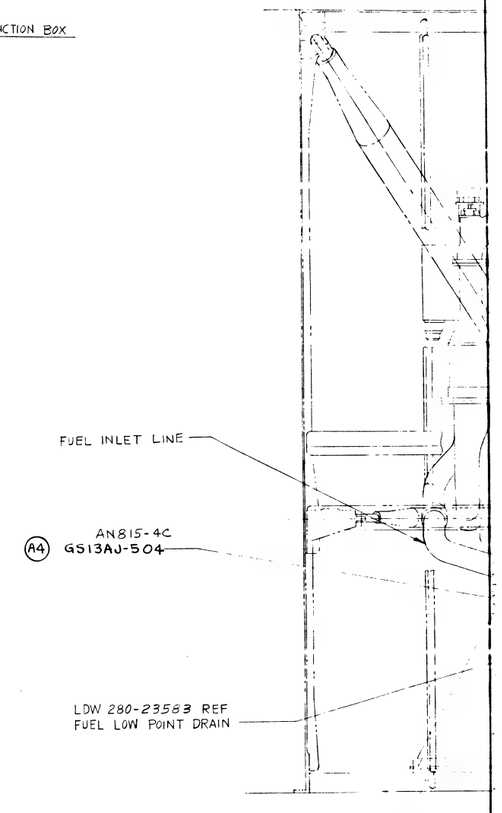
VIEW C-C JUNCTION BOX

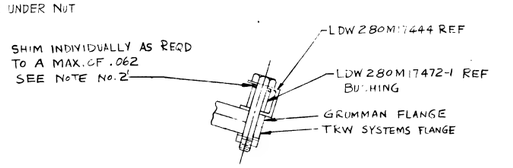


VIEW B-B

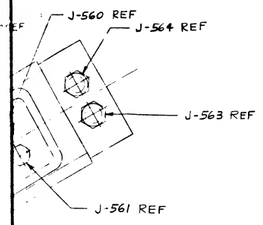


VIEW A-A

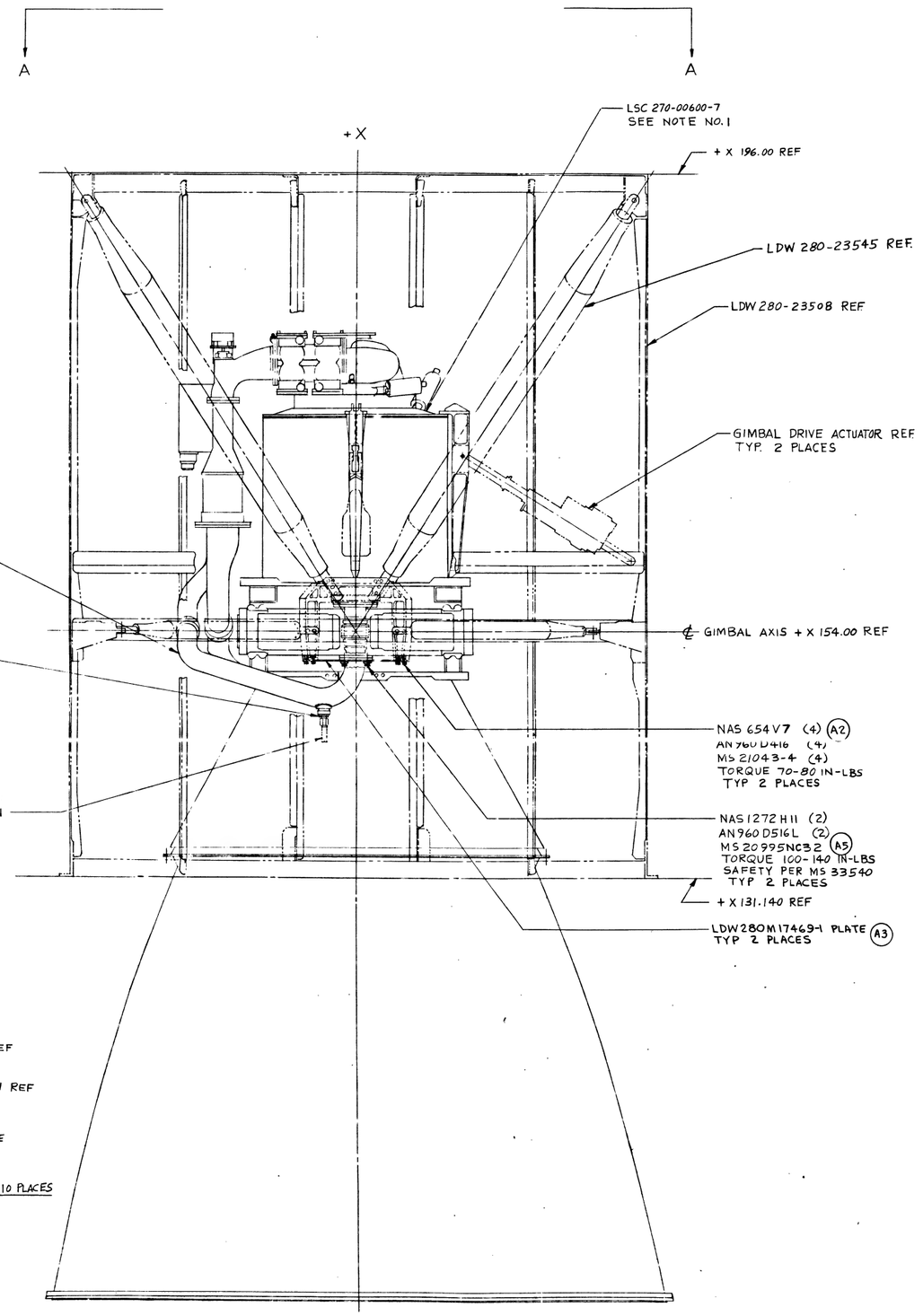


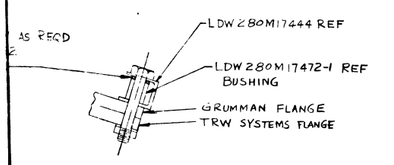


SECTION D-D ZONE 6C TYP 10 PLACES
FULL SIZE



VIEW C-C JUNCTION BOX





SECTION D-D ZONE 6C TYP 10 PLACES
FULL SIZE

NOTE:
1. COMMERCIAL PART – SEE SPECIFICATION CONTROL DRAWING NO. LSC 270-00600-7
2. USE AL ALLOY QQ-A-355, 2024-T3 FIN. #88

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY.	
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ⚷ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, MAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

50 FT. SQ. FT.
DWG SIZE 34 X
PRINTING INTO ONLY
FULL SIZE SHEET AREA OR X 1–
1/2 SIZE SHEET AREA (1/4 OF FULL)–
PRINT TRIM LINE

LDW 270-23120 A
LDW 270-23100 A

102/1021 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE J	CODE IDENT NO. 26512	LDW 270-23100	A
MODEL OR END ITEM	SCALE 1/4	SHEET 3	

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG NO. LDW270-23100 | EO NO. B1
CONTROL INFO NO. LM270-863

(ADD) -3 INSTL N/A LDW280-54508 LTA-3D/R 1/MODULE

-3 IDENTICAL TO-1 EXCEPT AS FOLLOWS:
IN F/D (ZONE 3C) LDW280-23508 REF LTA-3 WAS LDW280-23508 REF
LDW280-54508 REF LTA-3D/R

IN SECT D-D (ZONE 5A)
LDW280M17350 OXID } (LTA-3D/R
LDW280M17351 FUEL } LTA-3 REF WAS GRUMMAN FLANGE

IN B/M ADD LDW280M17350-1 PLATE 1/MODULE
LDW280M17351-1 PLATE 1/MODULE

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	LCD19-1242	5
REASON FOR EO: UPDATE DWG TO INCLUDE LTA-3D/R (REF LAV280-340)			DESCRIPTION OF EO: ADDED -3 INSTL	GAEC EO RELEASE: JK 4/6/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: NOT REWORK	REQD SCRAP	APPROVED BY	DATE	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
LM		LTA-3D/R(46)		✓				1				4/3/67			4-6-67	

PRIORITY: C
DRAWING TITLE: INSTALLATION DESCENT ENGINE
DRAWING NO.: LDW270-23100
EO NO.: B1

ISSUED BY W.KUTNER X1611 3-31-67 SECTION PROPULSION GROUP NO. 345 PL 25

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65 **ENGINEERING ORDER**

DWG. NO. LDW270-23100		EO NO. B2
CONTROL INFO NO.	LM-5-12896	

ON -3

SHT 3.00
IN SECTION D-D (ZONE A-5)

LDW 280M17350-10XID } {LTA-3 D/R
LDW 280M17351-1FUEL } {LTA-3 (REF)

S|B
TRW* G110273-1 OXID } LTA-3 D/R
TRW* G110273-2 FUEL }

RELEASED BY LIAISON

SHT 2.00
IN B|M

LDW 280M17350-1 S|B TRW*G110273-1
LDW 280M17351-1 S|B TRW*G110273-2

DETAIL SPEC REQ		CL II ENGRG CHG	✓	CL I ENGRG CHG		5

REASON FOR EO: FUEL & OXID. LINES NOT REQ'D, ON LTA-3 D/R

DESCRIPTION OF EO: -3 IN F|D & B|M TRW*G110273-1 WAS LDW280M17350-1 TRW*G110273-2 WAS LDW280M17351-1

GAEC EO RELEASE: 2

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY				DATE				
LM		LTA-3 D/R (46)		✓		✓		1			SUPPORT	RELIAB GROUP	6/5/67	4-29	5-26	4-24-67
													GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	INSTALLATION DESCENT ENGINE	LDW 270-23100	B2

ISSUED BY LIAISON A. VENTO X-6216 SECTION PROPULSION GROUP NO. 345 PL 25

01

NAS 9-1100

LDW270-23101 -A

LM	LDW270-54100	LM-15(45)	1
	LDW270-54100	LM-14(44)	1
	LDW270-54100	LM-13(43)	1
	LDW270-54100	LM-12(42)	1
	LTM 270-60010	PD-2	1
	LDW270-54100	LM-11(41)	1
	LDW270-54100	LM-10(40)	1
	LDW270-54100	LM-9(39)	1
	LDW270-54100	LM-8(38	1
	LDW270-54100	LM-7(37)	1
	LDW270-54100	LM-6(36)	1
	LDW270-54100	LM-5(35)	1
	LDW270-54100	LM-4(34)	1
	LDW270-53100	LM-3(33)	1
	LDW270-52100	LM-2(32)	1
	LDW270-51100	LM-1(31)	1
LM	LDW270-25100	LTA-5(15)	1

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW270-23101-1		GAEC SCH NO. 55	

2.

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00					
REV	A	A	A		A					
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED	A
LAST DASH NO. USED	13

GRUMMAN REL INFO A

PRIM NO.	(E1009)		EMF
459	MP-14	A-12-66	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS — ANGLES
± 1/32 ±.020 ± 1/2°

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100 LINE ITEM # 1 DOCUMENTATION TYPE II

DRAWN BY	J. GRIECO 8-31-66	RELIABILITY	
LAYOUT BY	L. NILSEN	THERMO	O Schaefer 10/10/66
CHECKED	C. GLASER 9-2-66		
GR LEADER	[illegible] 9/13/66		
VEH DES INT			
STRUCTURE	[illegible] 10/10/66	PROJ ENGR	O A McClaugherty 10/11/66
MATERIALS	[illegible] 10/10/66	REL GROUP	[illegible] 10/11/66
WEIGHTS			

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

RING ASSY
DESCENT ENGINE - THERMAL
PLUG SUPPORT

SIZE	CODE IDENT NO.	
B	26512	LDW270-23101 A

SCALE NONE SHEET 1.00 OF 4

ENG 77.1 12-65

EMF

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00, 1.10, 2.00, 3.00							IN FLD & B/M, ADDED LDW270-23101-11 & -13. IN B/M REMOVED INSULATION. IN FLD: ADDED LDW280P10871-11 (24) PLACES. 1½ DIM. WAS 3; REV FOLD ON-3; REM FOLD ON-5; REMOVED NOTE 1, ADDED NOTE 67 & 68 IN MODEL BLK ADDED LM-12 -13 -14 & -15 EFFECTIVITY. ADDED SH 1.10 SHT 1.00, DELETED LTA-3 REQUIREMENT	-5 LM-1 THRU LM-15, PD-2	✓	✓	KMS 11-10-66		

CHG APPROVED

LTR	GROUP LDR	VEH DES INT	STRUCTURE	MATERIALS	WEIGHTS	THERMO
A						11/30/66

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-23101	A

SCALE NONE SHEET 1.10

ENG 77.16 3-66

NAS 9-1100

QTY PER ASSEMBLY			CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		1		LDW270-23101-13	E	PATCH	SEE NOTE 6 & 3						
		1		LDW270-23101-11		BLANKET	SEE NOTE 6 & 3						
4 AS REQD	8 AS REQD			GS577A-1		STAPLE	GRUMMAN STD						
	AS REQD	AS REQD		LDW280P10869-11		INSULATION	SEE DWG						
				LDW280P10871-11		TAPE	SEE DWG						
		1		LDW270P10002-11		RING	SEE DWG						
											NONE	NONE	
		6		LDW270-23101-5		PATCH ASSY					NONE	NONE	
		1		LDW270-23101-3		BLANKET ASSY					NONE	NONE	
-5	-3	-1		LDW270-23101-1	E	RING ASSY					NONE	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

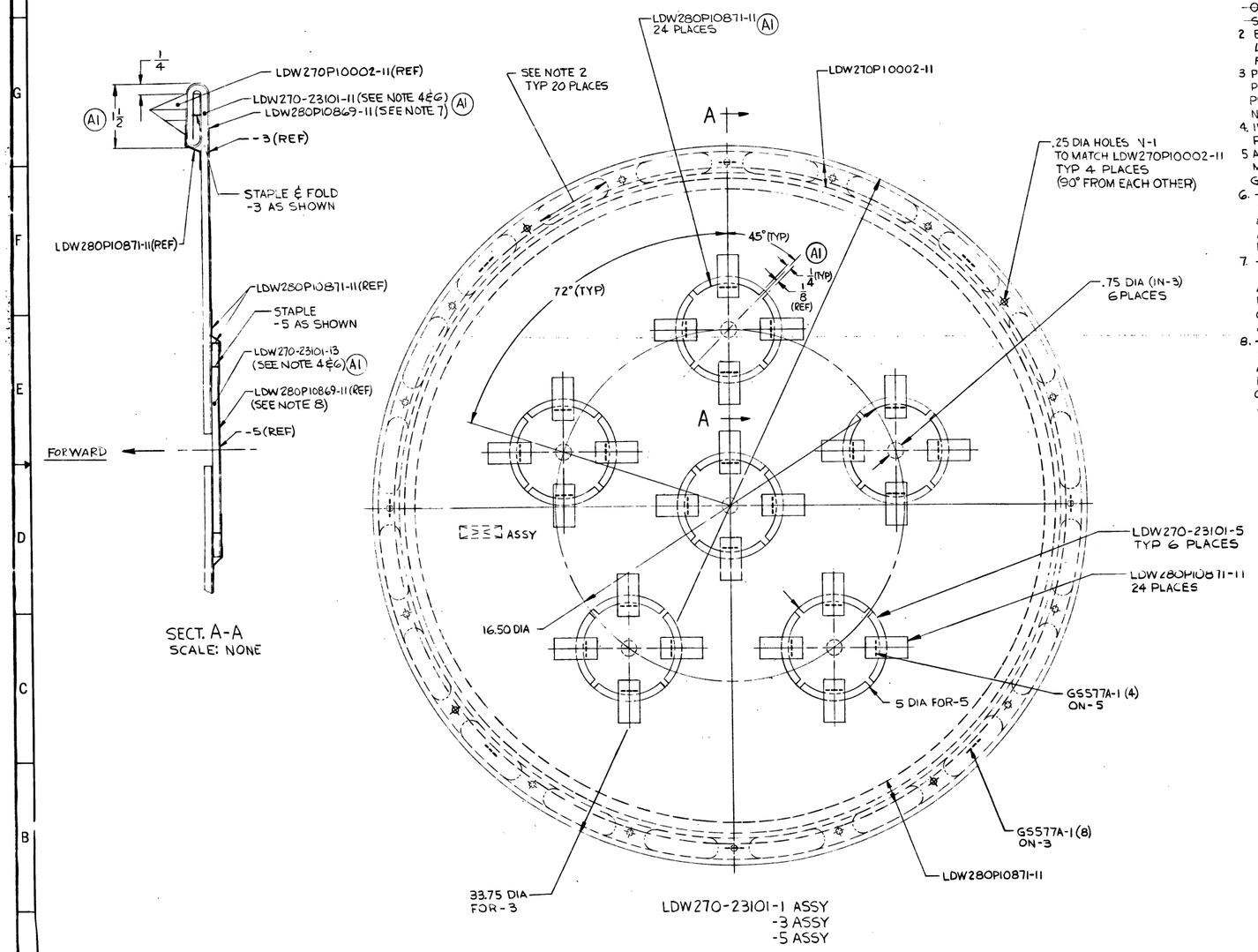
SIZE	CODE IDENT NO.		
B	26512	LDW270-23101	A

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



NOTES:

1. ~~-3 & -5 TO BE MADE FROM (5 LAYERS) OF ALUMINIZED POLYIMIDE FILM PREWRINKLED AND LAID UP INTO MULTIPLE SHEET BLANKETS, AND ONE NOT TO BE WRINKLED LAYER OF LDW280P10869-11, DURING MANUFACTURE OF -3 & -5 ALUMINIZED SURFACE OF EACH LAYER MUST FACE FWD (SEE SECT AA) AND COATED SURFACE OF LDW280P10869-11 MUST FACE OPPOSITE DIRECTION, TAPED AND STAPLED AS SHOWN IN FIELD~~
2. BOND-3 TO LDW270P10002-11 PER LSP-14-22602 (HOLES MUST BE KEPT FREE OF ADHESIVE)
3. POLYIMIDE FILM ALUMINIZED ONE SIDE ONLY .0005 PER LAYER, 2 OHMS PER SQUARE MAY BE PURCHASED FROM McCORDI CORP, MAMARONECK, N.Y. CODE IDENT # 24761
4. INSPECTION ON END ITEM ONLY. HOLES MAY BE PUNCHED ON ASSEMBLY
5. ALUMINIZED POLYIMIDE FILM AND LDW280P10869-11 MUST BE HANDLED WITH LINT FREE NYLON GLOVES
6. -11 & -13 TO BE MADE FROM 5 LAYERS OF ALUMINIZED POLYIMIDE FILM, PREWRINKLED & LAIDUP INTO A MULTIPLE SHEET BLANKET. ALUMINIZED SURFACE OF EACH LAYER MUST FACE SAME DIRECTION.
7. -3 TO BE MADE FROM LDW270-23101-11 & ONE, NOT TO BE WRINKLED, LAYER OF LDW280P10869-11. ALUMINIZED SURFACES OF LDW270-23101-11 MUST FACE OPPOSITE DIRECTION OF COATED SURFACES OF LDW280P10869-11, TAPED AND STAPLED AS SHOWN IN FIELD,
8. -5 TO BE MADE FROM LDW270-23101-13 & ONE, NOT TO BE WRINKLED, LAYER OF LDW280P10869-11. ALUMINIZED SURFACES OF LDW270-23101-13 MUST FACE OPPOSITE DIRECTION OF COATED SURFACES OF LDW280P10869-11 TAPED AND STAPLED AS SHOWN IN FIELD.

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG

NUMBER, DATE, PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .03R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN .001 FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ✓ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
	SIZE	CODE IDENT NO.	LDW270-23101
L M	F	26512	
MODEL OR END ITEM	SCALE HALF		SHEET

DNG 735 (4)

NAS 9-1100

LDW270-23101-D

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 25512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW 270-23101		EO NO. 31
CONTROL INFO NO.	LM 270-200	

REVISE B/M AS SHOWN:

WAS:	LM	LTM 270-60010	PD-2	1
IS:	LM	LTM 270-60010	PD-2	6
WAS:	LM	LTM 270-25100	LTA-5(15)	1
IS:	LM	LTM 270-25100	LTA-5(15)	5
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO	REQ'D PER MODULE OR END ITEM	
PART NO. LDW 270-23101-1				

DETAIL SPEC REQ		CL II ENGRG CHG	✓	CL I ENGRG CHG		2

REASON FOR EO: CORRECT ERROR ON DWG.

DESCRIPTION OF EO: ON PD-2 - 6 REQ'D WAS 1 ; ON LTA-5 - 5REQ'D WAS 1

GAEC EO RELEASE: FR 1/20/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		PD-2	
"		LTA-5(15)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: NOT REWORK | REQ'D SCRAP

APPROVED BY: DATE 1-20-67 | SUPPORT | RELIAB. GROUP | GROUP LEADER 1/19/67 | STRESS GROUP | LIAISON ENGRG | PROJ ENGRG 1/23/67 | GOVT

PRIORITY: C

DRAWING TITLE: RING ASSY, DESCENT ENGINE THERMAL PLUG

DRAWING NO.: LDW270-23101

EO NO. 31

ISSUED BY LARS NILSEN X 1611 SECTION LM PROPULSION GROUP NO. 270 PL 35

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

B
ENG 32.1 REV 3-65

DWG. NO. LDW 270-23101		EO NO. B2
CONTROL INFO NO. LM 270-873		

ON SHEET 3.00, REVISE NOTE 2 AS FOLLOWS:

2. THE RING, P/N LDW 270P10002-11 SHALL BE BRUSH COATED WITH NARMCO 7343 ADHESIVE ON TWO (2) SURFACES, THE DOWNSTREAM FACE AND THE I.D. BRUSH COAT THE I.D. FIRST, BEING CAREFUL TO KEEP HOLES FREE OF ADHESIVE. THEN, BRUSH COAT THE DOWNSTREAM FACE OR LOWER SURFACE AND BOND THE -3 BLANKET ASSY TO IT PER LSP-14-22602

WAS:

2. BOND -3 TO LDW 270 P10002-11 PER LSP-14-22602 (HOLES MUST BE KEPT FREE OF ADHESIVE)

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD 1578

REASON FOR EO: TO PREVENT CONTAMINATION OF THERMO BLANKETS FROM PLUG SUPPORT RING POWDERING

DESCRIPTION OF EO: REVISED NOTE 2, WAS: BOND -3 TO LDW 270P10002-11 PER LSP-14-22602 (HOLES MUST BE KEPT FREE OF ADHESIVE

GAEC EO RELEASE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO
LM		LM-1(31)	
		THRU LM-15(45)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		✓	

PRIORITY: C

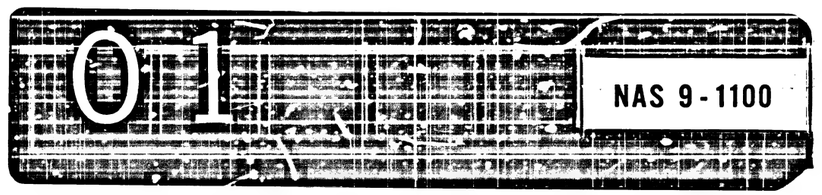
DRAWING TITLE: RING ASSY - DESCENT ENGINE - THERMAL PLUG SUPPORT

APPROVED BY	QR	R/m	—	Lowe	—	—	Gunn	AC
DATE	4/21/67	4/21/67	—	4/21/67	—	—	4/21/67	4-21-67
	PROP	SUPPORT MATLS	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	QM

DRAWING NO. LDW 270-23101

EO NO. B2

ISSUED BY E. RIMMAUDO X1471 4/20/67 SECTION LM PROPULSION GROUP NO. 270 PL 25



GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LDW270-23101 | ED NO. B3
CONTROL DFO NO. LM270-1275

ON SHEET 3.00 REVISE NOTES 2 & 7:

NOTE 2. BOND -3 & -9 ___ WAS: BOND -3 ___

NOTE 7. -3 & -9 ___ WAS: -3 ___

ON SHEET 2.00, IN B/M:

ADD -9 BLANKET ASSY SAME AS -3 EXCEPT: REMOVE LDW280P10871-11 TAPE AS REQUIRED, ADD GT15D-11 TAPE AS REQUIRED

ADD -15 RING ASSY SAME AS -1 EXCEPT: REMOVE (1) -3 BLANKET ASSY & LDW280P10871-11 TAPE AS REQUIRED, AND ADD (1) -9 BLANKET ASSY & GT15D-11 TAPE AS REQUIRED.

ON SHEET 1.00:

RESTRICT -1 EFFECTIVITY TO PD-2, LTA-5 LM-1, LM-2, LM-3

ADD -15 EFFECTIVE LM-4 THROUGH LM-15 M/A LDW270-54100 1 REQD/MOD.

ON SHEET 3.00 REVISE CALLOUTS AS SHOWN BELOW:

ZONE 4B:

LDW280P10871-11 ON-1
GT15D-11 ON-15

WAS: LDW280P10871-11

G5577A-1 (8) ON-3 & -9

WAS: G5577A-1 (8) ON-3

ZONE 3D:

LDW280P10871-11 24 PLACES ON-1
GT15D-11 24 PLACES ON-15

WAS: LDW280P10871-11 24 PLACES

ZONE 5H

LDW280P10871-11 24 PLACES ON-1
GT15D-11 24 PLACES ON-15

WAS: LDW280P10871-11 24 PLACES

ZONE 3F

.75 DIA (IN-3 & -9) 6 PLACES

WAS: .75 DIA (IN-3) 6 PLACES

ZONE 7G:

-3 (REF) -9 (REF)

WAS: -3 (REF).

ZONE 7F:

STAPLE & FOLD -3 & -9 AS SHOWN

WAS: STAPLE & FOLD -3 AS SHOWN

ZONE 8F:

LDW280P10871-11 (REF) ON-1
GT15D-11 (REF) ON-15

WAS: LDW280P10871-11 (REF)

ZONE 7F:

LDW280P10871-11 (REF) ON-1
GT15D-11 (REF) ON-15

WAS: LDW280P10871-11 (REF)

ZONE 5A: LDW270-23101-1-3-5-9-15 ASSY
WAS: LDW270-23101-1-3-5 ASSY

ZONE 6B: 33.75 DIA FOR -3 & -9 WAS: 33.75 DIA. FOR -3

REQUIREMENT FOR A HIGH TEMPERATURE TAPE																	
		EFFECTIVITY															
		SERIAL NO.															
LM		LM-4 (34) THRU LM-15 (45)															

IN P/D, B/M & M/B: ADDED -9 & -15, RESTRICTED -1 TO PD-2, LTA-5, LM-1 (33) THRU LM-3 (33) WAS PD-2, LTA-5 (12) LM-1 (31) THRU LM-15 (45), ADDED -9 TO NOTES 2 & 7

LCD 2360 DEG

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.2 REV 3-65

ENGINEERING ORDER

DWG. NO. LEO 270		EO NO. 81
CONTROL INFO NO. LM 270-1370		

REMOVE LM-15(45) EFFECTIVITY FROM THE FOLLOWING DWGS:

DRAWING NUMBER	TITLE	CHANGE NO.
LDW270-23101-15	SEE DWG.	B4
-28012-9		C5
-28013-1		B9
-51453-1,-3,-7,-17,-19,-23		C1
-53204-5		B8
-54020-7		D2
-54100-11		B9
-56402-1,-3		A4
-56452-1,-3		A3
P10002-11		A2
P10003-11		A7
M10037-11,-15		A6
M10038-11		A3
M10071-13-1, -14-1		B8
M10081-11		A1
M10082-11		A1
M10083-11		A1
M10084-11		A1
M10085-11		A1
M10086-11		A1
LDW270 M10087-11	SEE DWG.	A1

NAS 9-1100

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD 3587		LCRP 270-1	(5)

REASON FOR EO: ELIMINATION OF PROPULSION SUBSYSTEM FROM LM-15 (REF TWX JC32-68-1977 & -2028)

DESCRIPTION OF EO: FOR * REMOVED LM-15(45) EFFECTIVITY

GAEC RELEASE: 12-12-68

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY / DATE	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ. ENGRG	GOVT
LM		LM-15(45)		✓			✓	12-11-68						12/11/68	12/12/68

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SEE DRAWING	LEO 270	81

ISSUED BY J. REBHOLZ 12-6-68 X1471 SECTION PROPULSION GROUP NO. 345 PL 25

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 22.1 REV 3-65

DWG. NO. LDW270-23301 | EO NO. B2
CONTROL INFO NO. LM270-702

SHEET 2.00 & 4.00

IN B/M & F/D FOR -1 ASSY -

REMOVE - 1EA. LSC270-713-5 & -6 SOLE. LATCH VALVE

ADD - 1EA LSC270-713-9 & -10 SOLE. LATCH VALVE

REMOVE -1EA. LSC270-816-11 REDUCING VALVE

ADD -1EA. LSC270-816-11-1 REDUCING VALVE

32

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG

REASON FOR EO: REV. OF SOLE VL. DASH NO.

DESCRIPTION OF EO: FOR-1 ASSY- REMOVED 1EA LSC270-713-5 & -6 & LSC270-816-11. ADDED 1EA. LSC270-713-9 & -10 & LSC270-816-11-1.

GAEC EO RELEASE: FE 10/24/66

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA-3(3) TEST	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: -1 REWORK	SCRAP
✓		-1	

APPROVED BY							
DATE	11-1-66			10-31-66	—	—	10/27/66
	PROP	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG

PRIORITY: C

DRAWING TITLE: MODULE ASSY. DESCENT PROPELLANT PRESSURIZATION SUBSYSTEM

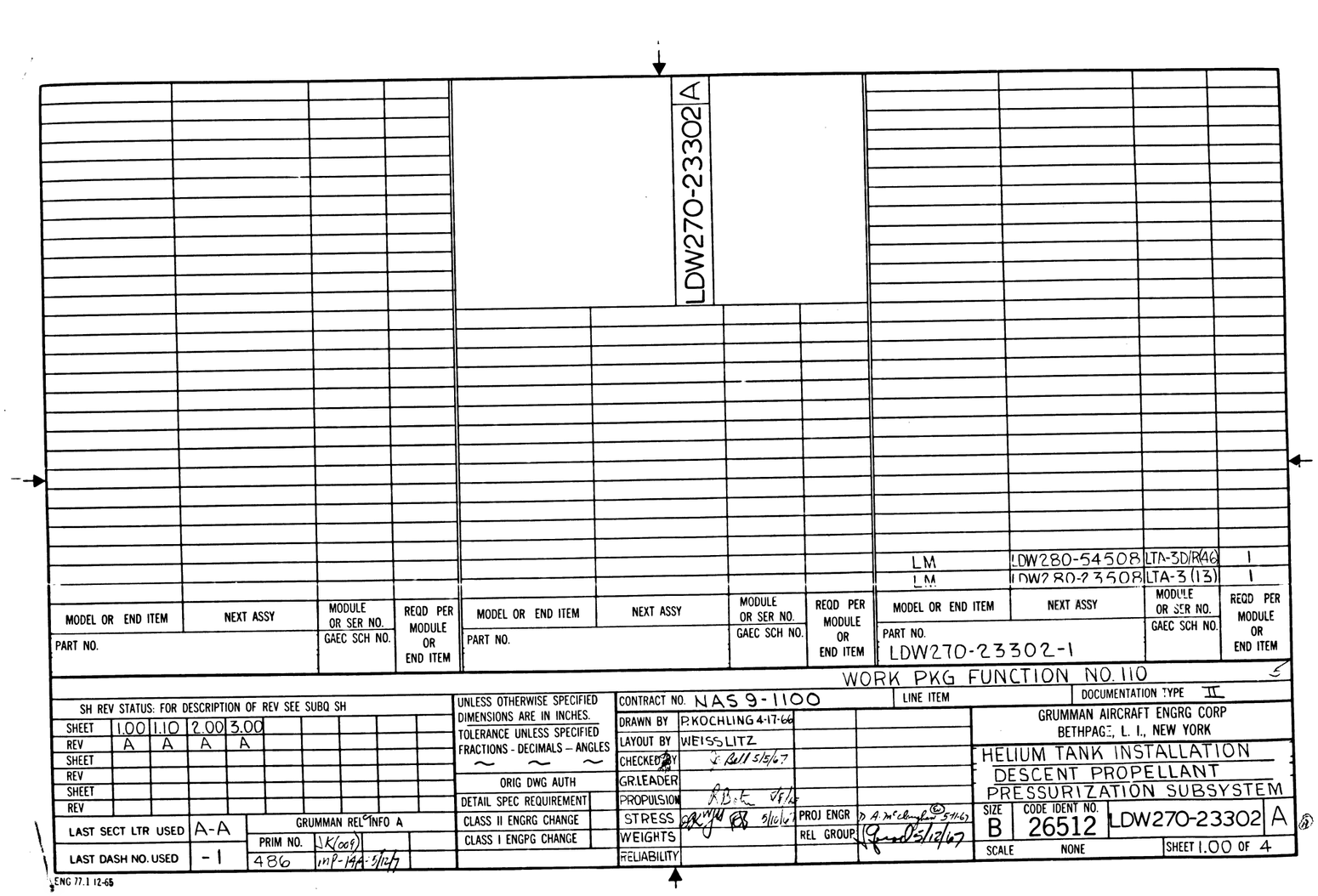
DRAWING NO.: LDW270-23301

EO NO.: B2

ISSUED BY J. GRAUL X1471 SECTION PROPULSION GROUP NO. 270 PL 35

01

NAS 9-1100



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-54508	LTA-3D(R4G)	1
LM	LDW280-23508	LTA-3(13)	1
PART NO. LDW270-23302-1		GAEC SCH NO.	

WORK PKG FUNCTION NO. 110

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	A-A
LAST DASH NO. USED	-1

GRUMMAN REL INFO A
PRIM NO. LK(009)
486 MP-19A 5/12/67

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGPG CHANGE

CONTRACT NO. NAS 9-1100 | LINE ITEM | DOCUMENTATION TYPE II

DRAWN BY	P. KOCHLING 4-17-66		
LAYOUT BY	WEISSLITZ		
CHECKED BY	J. Bell 5/5/67		
GR. LEADER			
PROPULSION	A.B.E. 5/5/67		
STRESS	[illegible] 5/16/67	PROJ ENGR	D. A. McClaughan 5-11-67
WEIGHTS		REL GROUP	[illegible] 5/12/67
RELIABILITY			

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

HELIUM TANK INSTALLATION
DESCENT PROPELLANT
PRESSURIZATION SUBSYSTEM

SIZE	CODE IDENT NO.		
B	26512	LDW270-23302	A

SCALE NONE | SHEET 1.00 OF 4

ENG 77.1 12-65

01
NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	APPD
A	1	1,1.10,2&3	5C					EO A1	E.O. A1 INITIAL DWG RELEASE PARTS MADE PER EO	LTA-3 (13)	NOT	REQD	P. KOCHLING 4-18-67		
	2	1.10 2&3	2B					EO A2	ON-1 NOTE 1 TORQUE VALUE WAS 30-40 INCH LBS. NAS 1106-24 WAS LDW280M 17360-5 &-7	LTA-3 13	✓				
	3	1 & 1.10					✓	EOA3-LCD19-1242	ON-1 ADDED LTA-3 D/R REQUIREMENT	LTA-3D/R 46	NOT	REQD			
	4	1.10, 3.00							ADDED NOTE 2	NOT REQD			MULLER 5/4/67		

CHG APPROVED	LTR	GROUP LDR	PROPULSION	STRESS	WEIGHTS	RELIABILITY
	A					

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-23302	A

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

C.L.	QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
C	AS REQD		MS20995NC40	E	SAFETY WIRE	STD PART						
C	3		NAS1106-24	F	BOLT	STD PART						
L	1		LDW280-13301-#	S	HELIUM TANK ASSY.	SEE DWG						5C
A			LDW270-23302-1	E	HELIUM TANK INSTL.					NONE	NONE	7A
	-1											

CLEANLINESS LEVEL PER LSP-14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-23302	A

SCALE NONE SHEET 2.00

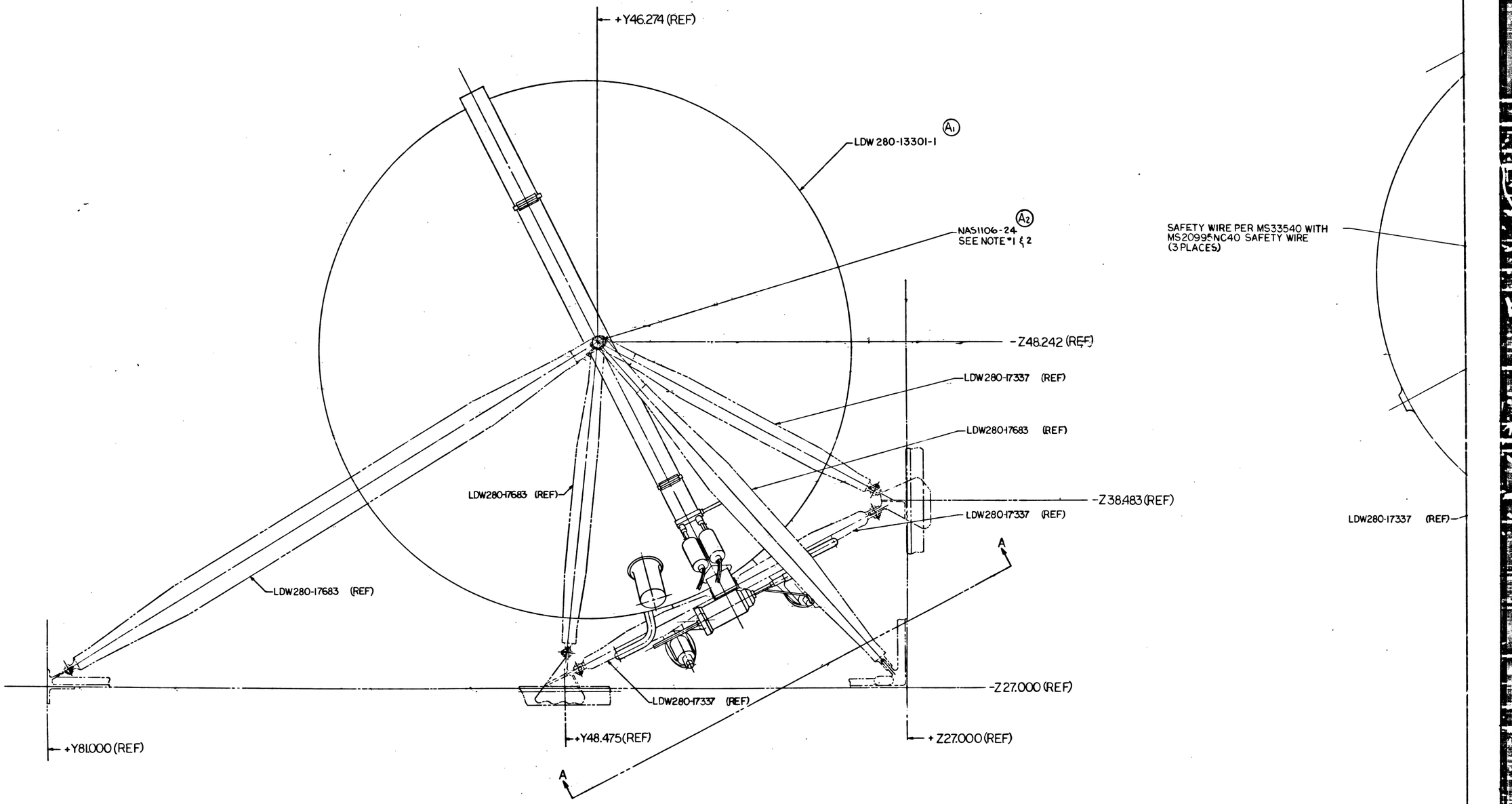
ENG 77.2 7-65

NAS 9-1100

C

B

A



LDW270-23302-1 INSTL.

01/02 NAS 9-1100

NAS1106-24 (A2) SEE NOTE "1 & 2

-Z48.242 (REF)

LDW280-17337 (REF)

LDW280-17683 (REF)

-Z38.483 (REF)

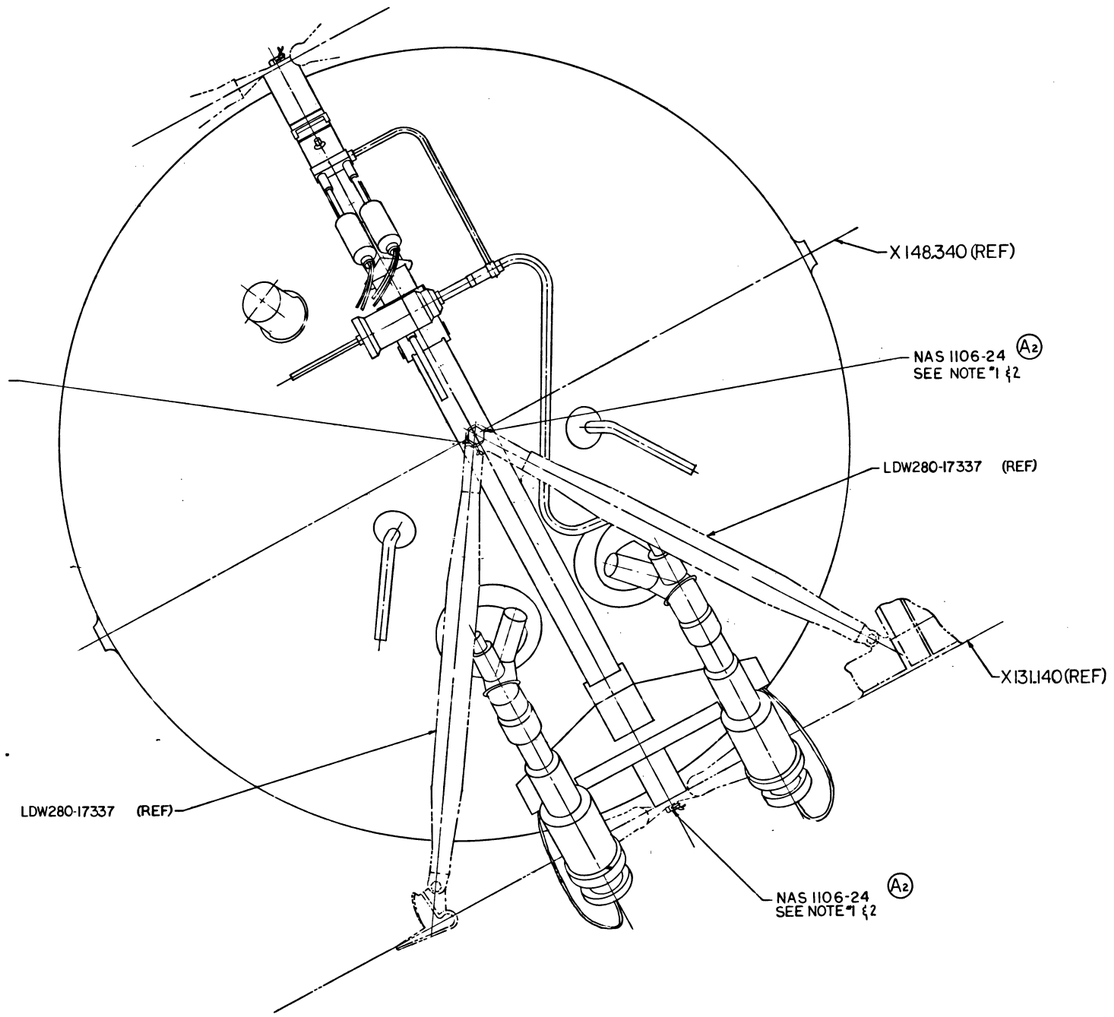
LDW280-17337 (REF)

A

-Z27.000 (REF)

Z.000 (REF)

SAFETY WIRE PER MS33540 WITH MS20995NC40 SAFETY WIRE (3 PLACES)



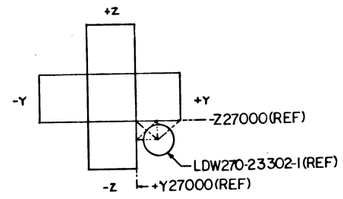
VIEW "A-A"

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.

- PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY.
- FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010; .063R TO .250R ± .015; OVER .250R ± .030
- DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 MIP THDS. BEYOND PERMISSIBLE.
- EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
- DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
- MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
- DIAMETERS MARKED ⌀ MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
- HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
- ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 IN THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
- 125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
- 250 FOR ALL DRILLED HOLES
- REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
- INSPECTION INFORMATION MINIMUM PERMISSIVE AVERAGE EDGE DISTANCE MARGIN IS
- SYMBOL ⌀ DENOTES SURFACE TO BE MACHINED
- UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
- LENGTHS OF AN, MAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
- TOLERANCE ON LOFTED DELINEATIONS IS

DWG SIZE 34 X 79

PRINTING INFO ONLY
FULL SIZE SHEET AREA (34 X 89)= 22.25⅝ ft.
1/2 SIZE SHEET AREA (1/4 OF FULL)= 5.6 ⅝ ft.
PRINT TRIM LINE



NOTES

1. TORQUE VALUE ON BOLT TO BE 95 TO 110 INCH LBS.
2. FINAL HOLE SIZE FOR NAS1106-24 TO BE .3747-.3757 "FOR CLOSE TOLERANCE FIT"

02102 NAS 9-1100

LM	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L.I., NEW YORK		
	SIZE J	CODE IDENT NO. 26512	LDW270-23302 A
	MODEL OR END ITEM	SCALE HALF	SHEET 3.00

LDW270-23302 SHEET 3

THIS IS AN ORIGINAL DWG.

LDW270-23302 A

LDW270-23302 A

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LE0270 | EO NO. 87

CONTROL INFO NO. LM270-1931

FOR THE FOLLOWING DWGS CHANGE THE N/A & EFF AS INDICATED BELOW:

DRAWING NO	DASH NO	DRAWING TITLE	NEW N/A	EFF	OLD N/A	EFF	E.O. NUMBER
LDW270-23308	-1	TANK INSTL - DESCENT PRESS SUB-SYSTEM, AMBIENT HE	LDW280-31508	SEE NOTE *	Δ LDW280-23608	LTA3(13)	C2
LDW270-23352	-1	ASSEMBLY HEAT EXCHANGER SIMULATOR D/S PROP	LDW280-31508	SEE NOTE *	Δ LDW280-23608	LTA3(13)	B1
LDW270-23302	-1	HELIUM TANK INSTL: DESCENT PROPELLANT PRESSURIZATION SUB-SYSTEM	LDW280-31508	SEE NOTE *	Δ LDW280-23508	LTA3(13)	B1

ADD NOTE * TO THE ABOVE DWGS: -1 USED ON LTA3(13) FOR TEST IS TO BE USED ON LTA-11(23) UPON COMPLETION OF TESTS ON LTA-3(13).

* USE NEXT AVAILABLE NOTE NUMBER

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD3890

REASON FOR EO: MODIFICATION FOR LARGER PROPELLANT TANKS

DESCRIPTION OF EO: IN M/B FOR -1 N/A LDW280-31508 EFF SEE NOTE *. WAS N/A Δ EFF LTA3(13) ADDED NOTE *

GAEC EO RELEASE: GS. 12 10-6-69; 10-7 87; 9/24/69

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA 11 (23)	

DRAWING CHANGE REQD: ✓ REVISE DWG | RECORD EO

DISPOSITION OF PARTS: ✓ REWORK | SCRAP

APPROVED BY	DATE	PROP	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
	9/24/69				9/18/69			9/24/69

PRIORITY: C | DRAWING TITLE: "NOTED" | DRAWING NO.: LE0270 | EO NO.: 87

ISSUED BY J. PAVLICA x1471 SECTION LM PROPULSION GROUP NO. 357 PL 25

01

NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM

PART NO. | GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW270-54300	LM-14(44)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(38)	1
		LM-7(37)	1
LM	LDW270-54300	LM-6(36)	1

PART NO. LDW270-23308 1-1 | GAEC SCH NO.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW270-54300	LM-5(35)	1
	-54300	LM-4(34)	1
	-53300	LM-3(33)	1
	-52300	LM-2(32)	1
	LDW270-2530	LTA-5-15	1
	LDW280-23608	LTA3 TR(46)	1
LM	LDW280-23608	LTA-3(13)	1

PART NO. LDW270-23308-1 | GAEC SCH NO. 5545

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	1.10	1.11	2.00	3.00	4.00			
REV	B	B	B	B	B	B			
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED -1

GRUMMAN REL INFO B
PRIM NO. K(009)
486 ME-16 2/6/13

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS — DECIMALS — ANGLES

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9 1100 | LINE ITEM ⇒ | DOCUMENTATION TYPE II

DRAWN BY	P.A. CAPPELLI 7-6-66	RELIABILITY	7/13
LAYOUT BY			
CHECKED BY			
GR'T LEADER	D. Wade		
PROPUL.			
V.D.I.			
STRESS.		PROJ ENGR	
WEIGHTS		PELEMIS	

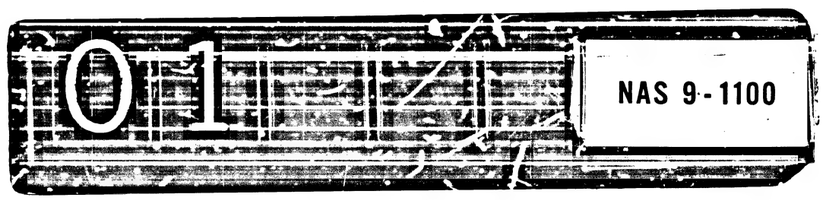
GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

TANK INST.
PROPULSION-DESCENT-PRESS.
SUB-SYSTEM-AMBIENT HELIUM

SIZE	CODE IDENT NO.	
B	26512	LDW270-23308 B

SCALE NONE | SHEET 100 OF 6.00

ENG 77.1 9-64



REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET 1.11

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	APPD
A	1	1.00, 1.10						E.O. A1	SH. 1.00 OF 5.00 WAS 1.00 OF 4.00 ADDED SH. 1.10. ON-1 NEXT ASSY LDW280-23608 WAS LDW270-23300.	LTA-3	NOT	REQ'D S.J.	BRODA 8-15-66		
	2	1, 1.10, 2, 4						E.O. A2	IN FLD & B/M MS15795-211 REPLACES AN960D416L.	LTA-3, -5 LEM-2 THRU LEM-6	✓		FOSTER 9-7-66 RS		
	3	1.10, 2, 4						EO-A3	REF EO-A2, MS27183-11(1) REPLACED AN960D16L(1)	LTA-3, -5 LEM-2 THRU LEM-6	✓		SIBILLA 10-4-66		
	4								REF EO-A3, AN960D16L(1) SHOULD BE AN960D416L(1)	NOTED	NOT	REQ'D S.J.			
	5								SHEET 1.00 - IN M/B ADDED N/A LDW270-54300 FOR LM 7 THRU LM 15. FOR LM 5 & LM 6 N/A LDW270-54300 WAS LDW270-55300 & LDW270-56300 RESPECTIVELY (R)	LM 5 THRU LM 15	NOT	REQD			
B	1	1.00							INC. E.O. B1	LTA-3D/R(146)					
	2	3.00							INC. E.O. B2	LTA-3(13), LTA-5(18), LTA-3DR LM-2(32) THRU LM-15(45)			E. RESENMAN 8/30/67		
	3	3.00							INC. LEO 270-53	LM-2 THRU LM-15					
	4	3.00							INC. LEO 270-59	LM-3					
	5	3.00, 4.00	4C						INC. E.O. B5	LTA-3D(13) LTA-5(15), LTA-3D/R(46) LM-2 (32) THRU LM-15(45)					
	6	3.00							INC. E.O. B6	LTA-3D(13) LTA-5 (15) LTA-3D/R(46) LM-2 (32) THRU LM-15(45)			I.D.		

CHG APPROVED

LTR	GROUP LDR	PROPUL	V. D. I.	STRESS	WEIGHTS	RELIABILITY
A		H. Dauberg				
B						

ENG 77.15 3-66

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-23308	B (B)

SCALE NONE SHEET 1.10

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
C3	7	4.00	4D 4B 4A 5C 3A 6A						INC. E.O. B7	NOT REQD		H.D.	E. BIGELMAN 8-14-68		
	8	2.00 & 4.00	4A						INC. E.O. B8	LM-7 THRU-15			P. LENZ 9-10-68		
	9	1.00 1-11							INC. LEO 270-80	LM-15			NOT RELEASED STEVE PESO 1-31-69 ES		
	10	1.00 1-11, 2.00 4.00	3C					(8)	INC. E.O. B10	LM-6 THRU LM-14					

CHG APPROVED	LTR	GROUP LDR	PROPUL	V.D.I.	STRESS	WEIGHTS	RELIABILITY					
	A											
	B											

ENG 77.16 3-66

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-23308	B (8)

SCALE NONE SHEET 1.11

01

NAS 9-1100

C					A/R	AS REQD	MS20995NC32	E		LOCKWIRE	STD PART												
C					1	1	MS27183-11	E		WASHER	STD PART												
L					1		LSC270-825-1	S		TANK	SEE NOTE #1												
L					1		LSC270-825-1	S		TANK	SEE NOTE #1												
C					1	1	LDW280MI7686-1	E		NUT	SEE DWG												
C					1	1	NAS500-4	E		NUT	STD PART												
C							LDW270-23308-1	E		TANK INSTL	—	—	—	—	—	—							
					1-1	-1	PART NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE						
A.L.					QTY PER ASSEMBLY																		

CLEANLINESS LEVEL PER LSP 14-5011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

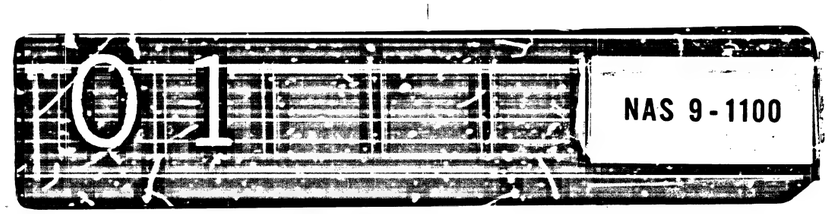
I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-23308	B

SCALE NONE SHEET 2.00

ENG 77.2 5-64

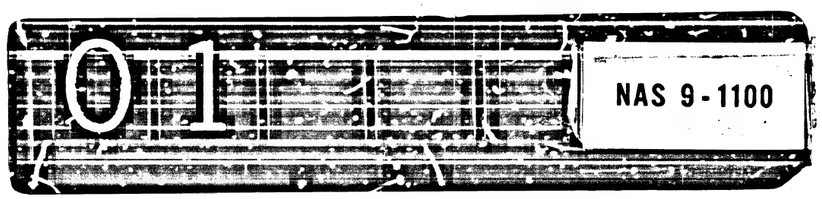


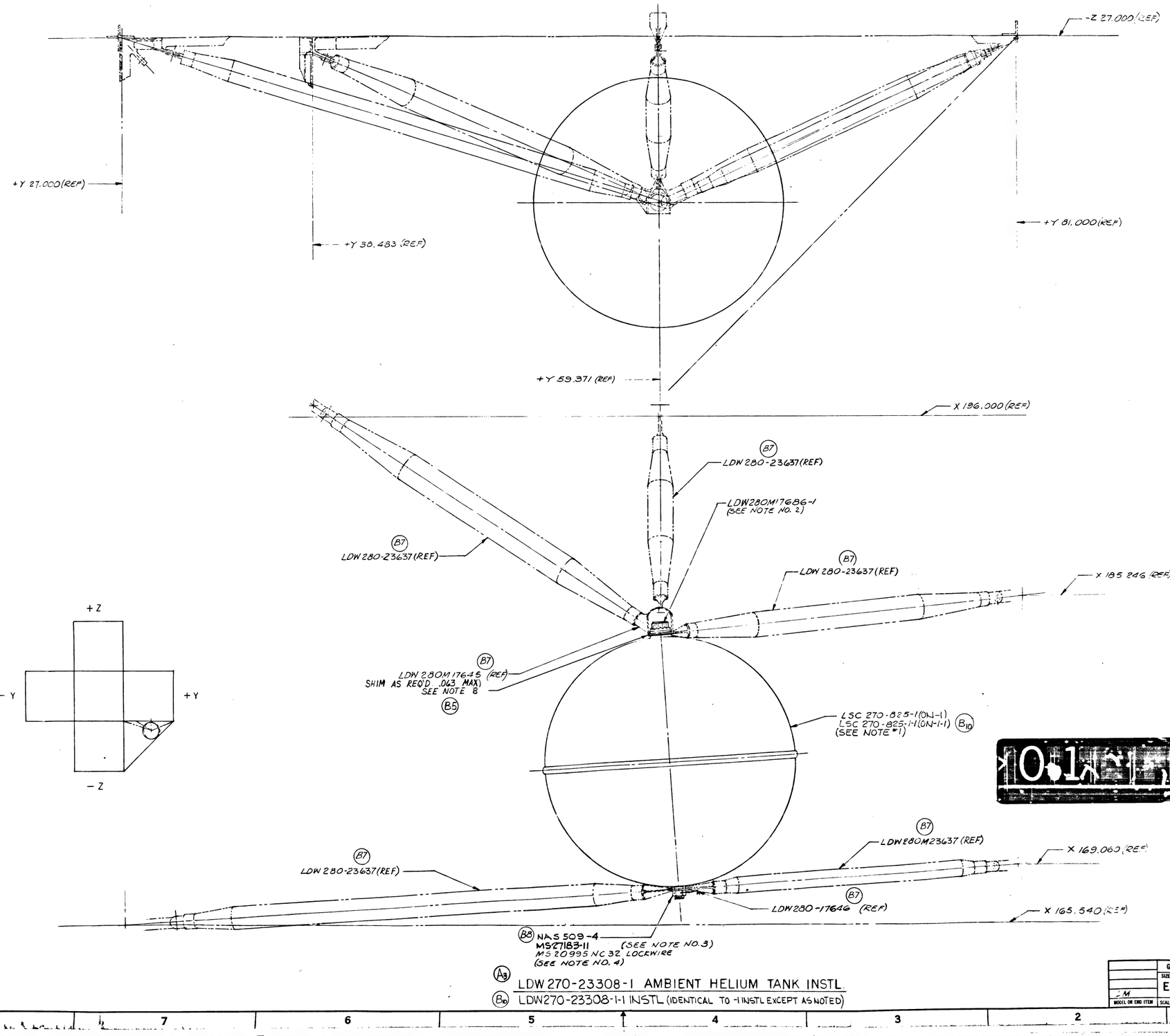
NOTES:

1. COMMERCIAL PART SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING.
2. TORQUE 500 ± 50 IN/LBS.
3. TORQUE 30-40 IN/LBS.
4. SAFETY LOCKWIRE PER MS 33540.
5. MINIMUM CLEARANCE BETWEEN TANK INSTL & LDW280-23637 STRUT ASSY TO BE .015.
6. BOND IN ACCORDANCE WITH FIGURE 12 OF LSP-14-13334, EFF LM-2 THRU LM-15.
7. BONDING REQUIREMENTS FOR LM-2 & LM-3 ARE ACCEPTABLE PROVIDED THE REQUIREMENTS OF PARAGRAPH 4.2 OF LSP-14-13334 ARE COMPLIED WITH.
8. SHIM AS REQD USING AL ALLOY, QQ-A-355, 2024-T3, FINISH #76, .015 MINIMUM REQUIRED CLEARANCE.

GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE, L. I., N. Y.			
CODE IDENT NO. 26512	SIZE B	LDW270-23308	B
SCALE		SHEET 3.00	

ENG 303





MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.

- PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.
- FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010; .063R TO .250R ± .015; OVER .250R ± .030
- DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.
- EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
- DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
- MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS ON INSIDE INTERSECTING SURFACES.
- DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
- HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
- ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
- 125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
- 200 FOR ALL DRILLED HOLES
- REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
- INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
- SYMBOL √ DENOTES SURFACE TO BE MACHINED
- UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
- LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
- TOLERANCE ON LOFTED DELINEATIONS IS

NAS 9-1100

(A9) LDW 270-23308-1 AMBIENT HELIUM TANK INSTL.

(B10) LDW270-23308-1-1 INSTL (IDENTICAL TO -1 INSTL EXCEPT AS NOTED)

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
	SIZE E	CODE IDENT NO. 26512	LDW270-23308
MODEL OR END ITEM	SCALE NONE		SHEET 7 OF 35

LDW 270-23308

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG. NO. LDW270-23308 | EO NO. C1
CONTROL INFO NO. LM 270-1325

DELETE: LM6(36) & LM7(37) FROM -1-1

ADD: LM6(36) & LM7(37) EFFECTIVITY FOR -1
N/A LDW270-54300 QTY 1

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCO 3636 ECP V065 dt.

REASON FOR EO: DELETE LM6 & LM7 PROOF PRESSURE REQMTS

DESCRIPTION OF EO: REMOVED LM6 & LM7 FROM -1-1
ADDED LM6 & LM7 TO -1

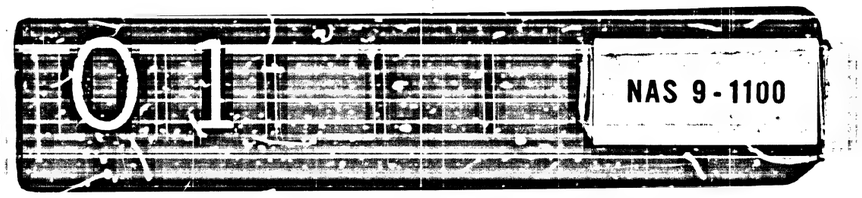
GAEC RELEASE 3/20/69

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM6(36)	
		LM7(37)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: NOT REWORK | REQD SCRAP
PRIORITY: C
DRAWING TITLE: AMBIENT HELIUM TANK INSTL
DRAWING NO.: LDW270-23308
ED NO.: C1

APPROVED BY	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
K.B.L.	JR			K.B.L.
DATE 3/20/69	4/10/69			3-20-69
PROP	SUPPORT	RELIAB GROUP		

ISSUED BY J. PAVLICA x1971 SECTION LM PROPULSION GROUP NO. 270 PL 25



GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LE0270 | EO NO. 87

CONTROL INFO NO. LM 270-1931

FOR THE FOLLOWING DWGS CHANGE THE N/A & EFF AS INDICATED BELOW:

DRAWING NO	DASH NO	DRAWING TITLE	NEW N/A	EFF	OLD N/A	EFF	E.O. NUMBER
LDW270-23308	-1	TANK INSTL - DESCENT PRESS SUB-SYSTEM, AMBIENT HE	LDW280-31508	SEE NOTE *	Δ LDW280-23608	LTA3(13)	C2
LDW270-23352	-1	ASSEMBLY HEAT EXCHANGER SIMULATOR D/S PROP	LDW280-31508	SEE NOTE *	Δ LDW280-23608	LTA3(13)	B1
LDW270-23302	-1	HELIUM TANK INSTL: DESCENT PROPELLANT PRESSURIZATION SUB-SYSTEM	LDW280-31508	SEE NOTE *	Δ LDW280-23508	LTA3(13)	B1

ADD NOTE * TO THE ABOVE DWGS: -1 USED ON LTA3(13) FOR TEST IS TO BE USED ON LTA-11(23) UPON COMPLETION OF TESTS ON LTA-3(13).

* USE NEXT AVAILABLE NOTE NUMBER

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD3690

REASON FOR EO: MODIFICATION FOR LARGER PROPELLANT TANKS

DESCRIPTION OF EO: IN N/B FOR -1 N/A LDW280-31508 EFF SEE NOTE *; WAS N/A Δ EFF LTA3(13) ADDED NOTE *

GAEC EO RELEASE: GS 10-7-69 | LL 10-6-69

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA 11(23)	

DRAWING CHANGE REQD: ✓ REVISE DWG | RECORD EO

DISPOSITION OF PARTS: ✓ REWORK | SCRAP

APPROVED BY	PROD	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
DATE	9/11/69			9/18/69		9/24/69	9/29/69

PRIORITY: C

DRAWING TITLE: "NOTED"

DRAWING NO.: LE0270

EO NO.: 87

ISSUED BY J. PAVLICA x1471 SECTION LM PROPULSION GROUP NO. 357 PL 25

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-23308 | EO NO. C3
CONTROL INFO NO. LM-2-6107

IN B/M FOR -1 INSTL & LSC270-825-1 TANK ADD "SEE NOTE *".

IN F/D ADD NOTE * "FOR LTA-11(23) ONLY, CLEANLINESS LEVEL S/B "A".

* USE NEXT AVAILABLE NOTE NO

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | V | LCD 3890

REASON FOR EO: HIGH CL NOT REQD FOR TEST ARTICLE.

DESCRIPTION OF EO: IN F/D ADDED NOTE *.

GAEC EO RELEASE: 4/16/70

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	DATE	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
LM		LTA-11(23)		V		NOT	REQD		4/14/70			4/9/70	4/14/70	4/14/70	4/16/70
									16 MAY 70						3/18/70

PRIORITY: C
DRAWING TITLE: TANK INSTL PROP~D/S PRESS SUB SYS~AMBIENT He
DRAWING NO.: LDW270-23308
EO NO.: C3

ISSUED BY LIAISON J. STECEWYCZ X3605 SECTION VEHICLE DESIGN INTEG GROUP NO. 280 PL 25

OF

NAS 9-1100

A

LDW270-23352

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-23008	LTA 3(13)	1
PART NO. LDW270-23352-1		GAEC SCH NO. 55	

2

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00	1.10	2.00	3.00						
REV	A	A	A	A						
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED	C-C
LAST DASH NO. USED	-3

GRUMMAN REL INFO A

PRIM NO.		
486	MF-A	9-22-6

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±½°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS 9-1100 LINE ITEM I DOCUMENTATION TYPE II

DRAWN BY	C Castellano 6-4-66	RELIABILITY	T. Broyles for L.K. 6/21/66
LAYOUT BY	A. GIMSON		
CHECKED BY	6-15-66		
GR LEADER	6-21-66		
VEH DES INT			
STRUCTURES	6/21/66	PROJ ENGR	29 Jun 66
STRUCTURES		REL GROUP	6-30-66
WEIGHTS	L. Garcia 6/21/66		

B

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ASSEMBLY
HEAT EXCHANGER SIMULATOR
DESCENT PROPULSION

SIZE	CODE IDENT NO.	
B	26512	LDW270-23352 A

SCALE NONE SHEET 1.00 OF 4

ENG 77.1 12-65

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	QUALITY APPD
A	1	1, 1.10, 2, 3.	3G 7B 6C					EO A1	IN FIELD & B/M FOR-1, MS20074-03-12 WAS NAS1351-3-12, MS20074-03-6 WAS NAS1351-3-6, 6EA. SH 1 OF 4 WAS SH 1 OF 3. ADDED SH 1.10	LTA-3	✓		P. CARTSELOS 9-3-66		
	2	1.10, 3						EO A2	ON-1: ZONE 7A, .31-.34 WAS .312; ZONE 2B, .50-.56 WAS .500; ZONE 5B, .37-.43 WAS .325. (MS20074-03-06 WAS NAS1351-3-12, MS20074-03-03 WAS NAS1351-3-6) NOT APPLICABLE, REF EO A1						
	3	1.10, 3						EO A3	ON-3, LDW270M10016-19 WAS LDW270M10016-1. REVISED CALLOUT IN ZONE 6B, WAS: MINOR DIA. 1449-1555, TAP 10-24 NC-3B x.375 DEEP, CSK 90° x.221 (4 PLACES) IN LDW 270-10022-13) ON-1. LOCATE FROM LDW270M10018-1						
	4	1.10, 3	7G					EO A4	DIM. 130-1.40 ADDED. DIM. 4 5/16 DELETED. DIM. 16.18-16.22 WAS 17.67-17.70		NOT	REQD			
	5	1.10, 3						EO A5	IN FIELD FOR-1 TRIMMED CORNERS OF LDW270M10017-1 & LDW270M10018-1; LDW270M10019-1 (2) WAS (1) FOR-3; REVISED SECT. B-B.		✓				
	6	1.10, 3							REF EO A5. ON-1, IN SECTION B-B, MS20074-03-6 (2) WAS (4), ADDED NAS1352-03-6 (2)	NOT REQD	NOT	REQD			
	7								REF EO A3: ON-3, "LDW270M10016-19 WAS LDW270M10016-1" SHOULD BE "LDW270M10016-1 WAS LDW270M10016-19". WAS TAP 10-24 NC-3B x .375 DEEP" SHOULD BE WAS" TAP 10-24 NC-3B x .37-.43 DEEP.						

CHG APPROVED	LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY
	A						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-23352	A

SCALE NONE SHEET 1.10

ENG 77.16 3-66

NAS 9-1100

QTY PER ASSEMBLY			CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
	6			MS20074-03-12	E	SCREW	STD PART				AW	NONE	4A
	4			MS20074-03-6		SCREW	STD PART				T	NONE	4A
	8			NAS1352-03-6		SCREW	STD PART						
1				LDW270M10021-3		SUPPORT	SEE DWG						
3				LDW270M10021-1		SUPPORT							
1				LDW270M10020-1		PLATE							
2				LDW270M10019-1		COLLAR							
	1			LDW270M10018-1		FLANGE							
	1			LDW270M10017-1		FLANGE							
	6			LDW270M10016-1		CLAMP							
2				LDW270-10022-13		SUPPORT							
2				LDW270-10022-11		SUPPORT							
	1			LDW270-10019-13		TUBE							
	4			LDW270-10019-11		TUBE	SEE DWG						
				LDW270-23352-3		TUBE ASS'Y (WELDED)							
				LDW270-23352-1	E	TUBE ASSY							
-3	-1												

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
T	SCREW THREADS	MIL-S-7742

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
AW	FUSION WELD	MIL-W-8604 (SEE NOTE 4)

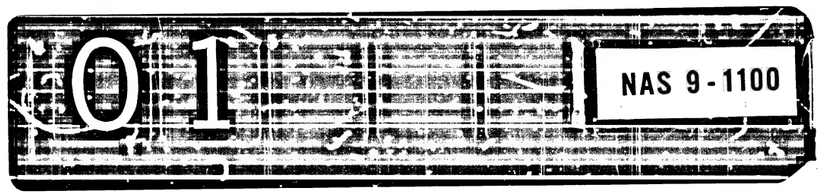
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

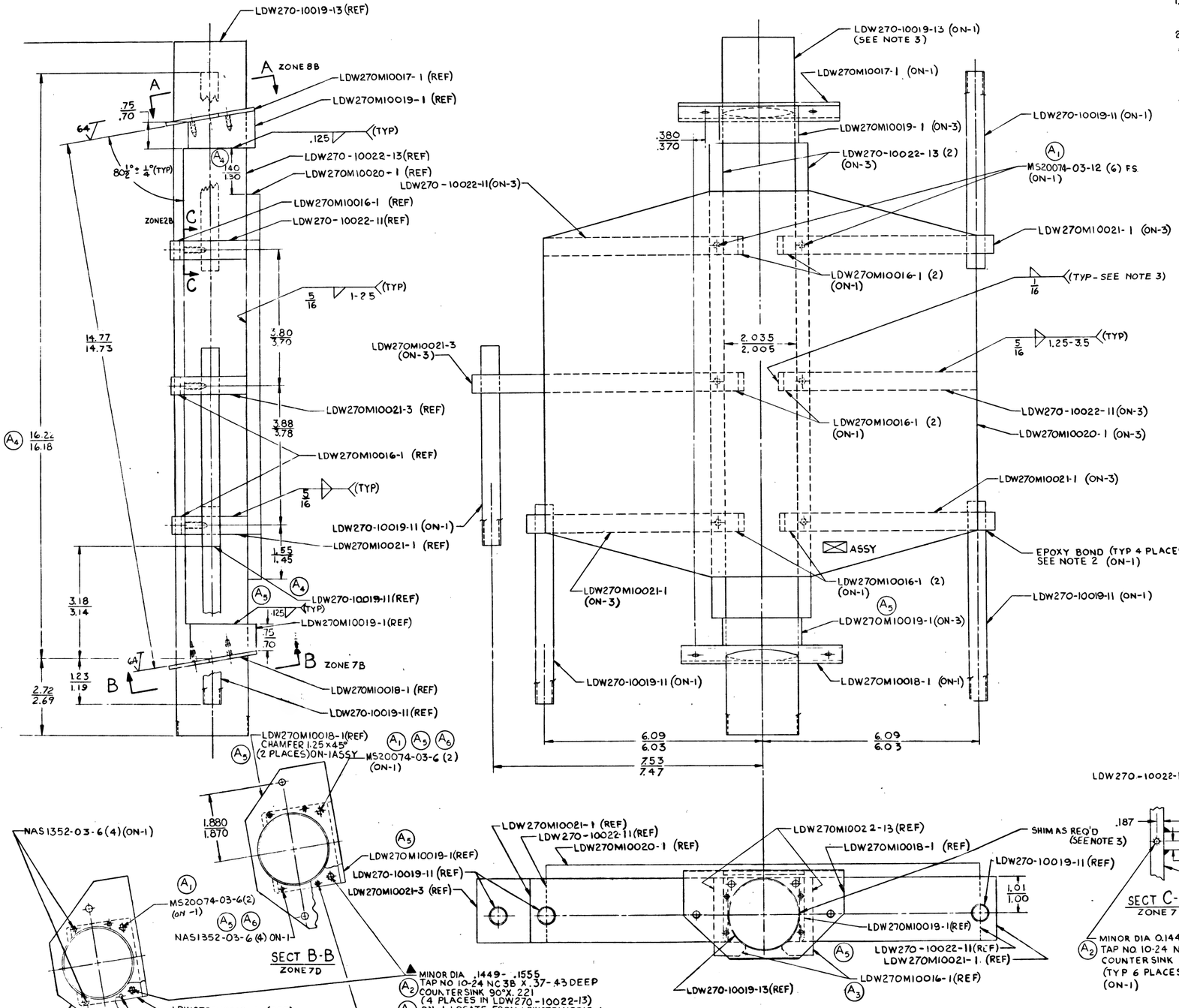
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW27023352	A

SCALE NONE SHEET 2.00

ENG 77.2 7-65





NOTES:
1. WELD ALL JOINTS BETWEEN ALUM ALLOY PARTS AS SHOWN. INTERMITTENT WELDS AND ANNEALING ADJACENT TO WELDS ARE PERMISSIBLE.
2. APPLY EPON 934 A OR EQUAL TO ENTIRE LENGTH OF CLEARANCE
3. LDW270-10019-13 MUST BE RIGIDLY CLAMPED. SHIM/CRES SHEET 304L MIL-S-4043) OD IF REQUIRED. WELD CLAMPS AS SHOWN.
4. NO X-RAY REQUIRED. VISUAL INSPECTION ONLY

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
PLANEMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .016 .063R TO .250R ± .015 OVER .250R ± .020	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS 2.3 IMP THDS. BEYOND PERMISSIBLE.	√
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .001" IN THREADED AREAS. NO ALL-ANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
300 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ▲ DENOTES SURFACE TO BE MACHINED	√
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

LDW 270-23352-1 ASSY
-3 ASSY (WELDED)

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
E	26512	LDW270-23352

LEM — MODEL OR END ITEM — SCALE FULL — SHEET 3.00

LDW270-23352-1 REV A
LDW270-23352-2 REV A
LDW270-23352-3 REV A

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LE0270 | EO NO. 87

CONTROL INFO NO. LM 270-1931

FOR THE FOLLOWING DWGS CHANGE THE N/A & EFF AS INDICATED BELOW:

DRAWING NO	DASH NO	DRAWING TITLE	NEW N/A	EFF	OLD N/A	EFF	E.O. NUMBER
LDW270-23308	-1	TANK INSTL - DESCENT PRESS SUB-SYSTEM, AMBIENT HE	LDW280-31508	SEE NOTE *	Δ LDW280-23608	LTA3(13)	C2
LDW270-23352	-1	ASSEMBLY HEAT EXCHANGER SIMULATOR D/S PROP	LDW280-31508	SEE NOTE *	Δ LDW280-23608	LTA3(13)	B1
LDW270-23302	-1	HELIUM TANK INSTL-DESCENT PROPELLANT PRESSURIZATION SUB-SYSTEM	LDW280-31508	SEE NOTE *	Δ LDW280-23508	LTA3(13)	B1

ADD NOTE * TO THE ABOVE DWGS: -1 USED ON LTA3(13) FOR TEST IS TO BE USED ON LTA-11(23) UPON COMPLETION OF TESTS ON LTA-3(13).

* USE NEXT AVAILABLE NOTE NUMBER

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCC3690

REASON FOR EO: MODIFICATION FOR LARGER PROPELLANT TANKS

DESCRIPTION OF EO: IN M/B FOR -1 N/A LDW280-31508 EFF SEE NOTE *, WAS N/A Δ EFF LTA3(13) ADDED NOTE *

GAEC EO RELEASE: GS. 12 10-6-69

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY / DATE	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
LM		LTA 11 (23)		✓		✓		9/11/69			9/12/69			9/24/69

PRIORITY: C | DRAWING TITLE: "NOTED" | DRAWING NO.: LE0270 | EO NO.: 87

ISSUED BY: J. PAVLICA x1471 SECTION: LM PROPULSION GROUP NO.: 357 PL: 25

01

NAS 9-1100

LDW270-23402 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LEM	LDW280-23950	LTA-3 (1D)	1 EA
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW270-23402-1 & -3		GAEC SCH NO. 43	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00	1.10	2.00	3.00						
REV	A	A	A	A						
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED	B
LAST DASH NO. USED	3

GRUMMAN REE INFO
PRIM NO. 450

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS 9-1100 LINE ITEM 009 DOCUMENTATION TYPE II

DRAWN BY	B.ZANG 3MAY66	WEIGHT	L. Garcia 5/16/66
LAYOUT BY			
CHECKED BY		VDI	
GR LDR			
PROP			
REL		PROJ ENGR	5.24
STRUCT	5/3	REL GROUP	5-27-66
STRUCT	5/23		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

LEVEL DETECTOR INSTL
PROPULSION FEED SYSTEM
PROPELLANT TANK – ASCENT

SIZE	CODE IDENT NO.		
B	26512	LDW270-23402	A

SCALE NONE SHEET 1.00 OF 4

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00, 1.10, 2.00, 3.00						E.O. A1	SH. 1 OF 4 WAS 1 OF 3 ADDED SH. 1.10. REVISED P/N FOR-1 LSC270-801-7 (WAS) LSC270-801-5. P/N FOR-3 LSC270-801-8 (WAS) LSC270-801-6.	LTA-3	✓		J. BRODA 9-3-66		
	2	1.10						E.O. A2	ON-1 LSC270-801-7 WAS-5. ON-3 LSC270-801-8 WAS-6 (NOT APPLICABLE SEE E.O. A1)	NOT REQ'D	NOT	REQ'D.			
	3	1.10, 2.00 3.00						Ⓟ	CHANGED COMMERCIAL CALLOUTS TO G.A.E.C. VENDOR APPROVED EQUIV.						

CHG APPROVED	LTR	GROUP LDR	PROP	RELIABILITY	STRUCTURES	STRUCTURES	WEIGHTS
	A						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-23402	A

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

C					AR	AR		MS20995NC20		LOCKWIRE	STD PART	SEE NOTE 1						
C					8	8		AN960D10		WASHER	STD PART	"						
C					8	8		GB511T-3H'L		BOLT	GRUMMAN STD.	SEE NOTE 1						
G					1	1		GS570V-1	E	SEAL	GRUMMAN STD.							
J					1			LSC270-801-8	S	DETECTOR, OXIDIZER	SEE NOTE 2							
J						1		LSC270-801-7	S	DETECTOR, FUEL	SEE NOTE 2							
G								LDW270-23402-3	E	LEVEL DETECTOR	INSTL, OXIDIZER							
G								LDW270-23402-1	E	LEVEL DETECTOR	INSTL, FUEL							
					-3	-1												
C.I.	QTY PER ASSEMBLY						CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE	

CLEANLINESS LEVEL PER LSP 14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

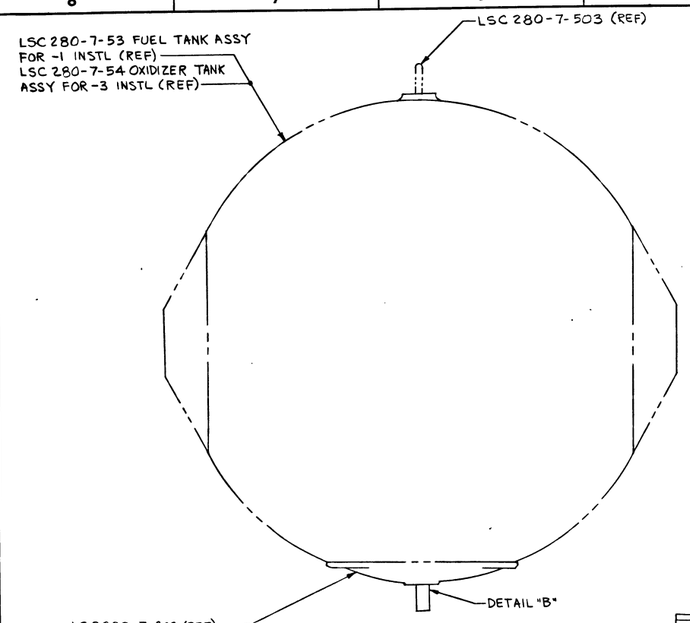
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-23402	A

SCALE NONE SHEET 2.00

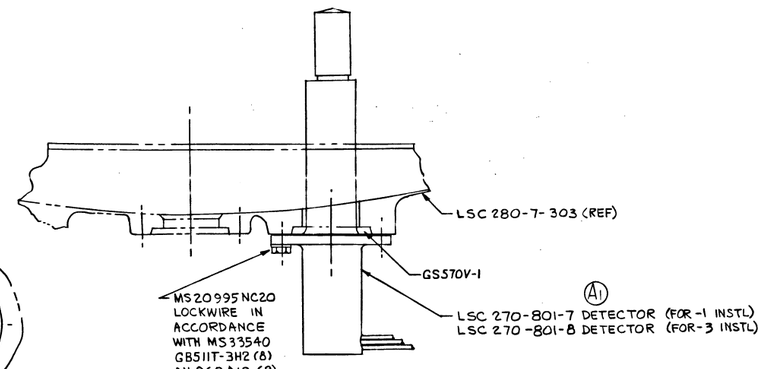
ENG 77.2 7-65

01 NAS 9-1100



VIEW "A-A"
FULL SIZE

INSTALLATION, SEQUENCE & TORQUE OF BOLTS TO BE AS SPECIFIED IN NOTE #1.



DETAIL "B"
FULL SIZE

NOTES:

1. INSTALL 8 BOLTS FINGER TIGHT THEN TORQUE IN SEQUENCE AS FOLLOWS:
   (a.) PHYSICAL LOCATION FOR START OF SEQUENCE (BOLT #1) IS OPTIONAL.
   (b.) TORQUE ALL BOLTS PER SEQUENCE TO 10 INCH POUNDS.
   (c) REPEAT STEP (b.) APPLYING 20 INCH POUNDS.
   (d.) REPEAT STEP (b.) APPLYING 32-35 INCH POUNDS FOR FINAL TORQUE.
2. COMMERCIAL PART SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING.

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.
FILLET AND INSIDE CORNER RADII TOLERANCES .01R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
200 FOR ALL DRILLED HOLES
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
SYMBOL ⌐ DENOTES SURFACE TO BE MACHINED
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
TOLERANCE ON LOFTED DELINEATIONS IS

LEM	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK		
	SIZE D	CODE IDENT NO. 26512	LDW270-23402 A
MODEL OR END ITEM	SCALE/SEE NOTES		SHEET 3.00

01 NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG NO. LDW270-23452 | EO NO. A1
CONTROL INFO NO. LEM-5-7946

IN B/M FOR -1, -3 REVISE QUANTITIES

NAS1271H4 (16) WAS (8)

AN960C416L (16) WAS (8)

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG

REASON FOR EO: INCORRECT QUANTITES IN B/M

DESCRIPTION OF EO: IN B/M FOR -1, -3 REVISE QUANTITIES FOR NAS1271H4, AN960C416L (16) WAS (8)

GAEC EO RELEASE: IE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	DATE	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ. ENGRG	GOVT
LEM		NOT REQ'D		✓		NOT REQ'D		8-11-66					—	EWS		
													—	8/11/66		

PRIORITY: E5 | DRAWING TITLE: SENSING UNIT ITVSTL-PROP LEVEL D/S - PROPULSION FEED SYSTEM | DRAWING #: LDW270-23452 | EO NO.: A1

ISSUED BY LIAISON - R.F. HUBER x6452 SECTION PROPULSION GROUP NO. PL 35

270

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

DWG. NO. LDW270-23452 | REV NO. A2

CONTROL INFO NO. LEM-2-2599

NG 32.1 REV 3-65

ENGINEERING ORDER

ON B/M } REDUCE CLEANLINESS LEVEL AS FOLLOWS:
ON -1 & -3 }

LDW270-23452-1 & -3	FROM	"G"	TO	"B"
LSC270-00009-9 & -10		"J"	TO	
GS13AJ-147		"C"	TO	
AN960C416L		"C"	TO	
NAS1271H8		C	TO	
MS20995NC20	FROM	C	TO	"B"

DESCRIPTION OF ED (CONT)

NAS1271H "B" WAS "C", MS20995NC20 "B" WAS "C"

(2)

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	

REASON FOR ED: CLEANLINESS LEVEL REQUIREMENTS REVISED TO COINCIDE WITH REDUCTION FROM CLEANLINESS LEVEL

DESCRIPTION OF ED: ON -1 & -3 ON B/M REVISE CLEANLINESS LEVEL AS FOLLOWS, LDW270-23452-1 & -3 "B" WAS "G" LSC270-00009-9 & -10 "B" WAS "J", GS13AJ-147 "B" WAS "C" AN960C416L "B" WAS "C" (CONT)

GAEC ED RELEASE: 16

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LEM		LTA-3(3)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD ED | DISPOSITION OF PARTS: REWORK ✓ | SCRAP

PRIORITY: C2

DRAWING TITLE: SENSING UNIT INST-PROPELLANT LEVEL-DESCENT-PROPULSION F.S.

DRAWING NO.: LDW270-23452

ED NO.: A2

	APPROVED BY	DATE
ORIG	RMCT	8-17-66
	—	8/17/66
SUPPORT		
RELIAB. GROUP		
GROUP LEADER		
STRESS GROUP	—	8/17/66
LIAISON ENGRG	8-17	8-18-66
PROJ ENGRG		
QUALITY		

ISSUED BY LIAISON J. PICCIOTTI Y1069 SECTION VD1 GROUP NO. 270 PL 35

270

LDW270-23453 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		LEM	LDW280-23508	LTA-5(13)	1
								PART NO. LDW 270-23453-1		GAEC SCH NO. 55	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH								
SHEET	1.00	1.10	2.00		3.00		4.00	
REV	A	A						
SHEET								
REV								
SHEET								
REV								

LAST SECT LTR USED	
LAST DASH NO. USED	1

GRUMMAN REL INFO

PRIM NO. VE009 6-27-66 X

482 MP-

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS — ANGLES — — —

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS 9-1100 LINE ITEM 009 DOCUMENTATION TYPE II

DRAWN BY	B. ZANG 2JUN66		
LAYOUT BY	~		
CHECKED BY	J. POYNTON 6/6/66		
PROPULSION	[illegible] 6/6/66		
V.D.I.	[illegible] 6/7/66		
WGTS	L.J. Garcia 6/23/66	PROJ ENGR	[illegible] 30 Jun 66
RELIABILITY	[illegible] 6/29	REL GROUP	[illegible] 7/1/66
STRESS	[illegible]		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

GAGING SYST. CONTROL BOX INSTL
DESCENT STAGE
PROPELLANT TANK

SIZE	CODE IDENT NO.	
B	26512	LDW270-23453 A

SCALE NONE SHEET 1.00 OF 5

ENG 77.1 12-65

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1, 1.10						EO A1	REVISED NEXT ASSY FOR LTA-3, WAS LDW280-23509 SH 1 OF 5 WAS SH 1 OF 4. ADDED SH 1.10 (R)	LTA-3	NOT	REQD	COBE 8-29-68		X

CHG APPROVED	LTR	GROUP LDR	VEH DES INT	WEIGHTS	RELIABILITY	STRESS	PROPULSION					
	A											

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-23453	A

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

C.L.	QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
C	3		NAS 1133V3	E	BOLT	STD PART						
C	3		AN960C10L	E	WASHER	STD PART						
J	1		LSC270-00009-22	S	CONTROL UNIT ASSY (SEE NOTE 1)							
G	-1		LDW270-23453-1	E	GAGING SYST CONTROL BOX INSTL							

CLEANLINESS LEVEL PER LSP 14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW270-23453

SCALE NONE SHEET 2.00

ENG 77.2 7-65

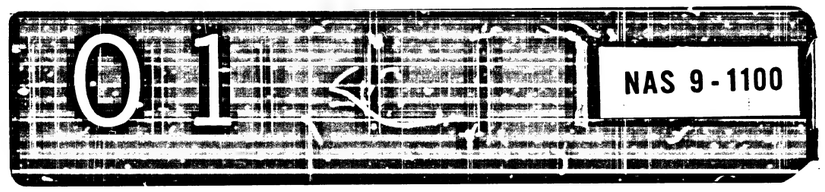
01 NAS 9-1100

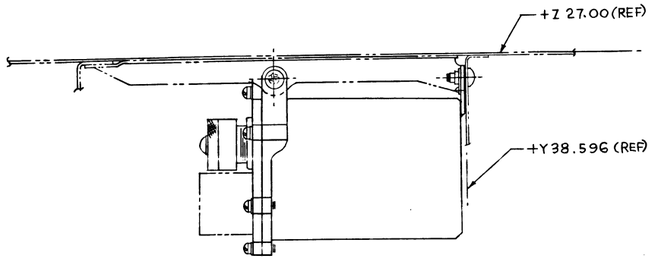
NOTES:

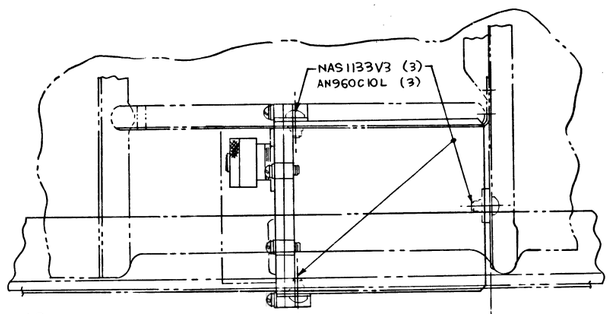
1. COMMERCIAL PART SEE SPECIFICATION CONTROL DWG BEFORE ORDERING.

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-23453	
SCALE NONE		SHEET 3.00	

ENG 73.1 6-64

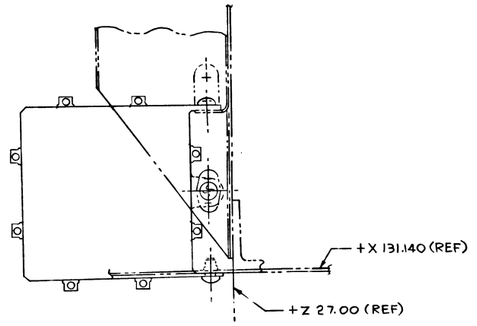


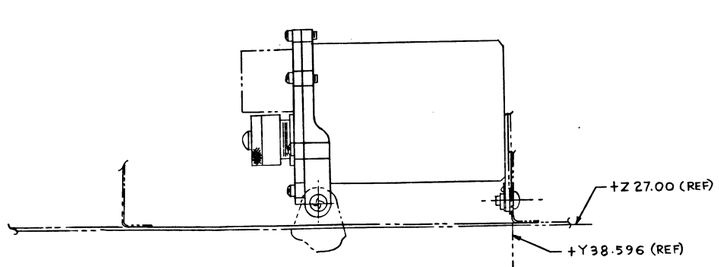




VIEW LOOKING AFT
LDW 270-25453-1 INSTL
FULL SCALE

UP
OUT BD





MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY.	
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ⌐ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

LDW270-23453 C

LEM	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L.I., NEW YORK		
	SIZE F	CODE IDENT NO. 26512	LDW270-23453
MODEL OR END ITEM	SCALE FULL		SHEET 4.00

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	REWORK
A	1	1.00							REVISED TO LATEST DWG. STATUS. WAS SH 1.00 OF 2		
	2	2.00							REVISED DWG. CONTENT BY REMOVING FLUID SCHEMATIC IN ITS ENTIRETY (FLUID SCHEMATIC UPDATED TO LATEST CONFIGURATION & TRANSFERRED TO SH 4.00) AND ADDING PARTS LIST.		
	3	NOTED							ADDED NOTE SHEETS 3.00 & 3.01		
	4	NOTED							ADDED FLUID SCHEMATIC SH 4.00 WAS SH 2		
	5	NOTED							ADDED ELECTRICAL SCHEMATIC SHEETS 5.00, 6.00, 7.00 & 8.00.	LTA-5D	
B	1	1.00							REVISED TO LATEST DWG STATUS. ADDED SHEETS 1.11 & 3.02		
	2	2.00 5.00 6.00							ADDED 10A3, 10A4, 10A3A1CR1, 10A3A1CR2 10A4A1CR1, 10A4A1CR2, 10MT34 THRU 10MT38, 10L5 & 10L6. DELETED 10MT14 & 10MT25 10L3 & 10L4 WAS 10L1 & 10L2. 10A3L1 & 10A4L1 WAS 10L3 & 10L4. LSC270-713-6 WAS LSC270-713-5	LTA-5D	NOT REQ'D
	3	3.01 & 3.02							ADDED MCR'S 366 & 468 TO NOTE 27 ADDED NOTES 33 THRU 41		
	4	4.00							EXTENSIVELY REVISED (CONT)		

A JOHNSON 1-24-6

FOR CONTINUATION OF REVISIONS SEE SHEET 1.11

ENG 77.3 5-64

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-25000	B

SCALE NONE SHEET 1.10

THIS IS AN ORIGINAL DRAWING

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	LM/GRG APPD	APPD
B	5	5.00 6.00 7.00 8.00							EXTENSIVELY REVISED WIRING & SHIELDING. CONVERTED SHIELD GROUNDING FROM SECTIONAL SINGLE POINT TO CONTINUOUS FLOATING WITH PROVISION FOR SHIELD CONTINUITY THRU RIG/FACILITY INTERFACE.	LTA-5D	NOT	REQ'D	ARROYO 4-20-66		
	6	5.00	23						ADDED WIRING FOR FUTURE ADDITION OF ELECTRICAL HEATER & TEMPERATURE TRANSDUCER PER LCR151.						
	7	5.00	22						CHANGED 10L3 & 10L4 TO CONFORM TO LSC400V0502-3. COIL WIRING WAS 22 AWG.						
	8	6.00	27-30						CHANGED CONTROL UNIT TO CONFORM TO LSC27-00009. ADDED GSE TEST POINT NOMENCLATURE.						
	9	7.00	42						ADDED BRANCH CIRCUIT TO GSE CONTROL FOR MEASUREMENT GQ6806H.						
C	1	1.00	-						1.00 OF 13 WAS 1.00 OF 12. ADDED SH 1.12	LTA-5D	NOT	REQ'D	ARROYO 6-27-66		
	2	2.00 6.00	29A & 24B						ADDED LSC270-00600-19, 10L7, 10MT8 & 10MT14 ADDED GQ NUMBERS FOR 10MT30 THRU 10MT33 (WAS 10MT51 THRU 10MT54).						
	3	3.01 & 3.02	-						DELETED NOTES 27 & 32. ADDED NOTES 42 THRU 45.						
	4	2.00 4.00	- 11A 11C 10A 7C 3C						GQ3436P WAS GQ3435P. "LSC270-821-29&-65(----,LSC360-601)" WAS "LSC270-821-29&-65". LSC400V0502-3 WAS LSC270-TBD. LSP-360-601-107 WAS LSP 360-601. ADDED "SEE NOTE 45" ADDED LSC270-821-53						
	5	2.00 5.00	13/14A						ADDED CALLOUTS FOR NOTES 38, 39 & 42. ADDED 10L7, 10MT8 & 10MT14. DELETED WIRING FOR LCR151						

FOR CONTINUATION OF REVISIONS SEE SHEET 1.12

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-25000	C

SCALE NONE SHEET 1.11

01

NAS 9-1100

27. FOR DETAILED MEASUREMENT STATUS REFER TO:
   a- LTA-5 MEASUREMENT LIST LED-360-205, REV. A, DATED 30 NOV. 1965.
   b- SECTION III OF THE CURRENT LEM MEASUREMENT STATUS REPORT.
   c- PROJECT APPROVED MCR'S 173A, 321, 305, 331, 364, 425, 366 & 468.

29. FOR RIG WIRING DIAGRAM OF GSE SUPPLIED TRANSDUCERS REFER TO GSE LEVEL III LDW 450-1053.

30. FOR ELECTRICAL SCHEMATIC OF GIMBAL DRIVE ACTUATOR REFER TO CES LEVEL III LDW 300-25000.

31. FOR ELECTRICAL SCHEMATIC OF EXPLOSIVE DEVICES REFER TO ED LEVEL III LDW 320-25000.

32. THE DESCENT ENGINE INTERFACE IS BASED ON VENDOR'S(STL) WIRING DIAG 226517, 226774 & 226775. THESE DWGS ARE NOT VENDOR CERTIFIED FOR THE LTA-5D ENGINE BUT REPRESENT, ACCORDING TO THE COGNIZANT SUBSYSTEM, THE BEST INFORMATION AVAILABLE AT THIS TIME. (LSC 270-00600-14 & LSP-270-6A DO NOT DETAIL ENGINE INTERFACE WIRING).

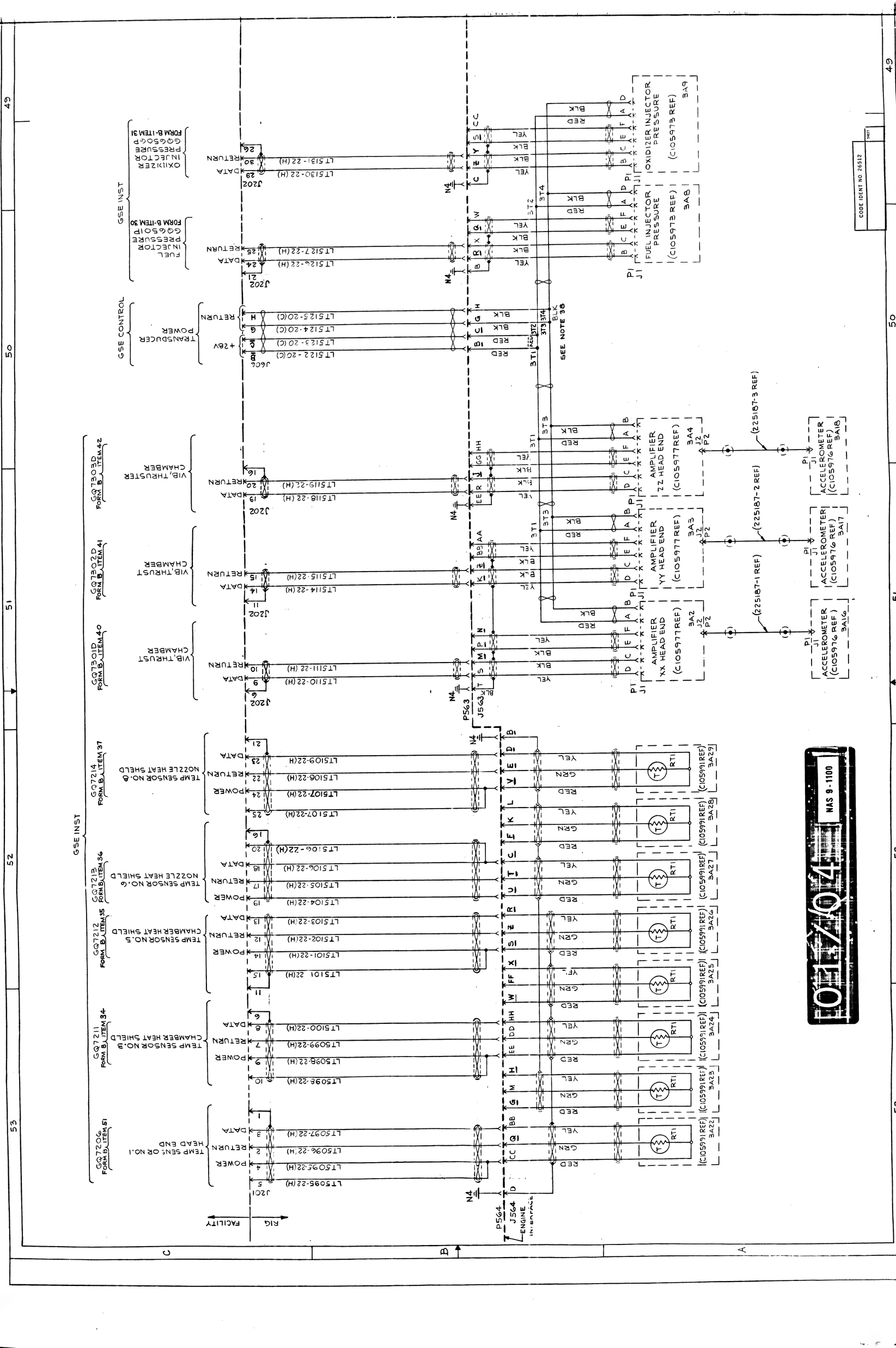
33. WIRES ARE TO BE TWISTED IN ACCORDANCE WITH LSP 390-002.

34. GROUND DESIGNATIONS: N1 = AC GROUND, N2 = DC GROUND, N3 = SIGNAL GROUND, N4 = STRUCTURE GROUND.

ENG 73.1 6-64

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-25000	C
SCALE THIS IS AN ORIGINAL DRAWING		SHEET 3.01	

NAS 9-1100


GSE INST
GSE CONTROL
OXIDIZER PRESSURE
FUEL INJECTOR PRESSURE
TRANSDUCER POWER
VIB. THRUST CHAMBER
TEMP SENSOR NO. 8 NOZZLE HEAT SHIELD
TEMP SENSOR NO. 6 NOZZLE HEAT SHIELD
TEMP SENSOR NO. 5 CHAMBER HEAT SHIELD
TEMP SENSOR NO. 3 CHAMBER HEAT SHIELD
TEMP SENS OR NO. 1 HEAD END
AMPLIFIER XX HEAD END
AMPLIFIER YY HEAD END
AMPLIFIER ZZ HEAD END
ACCELEROMETER
SEE NOTE 38
P563
J563
P564
J564
ENGINE INTERFACE
FACILITY
RIG
CODE IDENT NO. 26512
SHT
NAS 9-1100

GSE CONTROL — THROTTLE ACTUATOR CONTROL — J605

+15 VDC	ORN	M	LT5063-22(H)	
	SEE NOTE 37 ORN	S	LT5064-22(H)	
	BLK	J	LT5065-22(H)	
	SEE NOTE 36 BLK	R	LT5066-22(H)	
SIGNAL GROUND	BRN	N	LT5067-22(H)	
	BRN	K	LT5068-22(H)	
	RED	H	LT5069-22(H)	
	RED	T	LT5070-22(H)	

P561 / J561

GSE CHECKOUT — J607

VOLT CHANNEL 1 PRE AMP SIMULATOR FAIL	YEL	D	LT5053-22(H)	J690515V
VOLT CHANNEL 3 PRE AMP SIMULATOR FAIL	RED	Y	LT5054-22(H)	J690555V
VOLT CHANNEL 2 PRE AMP SIMULATOR FAIL	GRN	C	LT5055-22(H)	J690535V

P562 / J562

GSE CHECK-OUT — J607

PRE-VALVE TEST COMMON		U	LT5446-22(A)	
PRE-VALVE A CURRENT SHUNT		R	LT5447-22(A)	GA62971V
PRE-VALVE B CURRENT SHUNT		FF	LT5448-22(A)	GA62991V

N4

P562 / J562

GSE CONTROL — DISCRETE TO OPEN PRE-VALVES — J612

+28VDC PRE-VALVE B		S	LT5442-16(A)	
+28VDC PRE-VALVE A		I	LT5443-16(A)	
RETURN PRE-VALVE A	SEE NOTE 35	N	LT5444-16(A)	
RETURN PRE-VALVE B		C	LT5445-16(A)	

P560 / J560

GSE CONTROL — DISCRETE TO OPEN SHUT OFF VALVES — J604

+28 VDC		T	LT5007-16(A)	
+28 VDC	SEE NOTE 35	P	LT5006-16(A)	
RETURN		R	LT5005-16(A)	
RETURN		G	LT5004-16(A)	

P560 / J560

GSE CONTROL — PRESSURE CHAMBER (GA65107 FORM B ITEM 32) — J606

+28 VDC	RED	K	LT5002-22(C)	
RETURN	SEE NOTE 36 YEL	N	LT5003-22(C)	

GSE INST — J202

DATA	YEL	W	LT5389-22(H)	4
RETURN	BLK	G	LT5001-22(H)	5

P561 / J561

CHAMBER PRESS CALIBRATE TEST — YEL — V — LT5390-22(H) — 1

BLK — E

J562

GSE CHECK-OUT — J607

SHUT-OFF VALVE TEST COMMON (-)	BLK	Y	LT5008-22(A)	1
SHUT-OFF VALVE TEST COMMON (+)	RED	Y	LT5009-22(A)	1
VOLT(-) SHUT-OFF VALVE D CURRENT SHUNT	BRN	AA	LT5010-22(A)	GA63386V
VOLT (+) SHUT-OFF VALVE D CURRENT SHUNT	ORN	P	LT5011-22(A)	GA63376V
VOLT (-) SHUT-OFF VALVE C CURRENT SHUNT	BRN	M	LT5012-22(A)	GA63366V
VOLT (+) SHUT-OFF VALVE C CURRENT SHUNT	ORN	J	LT5013-22(A)	GA63356V
VOLT (-) SHUT-OFF VALVE B CURRENT SHUNT	BRN	K	LT5014-22(A)	GA63346V
VOLT (+) SHUT-OFF VALVE B CURRENT SHUNT	ORN	M	LT5015-22(A)	GA63336V
VOLT (-) SHUT-OFF VALVE A CURRENT SHUNT	BRN	N	LT5016-22(A)	GA63326V
VOLT (+) SHUT-OFF VALVE A CURRENT SHUNT	ORN	V	LT5017-22(A)	GA63316V

N4

P562 / J562

GSE INST — J202

DATA	YEL	CC	LT5130-22 H	29
RETURN	BLK	Z	LT5131-22(H)	30

OXIDIZER INJECTOR PRESSURE (C105975 REF) — BA9

P560 / J560

BT4

BLK	A	D	
RED	B	C	
BLK	F	A	

GSE CONTROL — OXIDIZER PRESSURE TRANSDUCER (GA65107 FORM B ITEM 31)

CODE IDENT NO 26512

NAS 9-1100

VEGA/SOE

CODE IDENT NO. 26512
DWG T

+15 VDC / -15 VDC / SIGNAL GROUND / MANUAL THROTTLE SIGNAL VOLTAGE / AUTO THROTTLE SIGNAL VOLTAGE

J561 — P561 — J605

+15 VDC	ORN	M	LT5063-22(H)	S
	SEE NOTE 37 ORN	S	LT5064-22(H)	J
	BLK	J	LT5065-22(H)	R
-15 VDC	SEE NOTE 36 BLK	R	LT5066-22(H)	N
	BRN	E	LT5067-22(H)	K
SIGNAL GROUND	BRN	K	LT5068-22(H)	Y
	RED	Y	LT5069-22(H)	H
MANUAL THROTTLE SIGNAL VOLTAGE	RED	H	LT5070-22(H)	N
	GRN	N	LT5071-22(H)	T
AUTO THROTTLE SIGNAL VOLTAGE	GRN	T	LT5072-22(H)	U
	BLK	P	N4	

THROTTLE ACTUATOR CONTROL — GSE CONTROL

VOLT (-) CHANNEL 2 MOTOR CURRENT SHUNT / VOLT (+) CHANNEL 2 MOTOR CURRENT SHUNT / VOLT (-) CHANNEL 3 MOTOR CURRENT SHUNT / VOLT (+) CHANNEL 3 MOTOR CURRENT SHUNT / VOLT (-) CHANNEL 1 MOTOR CURRENT SHUNT / VOLT (+) CHANNEL 1 MOTOR CURRENT SHUNT / TAC CURRENT TEST COMMON (+) / TAC CURRENT TEST COMMON (-)

J562 — P562 — J606

VOLT (-) CHANNEL 2 MOTOR CURRENT SHUNT	BRN	BB	LT5073-22(A)	Y	GQ6444V
VOLT (+) CHANNEL 2 MOTOR CURRENT SHUNT	ORN	CC	LT5074-22(A)	N	GQ6443V
VOLT (-) CHANNEL 3 MOTOR CURRENT SHUNT	BRN	R	LT5075-22(A)	R	GQ6446V
VOLT (+) CHANNEL 3 MOTOR CURRENT SHUNT	ORN	Q	LT5076-22(A)	Q	GQ6445V
VOLT (-) CHANNEL 1 MOTOR CURRENT SHUNT	BRN	GG	LT5077-22(A)	GG	GQ6442V
VOLT (+) CHANNEL 1 MOTOR CURRENT SHUNT	ORN	HH	LT5078-22(A)	HH	GQ6441V
TAC CURRENT TEST COMMON (+)	RED	X	LT5079-22(A)	X	
TAC CURRENT TEST COMMON (-)	BLK	W	LT5080-22(A)	W	
			N4		

GSE CHECK-OUT

CHASSIS GROUND

J560 — P560

CHASSIS GROUND	BLK	H	N4	
	BLK	L		

+28 VDC / +28 VDC / RETURN / RETURN

J562 — P562 — J604

+28 VDC	RED	M	LT5083-16(A)	M	
+28 VDC	RED	K	LT5084-16(A)	K	TAC POWER TO "ARM" ENGINE
RETURN SEE NOTE 35	BLK	A	LT5085-16(A)	A	
RETURN	BLK	N	LT5086-16(A)	N	

GSE CONTROL

VOLT CHANNEL 1 PWR AMPL SIMULATOR FAIL / VOLT CHANNEL 2 PWR AMPL SIMULATOR FAIL / VOLT CHANNEL 3 PWR AMPL SIMULATOR FAIL

J562 — P562 — J607

VOLT CHANNEL 1 PWR AMPL SIMULATOR FAIL	YEL	B	LT5450-22(A)	L	JQ9041V
VOLT CHANNEL 2 PWR AMPL SIMULATOR FAIL	GRN	W	LT5451-22(A)	M	JQ9042V
VOLT CHANNEL 3 PWR AMPL SIMULATOR FAIL	RED	X	LT5452-22(A)	N	JQ9043V
VOLT CHANNEL 1 PWR AMPL SIMULATOR FAIL	YEL	H	LT5453-22(A)	R	JQ9041V
VOLT CHANNEL 2 PWR AMPL SIMULATOR FAIL	BLK	D	LT5454-22(A)	S	JQ9042V
VOLT CHANNEL 3 PWR AMPL SIMULATOR FAIL	RED	J	LT5455-22(A)	T	JQ9043V

GSE CHECK-OUT

DATA / RETURN — TAC TLM POT 1; DATA / RETURN — TAC TLM POT 2

J561 — P561 — J301 — J606

DATA	YEL	D	LT5087-22(H)	28	
RETURN	BLK	R	LT5088-22(H)	30	TAC TLM POT 1 GQ6806H FORM B ITEM 33
DATA	YEL	Z	LT5087-22(H)	29	
RETURN	BLK	Y	LT5088-22(H)	30	
			LT5087-22(H)	BB	TAC TLM POT 1 GQ6806H FORM B ITEM 33
			LT5088-22(H)	AA	
				CC	

GSE INST — GSE CONTROL

TAC TLM POT 1 EXC / TAC TLM POT 2 EXC / TAC TLM POT RETURN

J562 — P562 — J607

TAC TLM POT 1 EXC	RED	G	LT5405-22(H)	E	THROTTLE INSTRUMENTATION REFERENCE POWER SUPPLY TEST POINTS
TAC TLM POT 2 EXC	RED	L	LT5456-22(H)	G	
TAC TLM POT RETURN	BLK	F	LT5406-22(H)	H	
				F	

GSE CHECKOUT

+28VDC / +28VDC / RETURN / RETURN

J561 — P561 — J605

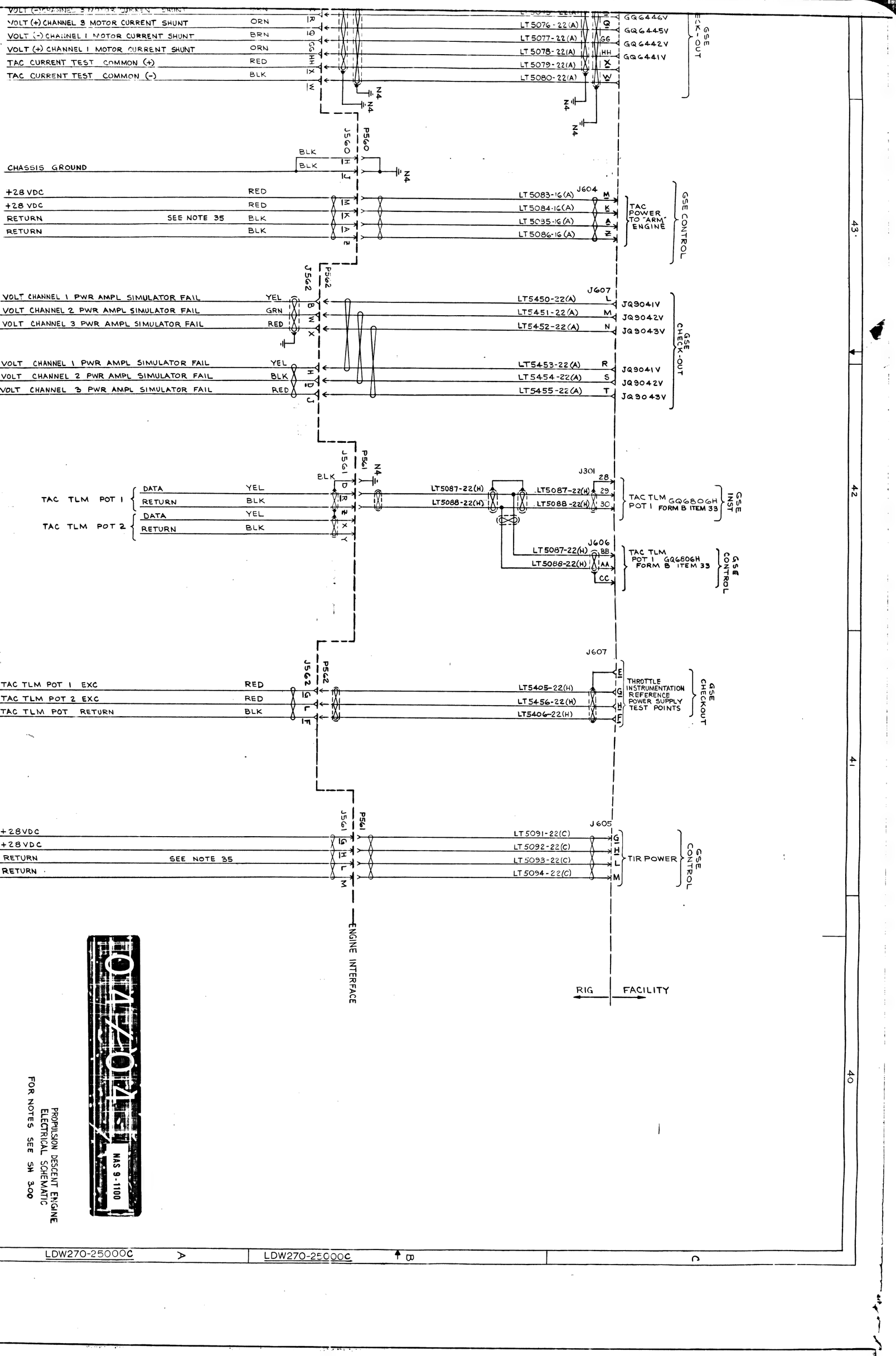
+28VDC		G	LT5091-22(C)	G	
+28VDC		H	LT5092-22(C)	H	TIR POWER
RETURN SEE NOTE 35		L	LT5093-22(C)	L	
RETURN		M	LT5094-22(C)	M	

GSE CONTROL

ENGINE INTERFACE

RIG — FACILITY

CODE IDENT NO. 26512
DWG T
80387-01E
NAS 9-1100



CODE IDENT NO. 26512

SHEET

PROPULSION DESCENT ENGINE
ELECTRICAL SCHEMATIC
FOR NOTES SEE SH 3.00

NAS 9-1100

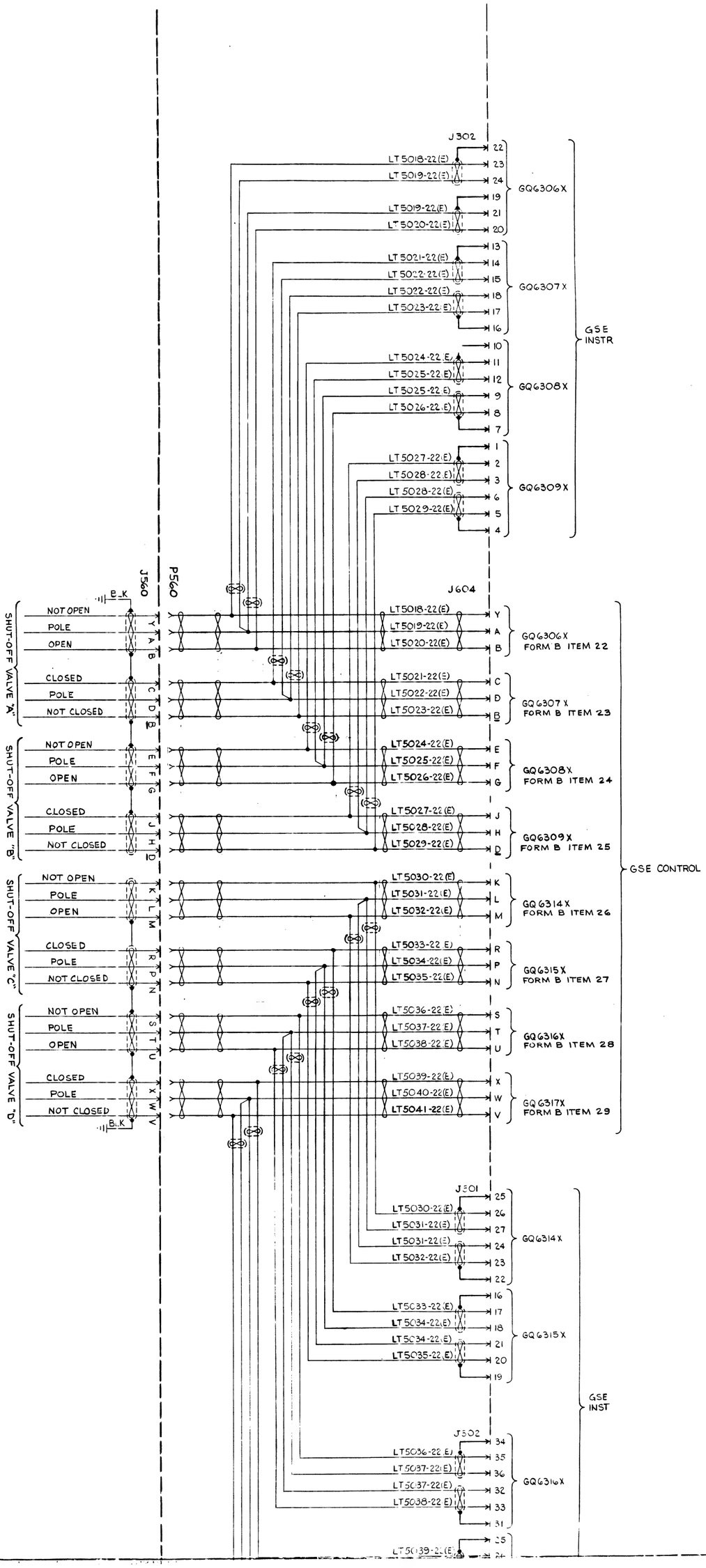
FOR ENGRS. INFO ONLY

GRUMMAN AIRCRAFT ENGG. CORP. BETHPAGE, L.I. NEW YORK

SIZE	CODE IDENT NO.	LDW270-25000	C
LEM	26512		

SHEET 7.00

LDW270-25000C

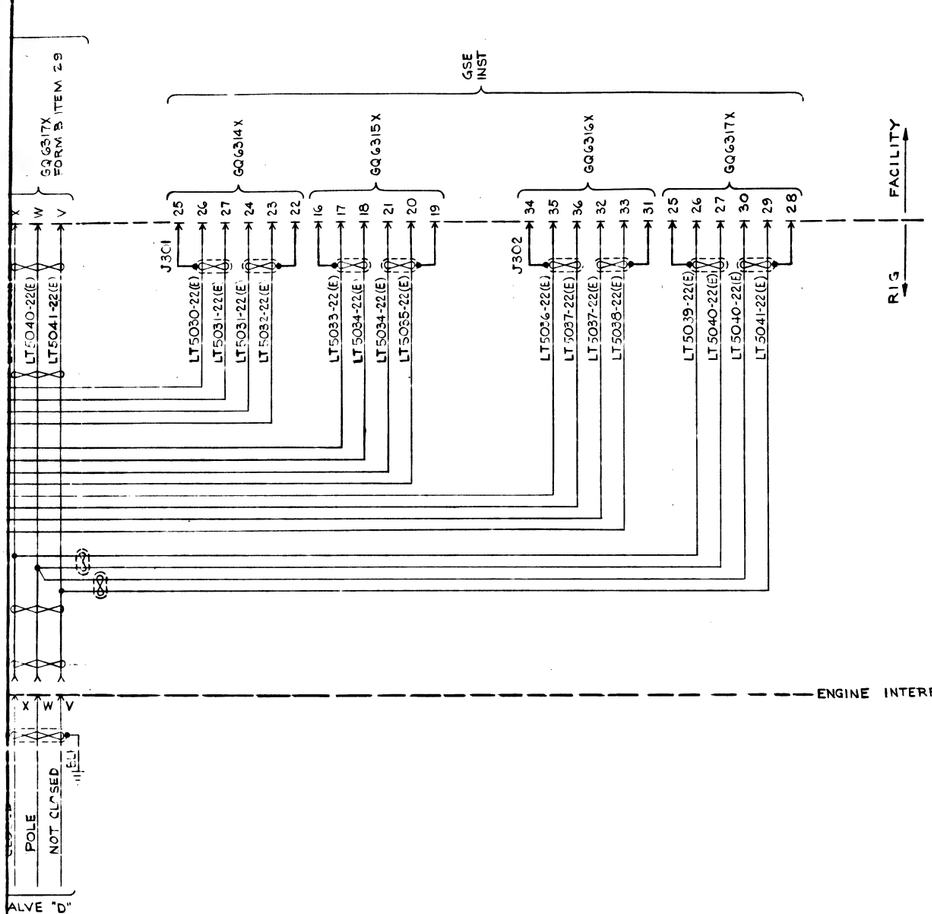


0E7/0224

NAS 9-1100

CODE IDENT NO. 26512

SHEET



58 57 56 55 54

C

B

A

LDW270-25000C

LDW270-25000C

02/02 NAS 9-1100

PROPULSION DESCENT ENGINE
ELECTRICAL SCHEMATIC

FOR NOTES SEE SH 3.00

FOR ENGRG INFO ONLY

	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE L.I.N.Y.	
LEM	26512	LDW270-25000 C
MODEL OR END ITEM	SCALE: NONE	SHEET 8.00

CODE IDENT NO. 26512 SHEET

58 57 56 55 54 2FR

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	QCME APPD
C	6	2.00 & 5.00	– 20A 20C 25A 24A 22A						"V10" WAS "PURPLE" ON 10A4 "(E)" WAS "(A)" ON WIRE NOS. LT5156 & LT5157. ADDED MEASUREMENT NUMBERS JQ9709V THRU JQ9712V. PT NO. OF 10MT7 WAS "LSC 270-821-51" LSC 360-605-109 WAS LSC360-605-103 ON 10MT37 "RED" & "BLK" WAS "B" & "A" ON 10L3 & 10L4.	LTA-5D	NOT	REQ'D			
	7	6.00 & 2.00	29B 29						REMOVED WIRE NOS. (9 WIRES). 10MT30 THRU 10MT33 WERE 10MT51 THRU 10MT54 ADDED GQ NUMBERS. DELETED GQ3605Q & GQ4105Q FROM WIRES #1 BLU & #4 GRN OF 10A2						
	8	6.00 & 2.00	31 32 37 38 39A						DELETED 10MT14 & 10MT25. ADDED "SEE NOTE 42" LSC 360-605-303 WAS "----307"						
	9	7.00	43 45 46 47 52 53						WIRING & CALLOUTS EXTENSIVELY REVISED. DELETED WIRES LT5051, LT5052, LT5056 THRU LT5062, LT5081, LT5082, LT5401 THRU LT5404 & LT5425. ADDED WIRES LT5095, LT5098, LT5101, LT5106, LT5107, LT5442 THRU LT5448 & LT5450 THRU LT5456.						
	10	8.00	58C 58 59						LT5041 WAS LT5050 RELOCATED VALVE CALLOUTS						
D	1	4.00	6B					LEO 270-8	LSC 270-818-5 & -6 VALVES WERE LSC 270-818-1 & -2						
	2	5.00	20A					E.O. D2	10A4L1 P/N LSC 270-713-10 WAS -6 10A3L1 P/N LSC 270-713-9 WAS -5	NOTED	NOT REQ'D				
	3	6.00	35 36					E.O. D3	DELETED SOLENOID VALVES 10L5 & 10L6 AND ASSOCIATED WIRING						

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-25000	D

SCALE NONE | SHEET 1.12

FOR CONTINUATION OF REVISIONS SEE SHEET _____

ENG 77.3 5-65

01 NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	[illegible]-APPD
D	4	4.00	4A 4C 5A 5B 5C 6A 6B 6C 7A 7B 7C 8A 8B 8C 9A 9B 9C 10A 10B 11C 6 10C 11C					E.O. D4	ADDED PART NOS. TO TRIM ORIFICE CALLOUT. LSC270-820-11 WAS -3, LSC270-813-27 WAS -7, LSC270-826-5 WAS 809-6, LSC270-826-7 WAS -809-8. ADDED "LOW POINT DRAIN (FUEL)" TO LSC270-213-26 CALLOUT. LSC270-818-5 WAS-1, LSC270-818-6 WAS -2, LSC270-813-23 WAS-3, LSC270-813-31 WAS-21, ADDED "GQ3435P TO CALLOUT. DELETED LSC270-813-24, LSC270-813-25, LSC270-809-2, LSC270-809-4, GQ3477T & GQ3478T. DELETED CALLOUT FOR LSC270-821-13 & -53	NOTED	NOT	REQ'D	S. ZANG 9-14-66		
	5	4.00	10C 11C 10B						REINSTATED GQ3477T & DELETED GQ3479T.						
	6		4A 7A 7C 10B 10C						ADDED "SEE NOTE 42" (8 PLACES) ADDED "SEE NOTE 46" (4 PLACES)						
	7		4B 4C 6B 8C 5B						LSC270-808-7 WAS -1, LSC270-807-7 WAS -1, LSC270-816-11-1 WAS -11, LSC270-814-3 WAS -1.	NOTED	NOT	REQ'D			
	8	5.00	23						DELETED WIRING FOR LCR151						
	9	6.00	31 32						DELETED 10MT14 (GQ3616P) & 10MT25 (GQ4116P).						
	10	2.00	-						GQ3666P WAS GQ3616P (FOR 10MT15)						
	11	3.02	-						ADDED "110C" TO NOTE 44						
	12	3.00	-						NOTE 20: "---(LSC270-818-5 & -6) "WAS"----1 & -2)"						
	13	1.00	-						ADDED SH 1.13 & SH 1.00 OF 14 WAS 1.00 OF 13						
	14	4.00	5C						REF E.O.D4 LSC270-813-26 WAS LSC270-213-26						

FOR CONTINUATION OF REVISIONS SEE SHEET _____

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-25000	D
SCALE NONE		SHEET 1.13	

ENG 77.3 5-65

01 NAS 9-1100

NOTES (CONT'D)

18. HELIUM STORAGE PRESSURE MAX. 1555 PSIA @ 100°R
19. LSC 270-816-11 PRESSURE REDUCER - EACH PARALLEL STAGE 246 ±2 PSIG (4000 TO 350 PSIG INLET) @ 0.43 - 4.25 #/MIN.
20. MAIN RELIEF VALVE PRESSURE (LSC 270-818-5 & 6)
    RATED FLOW PRESSURE 260-275 PSIG @ 10.0 #/MIN.
    RESEAT PRESSURE 254 PSIG.
    BURST DISC RUPTURE PRESSURE 288 ±20 PSIG.
21. HELIUM STORAGE VESSEL DATA:
    CHARGE PRESSURE: 80 PSIA
    CAPACITY: 48.8# TOTAL, 41.85 USABLE.
22. FLUID: MIL-P-27407 PROPELLANT, PRESSURIZING AGENT - HELIUM.
23. RELIEF VALVE PRESSURE (LSC 270-821-21)
    RATED FLOW PRESSURE: 5 #/MIN @ 1075 PSIA
    BURST DISC RUPTURE PRESSURE: 1555 PSIG + 0 - 155 PSIG.

25. SYMBOLS ARE IN ACCORDANCE WITH MSFC-STD-162A WITH THE FOLLOWING ADDITIONS:
    FUEL LINES
    HELIUM LINES
    OXIDIZER LINES
    DIFFERENTIAL PRESSURE TRANSDUCER
    LINE O.D. (-2) = 1/8, (-4) = 1/4, (-6) = 3/8, (-8) = 1/2, (-10) = 5/8, (-12) = 3/4, (-16) = 1, (-24) = 1 1/2, (-28) = 1 3/4, (-32) = 2.

26. TUBING DATA:

SIZE O.D.	PRESS. MAX	WALL THICK.	MAT'L	SPEC.
1/4	1000	.016	304 L	LSM-14-1001
3/8	1500	.025	↕	↕
1/2	1500	.035	↕	↕
5/8	1000	.016	↕	↕
3/4	1000	.016	304 L	LSM-14-1001

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-25000	D

SCALE NONE SHEET 3.00

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ENG 781 8-64

01

NAS 9-1100

CODE IDENT NO. 26512
SHT
NAS 9-1100

TRANSDUCERS BY INST – HARNESS BY EPS

LSC 360-605-303
TEMPERATURE
FUEL TANK NO1
LIQUID (FUEL BULK)
IOMT 16
GG 3718T FORM B ITEM 3

LSC 360-605-303
TEMPERATURE
FUEL TANK NO 2
LIQUID (FUEL BULK)
IOMT 17
GG 3719T FORM B ITEM 10

LSC 360-605-303
TEMPERATURE
OXID TANK NO1
LIQUID (OXID BULK)
IOMT 27
GG 4218T FORM B ITEM 12

LSC 360-605-303
TEMPERATURE
OXID TANK NO2
LIQUID (OXID BULK)
IOMT28
GG 4219T FORM B ITEM 13

LSC 360-601-107
(0-300 PSIA)
PRESSURE ENGINE
INTERFACE FUEL
IOMT 13
GG 3611P FORM B ITEM 14
SEE NOTE 42

LSC 360-601-107
(0-300 PSIA)
PRESSURE ENGINE
INTERFACE OXID
IOMT 23
GG 4111P FORM B ITEM 15
SEE NOTE 42

SEE NOTE 36
+28VDC

YEL BLK RED GRN

DC RET. +SIG SIG RET.

J206 J204 J205 J207 J208 J206

GSE INSTRUMENTATION

RIG FACILITY

LTS216-22 (H) LTS217-22(H) LTS218-22(H) LTS219-22(H)
LTS220-22(H) LTS221-22(H) LTS222-22(H) LTS223-22(H)
LTS224-22(H) LTS224-22(H) LTS225-22(H) LTS226-22(H)
LTS227-22(H) LTS227-22(H) LTS228-22(C) LTS229-22(C)
LTS230-22 (H) LTS231-22(H) LTS235-22 (C) LTS236-22 (C)
LTS237-22 (M) LTS238-22 (M)

GSE INST J206 1 2 3 4 5 J204 1 2 3 4 5 J205 1 2 3 4 5 J207 1 2 3 4 5 J208 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

TRANSDUCERS BY INST – HARNESS BY EPS

VALVES BY PROP – HARNESS BY EPS

LATCHING SOLENOID VALVE
LUNAR DUMP-HELIUM PRESS-FUEL
LSC310-403-204
IOL5

LATCHING SOLENOID VALVE
LUNAR DUMP-HELIUM PRESS-O
LSC310-403-303
IOL6

VALVE CLOSED GRY
POLE BRN
VALVE OPEN YEL
REFERENCE GRN

+28V PULSE TO CLOSE
-28V PULSE TO OPEN
SEE NOTE 35

CLOSE COIL
OPEN COIL

GSE CONTROL J600 C D E F G J604 M N J603 A B C 26 27 28 29 30 31 32 33 34 35 36

LTS414-26(E) LTS415-26(E) LTS416-26(E) LTS417-16 (A) LTS418-16(A) LTS419-26 (E) LTS420-26(E) LTS421-26(E) LTS422-16(A)

NST

GSE CONTROL

GSE INSTRUMENTATION

FACILITY

RIG

J303

J600

J604

J201

J206

J204

J205

J611

LT5419-24(E)
LT5420-24(E)
LT5421-24(E)
LT5422-16(A
LT5423-16(A)

LT5242-22(H)
LT5243-22(H)
LT5244-22(H)
LT5244-22(H)

LT5245-22(H)
LT5246-22(H)
LT5247-22(H)
LT5247-22(H)

LT5020-22(C)
LT5021-22(C)
LT5022-22(H)
LT5023-22(H)

LT5249-22(C)
LT5248-22(C)
LT5250-22(H)
LT5251-22(H)
LT5390-22(H)
LT5391-22(H)
LT5392-22(H)

LT5253-22(C)
LT5252-22(C)
LT5254-22(H)
LT5255-22(H)
LT5393-22(H)
LT5394-22(H)
LT5395-22(H)

LT5012-22(C)
LT5013-22(C)
LT5014-22(H)
LT5015-22(H)

GSE INST

GSE CONTROL

VALVE CLOSED
POLE
VALVE OPEN
REFERENCE
+28V PULSE TO CLOSE
-28V PULSE TO OPEN
SEE NOTE 39

GRY
BRN
YEL
GRN
RED

CLOSE COIL
OPEN COIL

LATCHING SOLENOID VALVE
LUNAR DUMP-HELIUM PRESS-OX
ESC310-403-303
:0L6

BY EPS

LSC360-605-301
TEMPERATURE ENGINE
INTERFACE FUEL
IOMT18
GQ3811T
FORM B ITEM 38

LSC360-605-301
TEMPERATURE ENGINE
INTERFACE OXID
IOMT29
GQ4311T
FORM B ITEM 39

TRANSDUCERS BY INST
HARNESS BY EPS

+28VDC
DC RET.
+SIG
SIG RET.

NTN-510981-201
Δ PRESSURE FUEL TANK NO.2
BOTTOM TO ENGINE
INTERFACE
IOMT15
GQ3666P
FORM B ITEM

BY INST
HARNESS BY EPS

N4

LSC450-10104-13
(0-35 PSID)
Δ PRESSURE FUEL TANK NO.1
BOTTOM TO ENGINE
INTERFACE
IOMT14
GQ3616P

BY GSE

LSC450-10104-13
(0-35 PSID)
Δ PRESSURE OXID TANK NO.1
BOTTOM TO ENGINE
INTERFACE
IOMT25
GQ4116P

BY GSE

NTN-510981-201
Δ PRESSURE OXID
TANK NO 1 BOTTOM
TO ENGINE INTERFACE
IOMT26
GQ4116P
FORM B ITEM 53

BY INST
HARNESS BY EPS

CODE IDENT NO. 26512

10A2

PROPELLANT QUANTITY GAGING CONTROL UNIT
LSC 270-00009-21

10MT30
LSC 270-00009-14 FUEL QUANTITY SENSING UNIT GQ3603Q DES-1-F

TEST CMD #1	LT5279-22(H)	#1 NAT	DES-1-F
SIGNAL RET. #2	LT5280-22(H)	#2 BRN	
FUEL QTY #3	LT5281-22(H)	#3 VIO	
FUEL LOW LEVEL #4	LT5282-22(H)	#4 GRN	
20 VDC #5	LT5283-22(H)	#5 RED	
RET. #6	LT5284-22(H)	#6 BLK	

10MT31
LSC 270-00009-14 FUEL QUANTITY SENSING UNIT GQ3604Q DES-2-F

TEST CMD #1	LT5285-22(H)	#1 NAT	DES-2-F
SIGNAL RET. #2	LT5286-22(H)	#2 BRN	
FUEL QTY #3	LT5287-22(H)	#3 VIO	
FUEL LOW LEVEL #4	LT5288-22(H)	#4 GRN	
20 VDC #5	LT5289-22(H)	#5 RED	
RET. #6	LT5290-22(H)	#6 BLK	

FACILITY | RIG

J304

GSE INST
- 26 N4 LT5295-22(F)
- 27
- 17 N4 LT5291-22(F)
- 18
- 21 LT5293-22(F)
- 20 LT5292-22(F) N4
- 24
- 23 LT5294-22(F) N4

OXIDIZER CLOCK	#5 ORN	MPPI (NOT INTERNALLY CONNECTED)
FUEL QTY SELECTED	#1 BLU	
RETURN	#3 BRN	
FUEL CLOCK	#2 BLK	
OXIDIZER QTY SELECTED	#4 GRN	

J611

GSE CONTROL
- V LT5275-22(E)
- S LT5276-22(E)
- P LT5277-22(C)
- R LT5278-22(C)

SEE NOTE #1

PROPELLANT QTY MON SEL SW-DES-2	#5 NAT	READOUT SELECT SW (NOT INTERNALLY CONNECTED)
PROPELLANT QTY MON SEL SW-POLE	#6 VIO	
+28VDC SEE NOTE 39	#3 RED	POWER
RET.	#4 BLK	

10MT32
LSC 270-00009-13 OXIDIZER QUANTITY SENSING UNIT GQ4103Q DES-1-OX

TEST CMD #1	LT5296-22(H)	#1 NAT	DES-1-OX
SIGNAL RET. #2	LT5297-22(H)	#2 BRN	
OXIDIZER QTY #3	LT5298-22(H)	#3 VIO	
OXID LOW LEVEL #4	LT5299-22(H)	#4 GRN	
20VDC #5	LT5300-22(H)	#5 RED	
RET. #6	LT5301-22(H)	#6 BLK	

10MT33
LSC 270-00009-13 OXIDIZER QUANTITY SENSING UNIT GQ4104Q DES-2-OX

TEST CMD #1	LT5302-22(H)	#1 NAT	DES-2-OX
SIGNAL RET. #2	LT5303-22(H)	#2 BRN	
OXIDIZER QTY #3	LT5304-22(H)	#3 VIO	
OXID LOW LEVEL #4	LT5305-22(H)	#4 GRN	
20VDC #5	LT5306-22(H)	#5 RED	
RET. #6	LT5307-22(H)	#6 BLK	

J556 P556

A	SENSOR TEST DRY
F	JQ90317X
E	SIGNAL GROUND JQ90318X
A	1 VOLT FUEL TANK NO.1 QTY JQ90323X
C	1 VOLT OXID TANK NO.1 QTY JQ90324X
B	1 VOLT FUEL TANK NO.2 QTY JQ90334X
D	1 VOLT OXID TANK NO.2 QTY
J	SENSOR OUTPUT INHIBIT JQ90339X
H	
G	SPARE

J611

A	LT5265-22(E)
M	LT5266-22(E)
N	LT5267-22(H)
L	LT5268-22(H)
K	LT5269-22(H)
U	LT5270-22(H)
J	LT5271-22(H)
T	LT5272-22(E)
H	LT5273-22(E)
G	LT5274-22

GSE CHECKOUT

RIG / FACILITY

TLM
- FUEL QTY TANK #1 — #1 BLU GQ3603Q
- FUEL QTY TANK #2 — #2 BLK GQ3604Q
- #5 ORN RET.
- OXID QTY TANK #2 — #4 GRN GQ4104Q
- OXID QTY TANK #1 — #3 BRN GQ4103Q

J304

LT5258-22(H)	5	GSE INST
LT5259-22(H)	6	
LT5260-22(H)	8	
LT5259-22(H)	9	
LT5259-22(H)	12	
LT5262-22(H)	11	
LT5259-22(H)	15	
LT5263-22(H)	14	

J304

#1 GRN	LT5256-22(E)	2	GSE INST
#2 BRN	GQ4455X LT5257-22(E)	3	

RIG | FACILITY

FACILITY | RIG

J205

8	LT5012-22 (C)
7	LT5013-22 (C)
9	LT5014-22 (H)
10	LT5015-22 (H)
6	

A	+28VDC
B	DC RET.
D	+SIG
C	SIG RET.

P1

MTM-510381-201
Δ PRESSURE OXID TANK NO 1 BOTTOM TO ENGINE INTERFACE
10MT26
GQ4116P FORM B ITEM 533

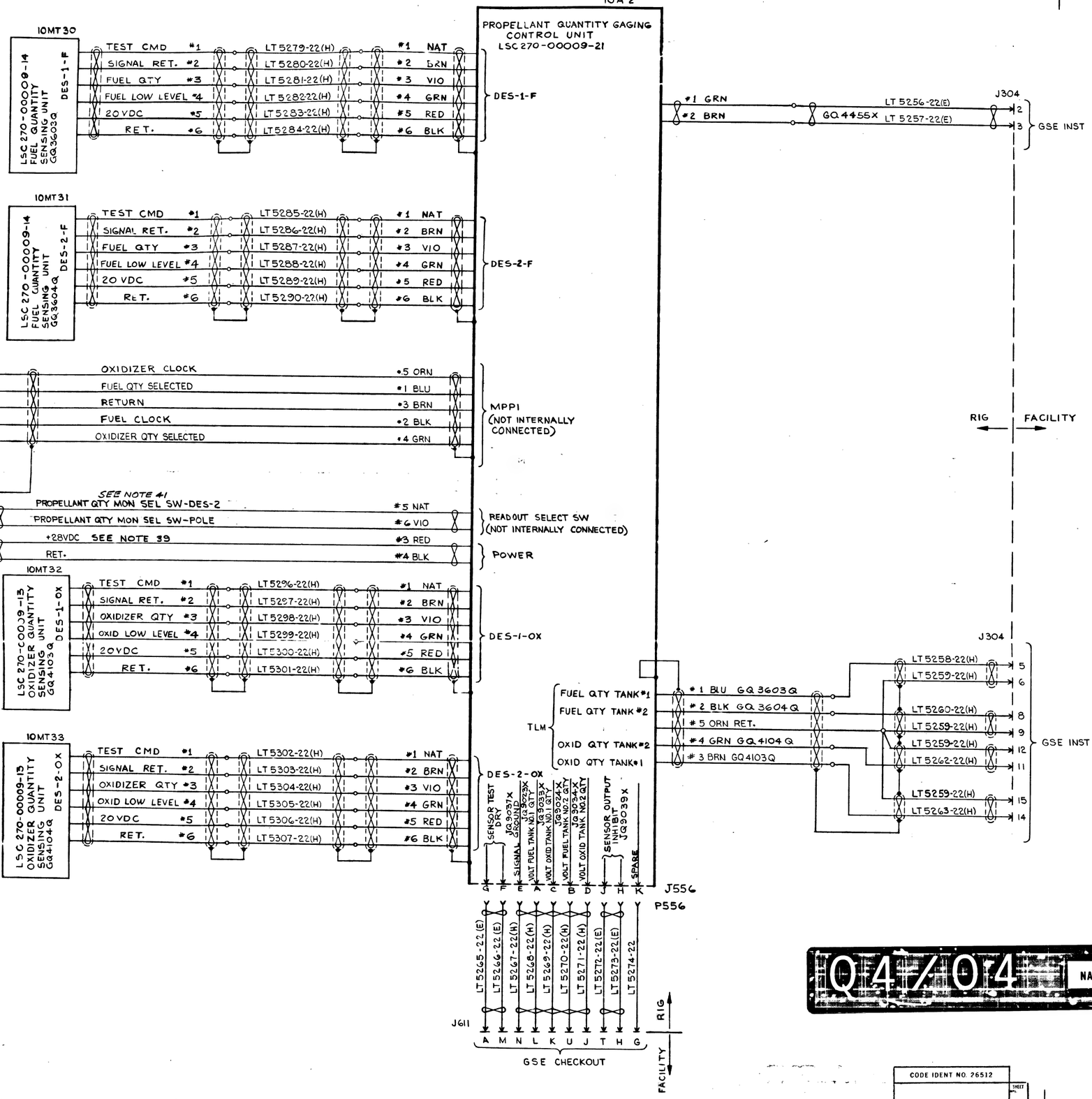
BY INST
HARNESS BY EPS

03/04

NAS 9-1100

CODE IDENT NO 26512 SHEET

CODE IDENT NO 26512 SHEET


29
28
27
26
10A2
PROPELLANT QUANTITY GAGING CONTROL UNIT LSC270-00009-21
10MT30
LSC270-00009-14 FUEL QUANTITY SENSING UNIT GQ3603Q DES-1-F
TEST CMD #1 LT5279-22(H) #1 NAT
SIGNAL RET. #2 LT5280-22(H) #2 BRN
FUEL QTY #3 LT5281-22(H) #3 VIO
FUEL LOW LEVEL #4 LT5282-22(H) #4 GRN
20 VDC #5 LT5283-22(H) #5 RED
RET. #6 LT5284-22(H) #6 BLK
DES-1-F
10MT31
LSC270-00009-14 FUEL QUANTITY SENSING UNIT GQ3604Q DES-2-F
TEST CMD #1 LT5285-22(H) #1 NAT
SIGNAL RET. #2 LT5286-22(H) #2 BRN
FUEL QTY #3 LT5287-22(H) #3 VIO
FUEL LOW LEVEL #4 LT5288-22(H) #4 GRN
20 VDC #5 LT5289-22(H) #5 RED
RET. #6 LT5290-22(H) #6 BLK
DES-2-F
OXIDIZER CLOCK #5 ORN
FUEL QTY SELECTED #1 BLU
RETURN #3 BRN
FUEL CLOCK #2 BLK
OXIDIZER QTY SELECTED #4 GRN
MPP1 (NOT INTERNALLY CONNECTED)
SEE NOTE 41
PROPELLANT QTY MON SEL SW-DES-2 #5 NAT
PROPELLANT QTY MON SEL SW-POLE #6 VIO
READOUT SELECT SW (NOT INTERNALLY CONNECTED)
+28VDC SEE NOTE 39 #3 RED
RET. #4 BLK
POWER
10MT32
LSC270-00039-13 OXIDIZER QUANTITY SENSING UNIT GQ4103Q DES-1-OX
TEST CMD #1 LT5296-22(H) #1 NAT
SIGNAL RET. #2 LT5297-22(H) #2 BRN
OXIDIZER QTY #3 LT5298-22(H) #3 VIO
OXID LOW LEVEL #4 LT5299-22(H) #4 GRN
20VDC #5 LT5300-22(H) #5 RED
RET. #6 LT5301-22(H) #6 BLK
DES-1-OX
10MT33
LSC270-00009-13 OXIDIZER QUANTITY SENSING UNIT GQ4104Q DES-2-OX
TEST CMD #1 LT5302-22(H) #1 NAT
SIGNAL RET. #2 LT5303-22(H) #2 BRN
OXIDIZER QTY #3 LT5304-22(H) #3 VIO
OXID LOW LEVEL #4 LT5305-22(H) #4 GRN
20VDC #5 LT5306-22(H) #5 RED
RET. #6 LT5307-22(H) #6 BLK
DES-2-OX
#1 GRN LT5256-22(E) J304 2
#2 BRN GQ4455X LT5257-22(E) J304 3
GSE INST
RIG
FACILITY
TLM
FUEL QTY TANK #1 #1 BLU GQ3603Q LT5258-22(H) J304 5
FUEL QTY TANK #2 #2 BLK GQ3604Q LT5259-22(H) J304 6
#5 ORN RET. LT5260-22(H) J304 8
OXID QTY TANK #2 #4 GRN GQ4104Q LT5259-22(H) J304 9
OXID QTY TANK #1 #3 BRN GQ4103Q LT5259-22(H) J304 12
LT5262-22(H) J304 11
LT5259-22(H) J304 15
LT5263-22(H) J304 14
GSE INST
SENSOR TEST GQ9037X
SIGNAL GROUND JQ3023X
VOLT FUEL TANK NO1 QTY JQ3033X
VOLT OXID TANK NO1 QTY GQ3034X
VOLT FUEL TANK NO2 QTY JQ3034X
VOLT OXID TANK NO2 QTY
SENSOR OUTPUT INHIBIT JQ9039X
SPARE
J556
P556
LT5265-22(E) LT5266-22(E) LT5267-22(H) LT5268-22(H) LT5269-22(H) LT5270-22(H) LT5271-22(H) LT5272-22(E) LT5273-22(E) LT5274-22
J611
A M N L K U J T H G
RIG
FACILITY
GSE CHECKOUT
Q4/04
NAS 9-1100
PROPULSION DESCENT FEED SYSTEM ELECTRICAL SCHEMATIC
FOR NOTES SEE SH 3.00
FOR ENGRG INFO ONLY
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L.I., NEW YORK
LEM
SIZE J CODE IDENT NO. 26512 LDW270-25000 D
SCALE ~ SHEET 6.00
CODE IDENT NO. 26512
SHEET
LDW270-25000 C
LDW270-25000 C
A
C
B
4-FR

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.	GAEC SCH NO.		

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.	GAEC SCH NO.		

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	—	LTA-5D	—
PART NO. LDW27025000	GAEC SCH NO. 55		

FOR ENGRG. INFO. ONLY

SH REV STATUS FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00	1.10	1.11	1.12	1.13	1.14				2.00
REV	E	B	C	D	D	E				E
SHEET	3.00	3.01	3.02							
REV	D	C	E							
SHEET	4.00	5.00	6.00	7.00	8.00					
REV	E	E	D	C	C					
LAST SECT LTR USED		GRUMMAN REL INFO XD/E								
LAST DASH NO USED		PRIM NO. JK'009 MP-E 12/2/67								
		471								

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS — DECIMALS — ANGLES

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS 9-1100 | LINE ITEM 9 | DOCUMENTATION TYPE II

DRAWN BY	W.HANSEN 7-27		
LAYOUT BY			
CHECKED BY			
PROP.			
GR LDR			
PROJ ENGR			
RELEASE			

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SCHEMATIC LTA-5 DESCENT PROPULSION SUB SYSTEM

SIZE	CODE IDENT NO.		
B	26512	LDW270-25000	E

SCALE NONE | SHEET 1 OF 15

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NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
E	1	4.00	4C					LEO 270-20	REROUTED HEAT EXCHANGER LINES -8(3)-32-6 & REVISED TANK COILS ACCORDINGLY.	LTA-5(15)	NOT	REQD	JAMES EIISWICK 12-18-67		
	2						✓	EO E2	CANCELED BY EO E-4						
	3	5.00	B24 B25				✓	EO E3	CHANGE COLORS & FUNCTIONS OF LEADS ON 10MT7 & 10MT8 RED WAS YEL, GRN WAS WHT, YEL WAS RED + INPUT WAS +28VDC, -INPUT WAS DC RET						
	4						✓	EO E4	CANCELS E.O. E-2						
	5	2.00, 3.02 & 4.00	3C				✓	EO E5	LSC 270-00600-25 WAS LSC 270-00600-14 DELETED NOTE 45 & ADDED NOTE 47 ON SH 4.00 ADDED REF TO NOTE 47						
	6						✓	LEO 390-234	LSC 390-102-1152 WAS LSC 390-102-1062		✓				
	7	4.00	5B				✓	EO E7 LCD 1843C	ADDED: DASH POT & RESTRICTOR (2) FUEL TEST POINT LSC 270-813-26 GQ 9462 OXIDIZER TEST POINT LSC 270-813-27 GQ 9461		NOT	REQD			
	8	2.00 4.00 5.00	9B 9A 8C 20A				✓	EO E8 LCD 2413	IN THE F/D & B/M DELETED 10A3L1, 10A4L1, 10A3CR1, 10A3CR2, 10A4CR1, 10A4CR2 LDW 390-28070-7&-9. 10A3 LSC 270-713-9-1 (WAS) 10A3 LDW 390-28070-7 10A4 LSC 270-713-10-1 (WAS) 10A3 LDW 390-28070-9 IN F/D LSC 270-827-1 (WAS) LSC 270-816-11-1 IN F/D 10A3 & 10A4 WIRE COLORS BLK (WAS) NAT, WHT (WAS) BLK, GRN (WAS) BLK, RED (WAS) NAT						
	9								SH 1.00 OF 15 WAS 1.00 OF 14 ADDED SH 1.14 REF E.O. E6 LSC 390-102-1152 NOT SHOWN ON THIS DRAWING (1)						

CHG APPROVED

LTR	GROUP LDR

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-25000	E

SCALE NONE SHEET 1.14

ENG 77.16 3-66

901 NAS 9-1100

10MT33	LSC270-00009-13	SENSING UNIT OXIDIZER QTY	6	29A	GQ4104Q	
32	-13	SENSING UNIT OXIDIZER QTY	6	29B	GQ4103Q	
31	-14	SENSING UNIT FUEL QTY	6	29C	GQ3604Q	
30	LSC270-00009-14	SENSING UNIT FUEL QTY	6	29C	GQ3603Q	
29	LSC360-605-301	TRANSDUCER-TEMP ENGINE INTERFACE	6	33A	GQ4311T	
28	LSC360-605-303	TRANSDUCER-TEMP OX TANK NO.2 OX BULK	6	38A	4219T	
27	LSC360-605-303	TRANSDUCER-TEMP OX TANK No.1 OX BULK	6	38A	4218T	
26	NTN510981-201	TRANSDUCER-ΔP-OX TNK-1 BOT TO ENG INTF	6	31A	4116P	
* 23	LSC360-601-107	TRANSDUCER-PRESS ENG INTERFACE OX	6	37A	4111P	
22	LSC400-9957-11	TRANSDUCER-PRESS OX TK VENT RLF VLV INLET	5	15A	4005P	
* 21	LSC360-601-107	TRANSDUCER-PRESS OX TK VENT RLF VLV INLET	5	16A	4005P	
20	LSC400-9957-11	TRANSDUCER-PRESS OX TANK NO.1 ULLAGE	5	13A	4001P	
* 19	LSC360-601-107	TRANSDUCER-PRESS OX TANK NO.1 ULLAGE	5	13A	4001P	
18	-605-301	TRANSDUCER-TEMP ENG INTERFACE FUEL	6	33A	3811T	
17	-605-303	TRANSDUCER-TEMP FUEL TK-2 FUEL BULK	6	39A	3719T	
16	LSC360-605-303	TRANSDUCER-TEMP FUEL TK-1 FUEL BULK	6	39A	3718T	
15	NTN-510981-201	TRANSDUCER-ΔP-FUEL TNK-1 BOT TO INTERFACE	6	32A	3666P	
14	LSC360-624-111	TRANSDUCER-PRESS AMBIENT HELIUM TANK	5	22A	3015P	
* 13	LSC360-601-107	TRANSDUCER PRESS ENG INTERFACE FUEL	6	38A	3611P	
12	LSC400-9957-11	TRANSDUCER-PRESS FUEL TK VENT RLF VLV INLET	5	16A	3505P	
* 11	LSC360-601-107	TRANSDUCER-PRESS FUEL TK VENT RLF VLV INLET	5	17A	3505P	
10	LSC400-9957-11	TRANSDUCER-PRESS FUEL TANK NO.1 ULLAGE	5	14A	3501P	
* 9	LSC360-601-107	TRANSDUCER-PRESS FUEL TANK NO.1 ULLAGE	5	14A	3501P	
8	AIRESEARCH 806174 (LSC360-601)	TRANSDUCER-PRESS SUPERCRIT HELIUM TK-2	5	24A	3436P	
7	AIRESEARCH 806174 (LSC360-601)	TRANSDUCER-PRESS SUPERCRIT HELIUM TK-1	5	25A	3435P	
6	LSC400-9957-11	TRANSDUCER-PRESS He REG OUT MANIFOLD	5	17A	3018P	
* 5	LSC360-601-107	TRANSDUCER-PRESS He REG OUT MANIFOLD	5	17A	3018P	
10MT4	LSC400-9906-5	TRANSDUCER-PRESS He SEC UPSTREAM REG IN	5	18A	GQ3010P	
REF DESIGNATION	PART NUMBER	DESCRIPTION	SHEET	ZONE		

* 10MT3	LSC360-601-109	TRANSDUCER-PRESS He SEC UPSTREAM REG IN	5	18A	GQ3010P
10MT2	LSC400-9906-5	TRANSDUCER-PRESS He PRI UPSTREAM REG IN	5	19A	GQ3009P
10MT1	LSC360-601-109	TRANSDUCER-PRESS He PRI UPSTREAM REG IN	5	19A	GQ3009P
~~10A4L1~~	~~LSC270-713-10~~	~~LATCHING SOLENOID VALVE-SECONDARY~~	~~5~~	~~20A~~	~~GQ3310X~~
~~10A3L1~~	~~LSC270-713-9~~	~~LATCHING SOLENOID VALVE-PRIMARY~~	~~5~~	~~20A~~	~~GQ3309X~~
10L4	LSC400V0502-3	BY-PASS VALVE	5	22A	
10L3	LSC400V0502-3	BY-PASS VALVE	5	22A	
**10MT38	LSC360-605-407	TRANSDUCER-TEMP S/C He FUEL HX SEC OUTLET	5	14A	GQ3463T
37	-109	TRANSDUCER TEMP He TANK SKIN NO.1	5	24A	GQ3476T
** 36	-407	TRANSDUCER TEMP S/C He HX OUTLET	5	24A	GQ3459T
** 35	-407	TRANSDUCER TEMP S/C He FUEL HX PRI OUTLET	5	25A	GQ3455T
**10MT34	LSC360-605-409	TRANSDUCER TEMP S/C SUPPLY TANK OUT He	5	25A	GQ3451T
10L7	LSC400V0502-3	VALVE-START PRESSURIZATION	5	21A	
~~10A4AICR2~~	~~UZ5840~~	ZENER DIODE			ARC SUPPR
~~10A4AICR1~~					
~~10A3AICR2~~					
~~10A3AICR1~~	~~UZ5840~~	~~ZENER DIODE~~			~~ARC SUPPR~~
10A1	LSC270-00600-11	DESCENT ENGINE	7 & 8	—	1ST INSTL'D
10A1	LSC270-00600-25	DESCENT ENGINE	7 & 8	—	2ND INSTL'D
10A4	LSC270-713-10-1	LATCHING SOLENOID VALVE SECONDARY	5	20A	GQ3310X
10A3	LSC270-713-9-1	LATCHING SOLENOID VALVE PRIMARY	5	20A	GQ3309X
10A2	LSC270-00009-14	GAGING CONTROL UNIT PROPELLANT QTY	6	28A	
REF DESIGNATION	PART NUMBER	DESCRIPTION	SHEET	ZONE	

*SEE NOTE 42

**SEE NOTE 46

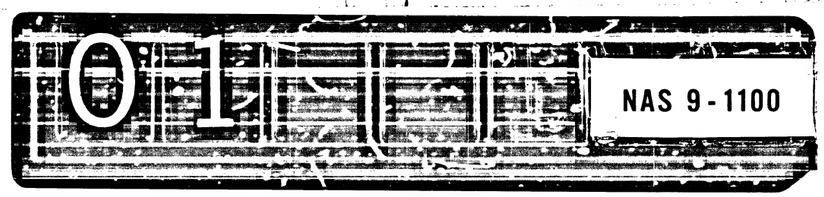
GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-25000	E

SCALE NONE SHEET 2.00

THIS IS AN ORIGINAL DRAWING

ENG 77.10 7-64



NOTES (CONT'D)

35. EQUIPMENT TERMINAL VOLTAGE REQUIREMENTS: 21.5 - 32 VDC @ SPEC. TEMP.

36. EQUIPMENT TERMINAL VOLTAGE REQUIREMENTS: $-15\ ^{+0.6}_{-0.2}$ VDC @ SPEC. TEMP.

37. EQUIPMENT TERMINAL VOLTAGE REQUIREMENTS: $+15\ ^{+0.2}_{-0.6}$ VDC @ SPEC. TEMP.

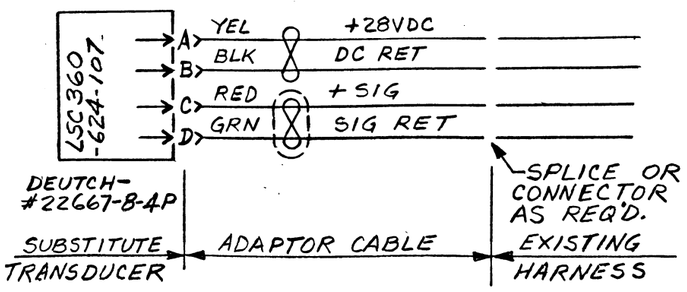
38. EQUIPMENT TERMINAL VOLTAGE REQUIREMENTS: 20-32 VDC @ SPEC. TEMP.

39. EQUIPMENT TERMINAL VOLTAGE REQUIREMENTS: 24 - 32 VDC @ SPEC. TEMP.

40. EQUIPMENT TERMINAL VOLTAGE REQUIREMENTS: 25 ± 7 VDC @ SPEC. TEMP.

41. SHORT CIRCUIT (SWITCH CLOSURE) ACROSS PINS V & S OF J611 READS OUT QUANTITY IN FUEL & OXIDIZER TANKS #2. OPEN CIRCUIT (SWITCH OPENING) READS OUT QUANTITY IN FUEL & OXIDIZER TANKS #1.

42 TRANSDUCER LSC360-624-107 MAY BE SUBSTITUTED FOR NOTED TRANSDUCERS (REF. LMO 360-698, 4/15/66). ADAPTOR CABLE REQ'D. FOR SUBSTITUTE TRANSDUCER - EXISTING HARNESS COMPATIBILITY.



43.- DESCENT ENGINE ELECTRICAL CIRCUITS AND INTERFACES ARE NOT DOCUMENTED BY "LSC" DWGS. ENGINE WIRING DIAGRAMS SHOWN IN THIS LEVEL 3 REPRESENT BEST INFO AVAILABLE.

44.- MEASUREMENTS SHOWN HEREON ARE COMPATIBLE WITH LTA-5D MEASUREMENT LIST LED-360-205, REV. B, DATED 29 APRIL 1966 AND THESE PROJECT APPROVED MCR'S: 428B, 468A, 544, 110C, & 556.

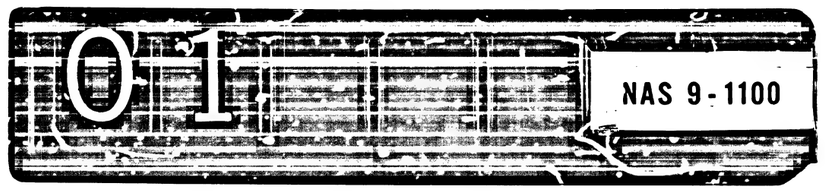
45. ~~DESCENT ENGINE LSC-00600-19 IS IDENTICAL TO LSC-00600-14 EXCEPT FOR GIMBAL RING STRAIN GAUGES GA6089, GA6090 & GA6091. FOR EXTERNAL CONNECTIONS OF THESE STRAIN GAUGES REFER TO THE GSE LEVEL 3, LDW450-1053.~~

46. - TRANSDUCER LSC360-627-XXX MAY BE SUBSTITUTED FOR NOTED TRANSDUCERS. IN THIS EVENT THE GREEN AND YELLOW LEADS OF THE NOTED TRANSDUCERS ARE BLACK AND WHITE, RESPECTIVELY, ON LSC 360-627-XXX.

47. - "DESCENT ENGINE LSC 270-00600-25 IS IDENTICAL TO LSC 270-00600-14 EXCEPT THAT LSC 270-00600-25 IS EQUIPPED WITH GIMBAL RING STRAIN GAUGES GA6089, GA6090 & GA6091 ALSO PROPELLANT FLOW VALVE CONTROL ELBOWS ARE SHOT PEENED FOR EXTERNAL CONNECTIONS OF STRAIN GAUGES REFER TO GSE LEVEL 3, DWG LDW 450-1053.

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-25000	E
SCALE NONE		SHEET 3.02	

ENG 73.1 6-64



11 | 10 | 9 | 8 | 7

GSE-1500PSI GN_2

GQ3436P, GQ3435P
PRESSURE HELIUM SUPPLY TANK
LSC270-821-29 & -65 (AIRESEARCH 806174, LSC360-601)

GQ3451T HE. TANK OUTLET
LSC360-605-409
SEE NOTE 46

EXPLOSIVE VALVE
LSC270-714-3
SQ 11/32

GQ3310X
SECONDARY LATCHING
SOLENOID VALVE
LSC270-713-10-1 NORM. CLOSED
JQ9711, JQ9712

SEE NOTE 42
GQ3505P
RELIEF VALVE
VENT PRESSURE
LSP360-601

SEE NOTE 42
GQ3501P
ULLAGE PRESSURE
LSP360-601-107

HELIUM FILL DISCONNECT COUPLING
LSC270-821-31 GQ 9401

GQ 9409
LSC400V0502-3
BY-PASS VALVE

TEST POINT
LSC270-813-31 (2)
GQ 9405

GQ3476T TEMP HE. TANK SKIN NO.1
LSC360-605-109

HELIUM FILL VENT COUPLING
LSC270-821-41 GQ 9407

LSC400V0502-3
SH_e DUMP VALVE

GQ3010P
REGULATOR INLET PRESSURE
LSC360-601-109
SEE NOTE 42

GQ3018P
REGULATOR OUTLET PRESSURE
LSC360-601-107
SEE NOTE 42

REMOVE BY-PASS PRIOR
TO DUTY MISSION FIRING

LSC270-813-24
TEST POINT(4)

GQ 9433

GQ 9441

GQ 9432

GQ 9445

LSC270-817-6
CHECK VALVE

VACUUM SEAL AND
PRESSURE RELIEF

TEST POINT
DISCONNECT
LSC270-813-31
GQ 9404

VACUUM SENSING PORT
JQ 9412

MOUNTED ON
G.S.E. ΔP CART

GQ 9447

GQ 9446

LSC270-813-23 DISCONNECT
TEST POINT GQ 9425

GQ3455T TEMP. HELIUM INLET
LSC360-605-407
SEE NOTE 46

GQ3477T TEMP. HE. TANK SKIN NO. 2

GQ3459T TEMP. HE. OUTLET
LSC360-605-407
SEE NOTE 46

THRUST NEUTRALIZER TEE
GQ 9408

PRESSURE RELIEF VALVE ASSY
LSC270-821-21 (ON -13 TANK)
DOUBLE BURST DISC ASSY
LSC270-821-58 (ON -53 TANK)

TEST POINT DISCONNECT
LSC270-813-31 GQ9403

LSC270-814-3 FILTER

VACUUM SENSING PORT
JQ9410

LSC270-827-1
PRESSURE REDUCER

GQ 9444

GQ 9431

BURST DISC
LSC270-821-23

HELIUM TANK ASSY
LSC270-821-13 (FOR COLD FLOW)
LSC270-821-53 (FOR FIRING)

AMBIENT HELIUM TANK
LSC270-825-1

LSC360-624-111
GQ3015

LSC400V0502-3

GQ 9430
LSC270-813-25
TEST POINT (4)

GQ 9440

LSC270-817-5
CHECK VALVE

BRAZED CAPS

LSC270-713-9-1
PRIMARY LATCHING SOLENOID VALVE
GQ3309X NORM. OPEN
JQ9709, JQ9710

LSC270-819-11 EXPLOSIVE VALVE
OX COMPT SQ 41/20

HELIUM FILL DISCONNECT
COUPLING
LSC270-813-31
GQ9415

EXPLOSIVE VALVE
LSC270-714-3

FILTER
LSC270-712-1

LSC360-601-109
REGULATOR INLET PRESSURE
GQ3009P

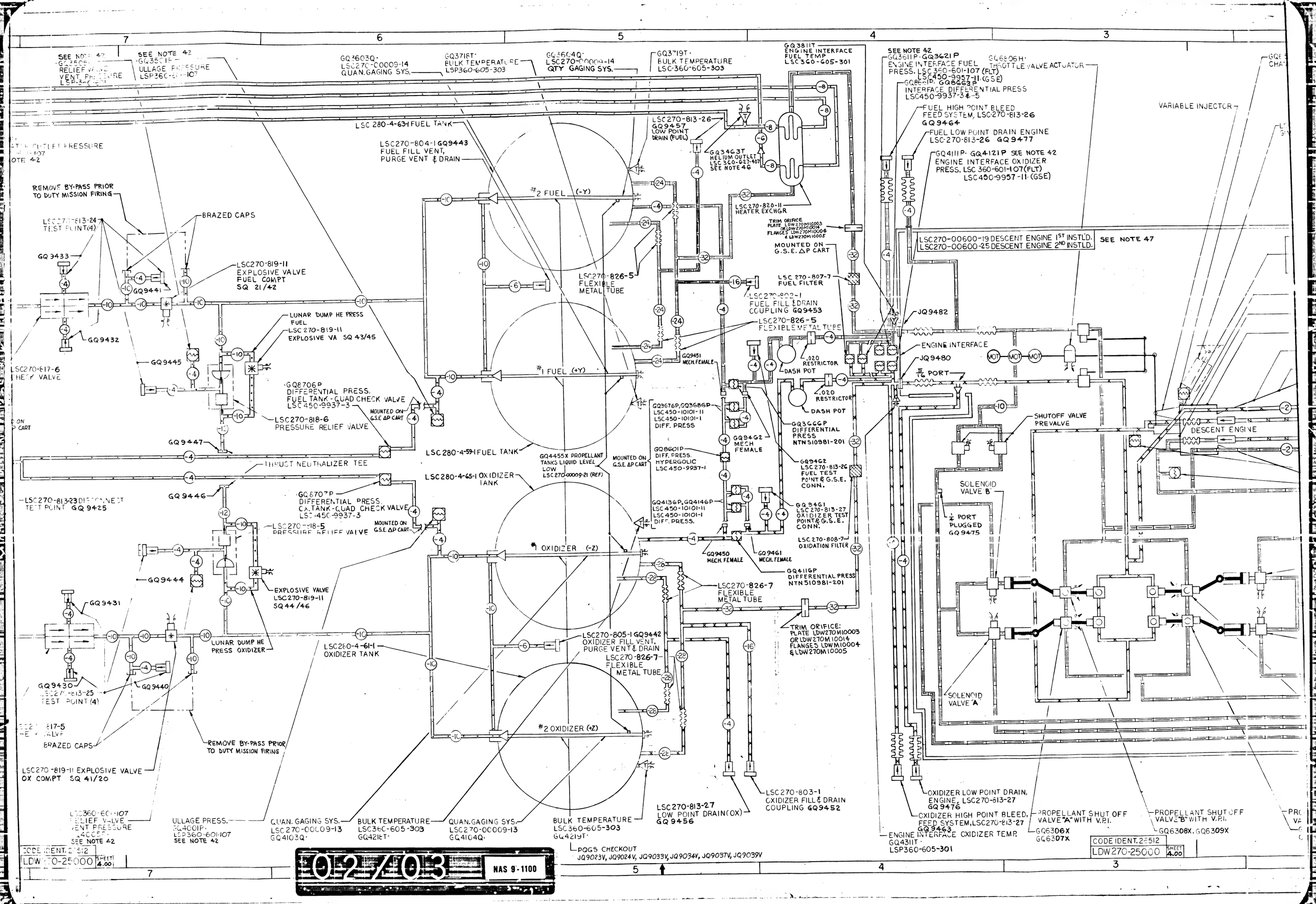
LSC360-601-107
RELIEF VALVE
VENT PRESSURE
GQ4005P
SEE NOTE 42

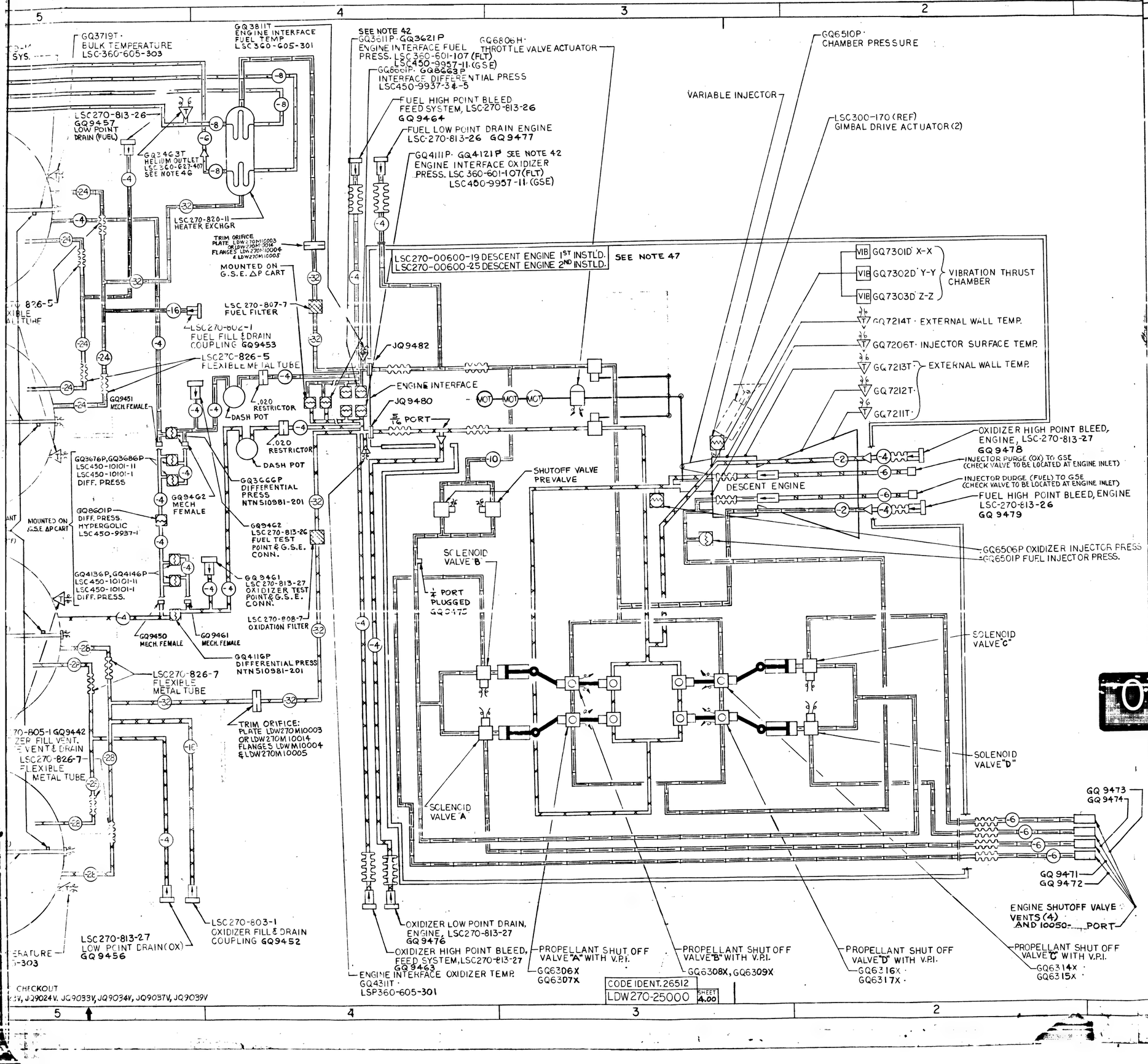
ULLAGE PRES
GQ4001P
LSP360-601
SEE NOTE 42

01/03 NAS 9-1100

CODE IDENT. 26512
LDW270-25000 SHEET 4.001

A | B | C | D


7
6
5
4
3
SEE NOTE 42
GQ3603Q· LSC270-00009-14 QUAN.GAGING SYS.
GQ3718T· BULK TEMPERATURE LSP360-605-303
GQ3604Q· LSC270-00009-14 QTY GAGING SYS.
GQ3719T· BULK TEMPERATURE LSC360-605-303
GQ3811T ENGINE INTERFACE FUEL TEMP LSC360-605-301
GQ3611P· GQ3621P ENGINE INTERFACE FUEL PRESS. LSC360-601-107 (FLT) LSC450-9957-11 (GSE)
GQ6606H· THROTTLE VALVE ACTUATOR
GQ8661P· GQ8663P INTERFACE DIFFERENTIAL PRESS LSC450-9937-3 & -5
VARIABLE INJECTOR
FUEL HIGH POINT BLEED FEED SYSTEM, LSC270-813-26 GQ9464
FUEL LOW POINT DRAIN ENGINE LSC270-813-26 GQ9477
GQ4111P· GQ4121P SEE NOTE 42 ENGINE INTERFACE OXIDIZER PRESS. LSC360-601-107(FLT) LSC450-9957-11 (GSE)
LSC280-4-63-1 FUEL TANK
LSC270-804-1 GQ9443 FUEL FILL VENT, PURGE VENT & DRAIN
LSC270-813-26 GQ9457 LOW POINT DRAIN (FUEL)
GQ3463T HELIUM OUTLET LSC360-627-407 SEE NOTE 46
LSC270-820-11 HEATER EXCHGR
TRIM ORIFICE PLATE LDW270M10003 OR LDW270M10014 FLANGES LDW270M10004 & LDW270M10005
MOUNTED ON G.S.E. ΔP CART
LSC270-00600-19 DESCENT ENGINE 1ST INSTL'D.
LSC270-00600-25 DESCENT ENGINE 2ND INSTL'D.
SEE NOTE 47
REMOVE BY-PASS PRIOR TO DUTY MISSION FIRING
BRAZED CAPS
LSC270-813-24 TEST POINT(4)
GQ 9433
LSC270-819-11 EXPLOSIVE VALVE FUEL COMPT SQ 21/42
GQ 9441
GQ 9432
LUNAR DUMP HE PRESS FUEL
LSC 270-819-11 EXPLOSIVE VA SQ 43/45
GQ 9445
LSC270-817-6 CHECK VALVE
#2 FUEL (-Y)
#1 FUEL (+Y)
LSC270-826-5 FLEXIBLE METAL TUBE
GQ9451 MECH FEMALE
LSC 270-807-7 FUEL FILTER
LSC270-802-1 FUEL FILL & DRAIN COUPLING GQ9453
LSC270-826-5 FLEXIBLE METAL TUBE
.020 RESTRICTOR
DASH POT
JQ 9482
ENGINE INTERFACE
JQ 9480
5/16 PORT
SHUTOFF VALVE PREVALVE
DESCENT ENGINE
GQ8706P DIFFERENTIAL PRESS. FUEL TANK-QUAD CHECK VALVE LSC450-9937-3
MOUNTED ON G.S.E ΔP CART
LSC270-818-6 PRESSURE RELIEF VALVE
GQ 9447
THRUST NEUTRALIZER TEE
GQ3676P, GQ3686P LSC450-10101-11 LSC450-10101-1 DIFF. PRESS
GQ3666P DIFFERENTIAL PRESS NTN S10981-201
GQ9462 LSC270-813-26 FUEL TEST POINT & G.S.E. CONN.
GQ8601P DIFF. PRESS. HYPERGOLIC LSC450-9937-1
GQ9462 MECH FEMALE
LSC280-4-59-1 FUEL TANK
GQ4455X PROPELLANT TANKS LIQUID LEVEL LOW LSC270-00009-21 (REF)
MOUNTED ON G.S.E ΔP CART
LSC280-4-65-1 OXIDIZER TANK
GQ 9446
GQ8707P DIFFERENTIAL PRESS. OX.TANK-QUAD CHECK VALVE LSC-450-9937-3
LSC270-813-23 DISCONNECT TEST POINT GQ 9425
LSC270-818-5 PRESSURE RELIEF VALVE
MOUNTED ON G.S.E ΔP CART
GQ4136P, GQ4146P LSC450-10101-11 LSC450-10101-1 DIFF. PRESS.
GQ 9461 LSC270-813-27 OXIDIZER TEST POINT & G.S.E. CONN.
LSC 270-808-7 OXIDATION FILTER
GQ9450 MECH. FEMALE
GQ9461 MECH. FEMALE
GQ4116P DIFFERENTIAL PRESS NTN S10981-201
#1 OXIDIZER (-Z)
GQ 9444
EXPLOSIVE VALVE LSC270-819-11 SQ 44/46
LSC270-826-7 FLEXIBLE METAL TUBE
GQ 9431
LSC270-805-1 GQ9442 OXIDIZER FILL VENT, PURGE VENT & DRAIN
LSC270-826-7 FLEXIBLE METAL TUBE
LUNAR DUMP HE PRESS OXIDIZER
LSC280-4-61-1 OXIDIZER TANK
TRIM ORIFICE: PLATE LDW270M10003 OR LDW270M10014 FLANGES LDW270M10004 & LDW270M10005
GQ 9430 LSC270-813-25 TEST POINT (4)
GQ 9440
#2 OXIDIZER (+Z)
REMOVE BY-PASS PRIOR TO DUTY MISSION FIRING
BRAZED CAPS
LSC270-819-11 EXPLOSIVE VALVE OX COMPT SQ 41/20
LSC270-803-1 OXIDIZER FILL & DRAIN COUPLING GQ9452
LSC270-813-27 LOW POINT DRAIN (OX) GQ 9456
SOLENOID VALVE 'B'
SOLENOID VALVE 'A'
OXIDIZER LOW POINT DRAIN, ENGINE, LSC270-813-27 GQ 9476
OXIDIZER HIGH POINT BLEED, FEED SYSTEM, LSC270-813-27 GQ 9463
ENGINE INTERFACE OXIDIZER TEMP. GQ4311T· LSP360-605-301
PROPELLANT SHUT OFF VALVE "A" WITH V.P.I.
PROPELLANT SHUT OFF VALVE "B" WITH V.P.I.
GQ6306X GQ6307X
GQ6308X, GQ6309X
LSC360-601-107 RELIEF VALVE VENT PRESSURE LSP360-601-107 SEE NOTE 42
ULLAGE PRESS. GQ4001P· LSP360-601-107 SEE NOTE 42
QUAN. GAGING SYS. LSC270-00009-13 GQ4103Q·
BULK TEMPERATURE LSC360-605-303 GQ4216T·
QUAN. GAGING SYS. LSC270-00009-13 GQ4104Q·
BULK TEMPERATURE LSC360-605-303 GQ4219T·
POGS CHECKOUT JQ9023V, JQ9024V, JQ9033V, JQ9034V, JQ9037V, JQ9039V
CODE IDENT. 28512
LDW270-25000
SHEET 4.00
02703
NAS 9-1100



MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.
FILLET AND INSIDE CORNER RADII TOLERANCES .015R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .020
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
250 FOR ALL DRILLED HOLES
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
SYMBOL DENOTES SURFACE TO BE MACHINED
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
TOLERANCE ON LOFTED DELINEATIONS IS

DWG SIZE 34 X 112

PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X 112) = 30.5 SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL) = 7.6 SQ. FT.

PRINT TRIM LINE

03/03 NAS 9-1100

PROPULSION - DESCENT FLUID SCHEMATIC

FOR NOTES SEE SH 3.00

FOR ENGINEERING INFORMATION ONLY

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LEM	SIZE J	CODE IDENT. NO. 26512	LDW270-25000 E
MODEL OR END ITEM	SCALE NONE		SHEET 4.00

CODE IDENT. 26512
LDW270-25000 SHEET 4.00

LDW270-25000 E

3FR

RIG FACILITY

TRANSDUCER SUPPLIED WITH TANK BY PROP HARNESS BY EPS

AIRESEARCH 806174
(LSC360-601)
PRESSURE SUPER-CRITICAL
HELIUM SUPPLY TANK NO 1
10MT7
GQ 3435 P
FORM B ITEM 60

SEE NOTE 38

YEL	+ INPUT	LT5385 – 22(C)	3
BLK	- INPUT	LT5386 – 22(C)	2
RED	+ OUTPUT	LT5387 – 22(H)	4
GRN	- OUTPUT	LT5388 – 22(H)	5
			1

TRANSDUCERS BY INST - HARNESS BY EPS

SEE NOTE 46
LSC360-605-409
TEMPERATURE SUPERCRITICAL
SUPPLY TANK OUT. HELIUM
10MT34
GQ 3451T
FORM B ITEM 61

GRN	LT5001-22(H)	7
RED	LT5002-22(H)	8
YEL	LT5003-22(H)	9
	LT5003-22(H)	10
		6

SEE NOTE 46
LSC360-605-407
TEMPERATURE SUPERCRITICAL
HELIUM FUEL HX PRI OUTLET
10MT35
GQ 3455T
FORM B ITEM 62

GRN	LT5004-22(H)	12
RED	LT5005-22(H)	13
YEL	LT5006-22(H)	14
	LT5006-22(H)	15
		11

SEE NOTE 46
LSC360-605-407
TEMPERATURE SUPERCRITICAL
HELIUM HX OUTLET
10MT36
GQ3459T
FORM B ITEM 63

GRN	LT5007-22(H)	17
RED	LT5008-22(H)	18
YEL	LT5009-22(H)	19
	LT5009-22(H)	20
		16

LSC360-605-109
TEMPERATURE
HELIUM TANK SKIN NO.1
10MT37
GQ3476T
FORM B ITEM 65

GRN	LT5020-22(H)	22
RED	LT5021-22(H)	23
YEL	LT5022-22(H)	24
	LT5022-22(H)	25
		21

J203

GSE INSTRUMENTATION

TRANSDUCER SUPPLIED WITH TANK BY PROP HARNESS BY EPS

AIRESEARCH 806174
(LSC360-601)
PRESSURE SUPERCRITICAL
HELIUM SUPPLY TANK NO. 2
10MT8
GQ 3436P
FORM B ITEM TBA

SEE NOTE 38

YEL	+INPUT	LT5429-22 (C)	33
BLK	- OUTPUT	LT5430-22 (C)	32
RED	+ OUTPUT	LT5431-22 (H)	34
GRN	- OUTPUT	LT5432-22(H)	35
			31

J203

GSE INSTRUMENTATION

VEHICLE WIRING PROVISION FOR LCRISI HTR & TEMP TRANSDUCER. CAP & STOW

DC RET		LT5411-26(H)	26
+ DC		LT5412-26(H)	27
SIGNAL (+)		LT5413-26(H)	28
SIGNAL (-)		LT5424-26(H)	29
			30

J203

GSE INST

RET		LT5010-12(A)	-16(A)
		LT5011-12(A)	-16(A)
			-16(A)
			-16(A)
			-16(A)
			-16(A)

J612

GSE CONTROL

LSC360-624-111
PRESSURE
AMBIENT HELIUM TANK
10MT14
GQ3015 P
FORM B ITEM TBA

P665

SEE NOTE 38

A	+28 VDC	LT5433-22 (C)	13
B	DC RET	LT5434-22 (C)	12
C	+ OUTPUT	LT5435-22 (H)	14
D	- OUTPUT	LT5436-22 (H)	15
			11

J205

GSE INSTRUMENTATION

VALVES BY GSE-HARNESS BY EPS

LSC400VO502-3
DUMP VALVE 10L3
NO (HELD CLOSED) C NO

GRN	VALVE CLOSED	LT5143-22(E)	F
WHT	COMMON	LT5144-22(E)	D
RED	VALVE OPEN	LT5145-22(E)	E
RED	+28V DISCRETE TO OPEN SEE NOTE 40	LT5146-16(A)	J
BLK	RETURN	LT5147-16(A)	K

LSC400VO502-3
BY-PASS VALVE 10L4
NO (HELD CLOSED) C NO

GRN	VALVE CLOSED	LT5148-22(E)	H
WHT	COMMON	LT5149-22(E)	C
RED	VALVE OPEN	LT5150-22(E)	G
RED	+28V DISCRETE TO OPEN SEE NOTE 40	LT5151-16(A)	L
BLK	RETURN	LT5152-16(A)	M

J608

LSC400VO502-3
START PRESSURIZATION VALVE 10L7
NO (HELD CLOSED) C NO

GRN	VALVE CLOSED	LT5437-22 (E)	T
WHT	COMMON	LT5438-22 (E)	U
RED	VALVE OPEN	LT5439-22 (E)	V
RED	+28V DISCRETE TO OPEN SEE NOTE 40	LT5440-16 (A)	W
BLK	RETURN	LT5441-16 (A)	A1

J612

GSE CONTROLS

RIG FACILITY

NAS 9-1100

LDW270-25000

CODE IDENT NO. 25312

SCALE NONE

SHEET 500

EPS

BLK	RETURN	LT5152-16(A)	J603 M
GRN	VALVE CLOSED	LT5437-22(E)	T
WHT	COMMON	LT5438-22(E)	U
RED	VALVE OPEN	LT5439-22(E)	V
RED	+28V DISCRETE TO OPEN SEE NOTE 40	LT5440-16(A)	N
BLK	RETURN	LT5441-16(A)	A

LSC400V0502-3 START PRESURIZATION VALVE 10L7 — NO (HELD CLOSED) C C NO — 10L4 — 10L7 — J612

RIG | FACILITY

VALVES BY PROP HARNESS BY E P S

PRIMARY LATCHING SOLENOID VALVE LSC270-713-9-1 (10A3)

BLK	NAT +28V PULSE TO CLOSE SEE NOTE 39	LT5156-22(E)	J303 4
		LT5157-22(E)	6
		LT5153-16(A)	5
WHT	BLK. RETURN	LT5154-16(A)	J303 C
			J601 D JQ9710V
BRN	POLE	LT5156-22(E)	M
GRY	VALVE CLOSED GQ3309X	LT5157-22(E)	J600 L
GRN	BLK RETURN	LT5159-16(A)	C
RED	NAT +28V PULSE TO OPEN SEE NOTE 39	LT5158-16(A)	J609 D JQ9709V

SECONDARY LATCHING SOLENOID VALVE LSC270-713-10-1 (10A4)

BLK	NAT +28V PULSE TO CLOSE SEE NOTE 39	LT5160-16(A)	K
WHT	BLK RETURN	LT5161-16(A)	J612 M JQ9712V
VIO	VALVE OPEN GQ3310X	LT5162-22(E)	S
BRN	POLE	LT5163-22(E)	J600 R
GRN	BLK RETURN	LT5166-16(A	G
RED	NAT +28V PULSE TO OPEN SEE NOTE 39	LT5165-16(A)	J604 I JQ9711V
		LT5162-22(E)	10
		LT5163-22(E)	J303 11 12

GSE INSTRUMENTATION (4, 6, 5) — GSE CONTROLS — GSE INSTRUMENTATION (10, 11, 12)

HARNESS BY EPS TO ACCOMMODATE EITHER TRANSDUCER

LSC360-601-109 HELIUM PRIMARY UPSTREAM REGULATOR INLET PRESS 10MT1 GQ3009P FORM B ITEM 1 — BY INST — SEE NOTE 38 +28VDC

YEL	+28VDC	C
BLK	DC RET.	B
RED	+OUTPUT	D
GRN	-OUTPUT	E

J651

LSC400-9806-5 (0-2000 PSIA RANGE) 10CPS RESPONSE HELIUM PRIMARY UPSTREAM REGULATOR INLET PRESSURE 10MT2 GQ3009P — BY GSE

B	DC RET.	LT5167-22(C)	2
C	+28VDC	LT5168-22(C)	3
D	+OUTPUT	LT5169-22(H)	4
E	-OUTPUT	LT5170-22(H)	5
F		LT5171-22(H)	7
G		LT5172-22(H)	6
H		LT5173-22(H)	8
A	P651		J101 1

HARNESS BY EPS TO ACCOMMODATE EITHER TRANSDUCER

SEE NOTE 42 — LSC360-601-109 HELIUM SECONDARY UPSTREAM REGULATOR INLET PRESS 10MT3 GQ3010P FORM B ITEM 2 — BY INST — SEE NOTE 38 +28VDC

YEL	+28VDC	C
BLK	DC RET.	B
RED	+SIG	D
GRN	SIG RET.	E

J659

LSC400-9806-5 (0-2000 PSIA RANGE) 10CPS RESPONSE HELIUM SECONDARY UPSTREAM REGULATOR INLET PRESSURE 10MT4 GQ3010P — BY GSE

B	DC RET.	LT5174-22(C)	10
C	+28VDC	LT5175-22(C)	11
D	+OUTPUT	LT5176-22(H)	12
E	-OUTPUT	LT5177-22(H)	13
F		LT5178-22(H)	15
G		LT5179-22(H)	14
H		LT5180-22(H)	16
A	P659		J101 9

HARNESS BY EPS TO ACCOMMODATE EITHER TRANSDUCER

SEE NOTE 42 — LSC360-601-107 HELIUM REGULATOR OUTLET MANIFOLD PRESSURE 10MT5 GQ3018P FORM B ITEM 3 — BY INST — SEE NOTE 38 +28VDC

YEL	+28VDC	C
BLK	DC RET.	B
RED	+SIG	D
GRN	SIG RET.	E

J660

LSC400-9957-11 (0-300 PSIA) HELIUM REGULATOR OUTLET MANIFOLD PRESSURE 10MT6 GQ3018P — BY GSE

B	DC RET.	LT5181-22(C)	18
C	+10 VDC	LT5182-22(C)	19
D	+OUTPUT	LT5183-22(H)	20
E	-OUTPUT	LT5184-22(H)	21
F		LT5185-22(H)	23
G		LT5186-22(H)	22
H		LT5187-22(H)	24
A	P660		J101 17

HARNESS BY EPS TO ACCOMMODATE EITHER TRANSDUCER

SEE NOTE 42 — LSC360-601-107 FUEL TANK VENT RELIEF VALVE INLET PRESSURE 10MT11 GQ3505P FORM B ITEM 7 — BY INST — SEE NOTE 38 +28VDC

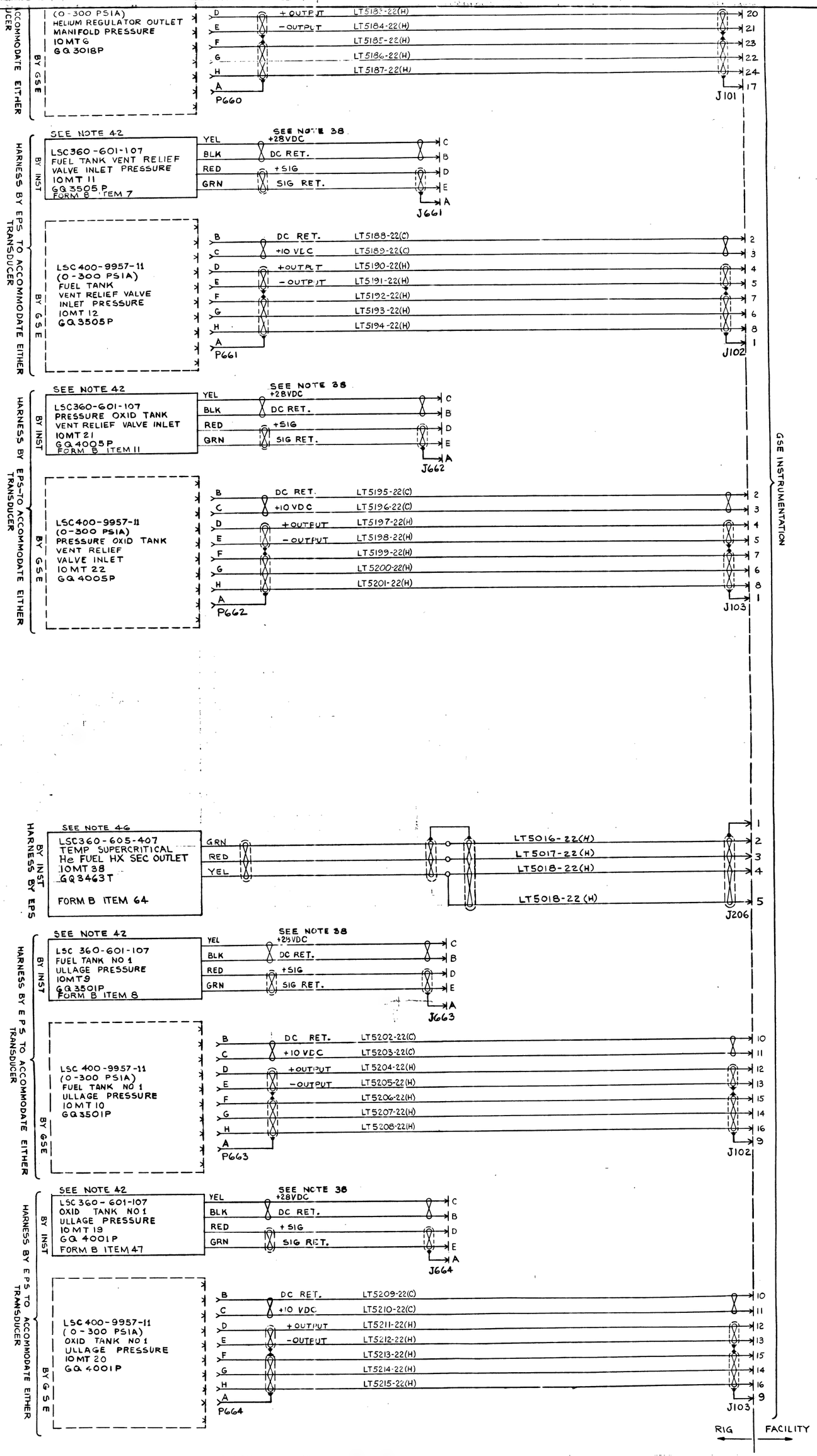
YEL	+28VDC	C
BLK	DC RET.	B
RED	+SIG	D
GRN	SIG RET.	E

J661

LSC400-9957-11 (0-300 PSIA) FUEL TANK — BY GSE

B	DC RET.	LT5188-22(C)	2
C	+10 VDC	LT5189-22(C)	3
D	+OUTPUT	LT5190-22(H)	4
E	-OUTPUT	LT5191-22(H)	

EQ27A04
NAS 9-1100


BY INST HARNESS BY EPS TO ACCOMMODATE EITHER TRANSDUCER
SEE NOTE 42
LSC360-601-107
FUEL TANK VENT RELIEF VALVE INLET PRESSURE
10MT11
GQ3505P
FORM B ITEM 7
YEL +28VDC
BLK DC RET.
RED +SIG
GRN SIG RET.
SEE NOTE 38
J661
BY GSE
LSC400-9957-11
(0-300 PSIA)
FUEL TANK VENT RELIEF VALVE INLET PRESSURE
10MT12
GQ3505P
P661
B DC RET. LT5188-22(C)
C +10 VDC LT5189-22(C)
D +OUTPUT LT5190-22(H)
E -OUTPUT LT5191-22(H)
F LT5192-22(H)
G LT5193-22(H)
H LT5194-22(H)
A
J102
BY INST HARNESS BY EPS TO ACCOMMODATE EITHER TRANSDUCER
SEE NOTE 42
LSC360-601-107
PRESSURE OXID TANK VENT RELIEF VALVE INLET
10MT21
GQ4005P
FORM B ITEM 11
YEL +28VDC
BLK DC RET.
RED +SIG
GRN SIG RET.
SEE NOTE 38
J662
BY GSE
LSC400-9957-11
(0-300 PSIA)
PRESSURE OXID TANK VENT RELIEF VALVE INLET
10MT22
GQ4005P
P662
B DC RET. LT5195-22(C)
C +10 VDC LT5196-22(C)
D +OUTPUT LT5197-22(H)
E -OUTPUT LT5198-22(H)
F LT5199-22(H)
G LT5200-22(H)
H LT5201-22(H)
A
J103
BY INST HARNESS BY EPS
SEE NOTE 46
LSC360-605-407
TEMP SUPERCRITICAL He FUEL HX SEC OUTLET
10MT38
GQ3463T
FORM B ITEM 64
GRN
RED
YEL
LT5016-22(H)
LT5017-22(H)
LT5018-22(H)
LT5018-22(H)
J206
BY INST HARNESS BY EPS TO ACCOMMODATE EITHER TRANSDUCER
SEE NOTE 42
LSC 360-601-107
FUEL TANK NO 1
ULLAGE PRESSURE
10MT9
GQ3501P
FORM B ITEM 8
YEL +28VDC
BLK DC RET.
RED +SIG
GRN SIG RET.
SEE NOTE 38
J663
BY GSE
LSC 400-9957-11
(0-300 PSIA)
FUEL TANK NO 1
ULLAGE PRESSURE
10MT10
GQ3501P
P663
B DC RET. LT5202-22(C)
C +10 VDC LT5203-22(C)
D +OUTPUT LT5204-22(H)
E -OUTPUT LT5205-22(H)
F LT5206-22(H)
G LT5207-22(H)
H LT5208-22(H)
A
J102
BY INST HARNESS BY EPS TO ACCOMMODATE EITHER TRANSDUCER
SEE NOTE 42
LSC 360-601-107
OXID TANK NO 1
ULLAGE PRESSURE
10MT19
GQ4001P
FORM B ITEM 47
YEL +28VDC
BLK DC RET.
RED +SIG
GRN SIG RET.
SEE NOTE 38
J664
BY GSE
LSC400-9957-11
(0-300 PSIA)
OXID TANK NO 1
ULLAGE PRESSURE
10MT20
GQ4001P
P664
B DC RET. LT5209-22(C)
C +10 VDC LT5210-22(C)
D +OUTPUT LT5211-22(H)
E -OUTPUT LT5212-22(H)
F LT5213-22(H)
G LT5214-22(H)
H LT5215-22(H)
A
J103
RIG
FACILITY
GSE INSTRUMENTATION

NAS 9-1100

DWG SIZE M X144
PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 x 48) 38.438 FT.
½ SIZE SHEET AREA (Major Fold) 9.6 SQ. FT.

FOR ENGRG INFO ONLY
GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L.I., NEW YORK
SIZE J | CODE IDENT NO. 26512 | LDW270-25000E
LEM | WHEEL OR CARD TITLE | SCALE 5.00 | SHT

PROPULSION DESCENT FEED SYSTEM
ELECTRICAL SCHEMATIC

FOR NOTES SEE SH 3.00

NAS 9-1100

104/104

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	ENGRG APPD
	3			LFM 563		✓		LCD 5430 C	CANCELED BY EO G4.	LTA-5R(159)	NOT	REQD			
	4			LFM 563		✓		LCD 5430 E	CANCEL EO G3						
G	5	6.00	30A 30B 30C 29A 29B 29C 28A 28C	LFM 563		✓		LCD 5430 E PK# 3	ADDED J304-1,-10,-13,-16,-19,-22,-25,-28 & -29 W/ASSOC WIRING, SPLICES & CALLOUTS. REIDENTIFIED 10MT52 10MT53, 10MT54 & 10MT55 WERE 10MT30, 10MT31 & 10MT32 & 10MT33 RESP. FROM 10A2, FOR DES-1-F REMOVED SPLICES 1 THRU 6 & ASSOC WIRE NOS LT5278-22H THRU LT5284 -22H RESP. WIRES WERE TWISTED & SHIELDED & JUMPED ON BOTH SIDES OF REMOVED SPLICES. SPLICES WERE LOCATED BETWEEN 10A2 & EXISTING SPLICES 1 THRU 6. FROM 10A2, FOR DES-2-DX, REMOVED SPLICES 1 THRU 6 & ASSOC WIRE NOS LT5302-22H THRU LT5307-22H RESP. WIRES WERE TWISTED & SHIELDED & JUMPED ON BOTH SIDES OF REMOVED SPLICES. SPLICES WERE LOCATED BETWEEN 10A2 & EXISTING SPLICES 1 THRU 6. ADDED SHEET 1.23, SHEET 1.00 OF 27 WAS 1.00 OF 26	LTA-5R(159)	NOT	REQD	R Dooley 4-16-70		

CHG APPROVED	LTR	GROUP LDR	GRP LDR	CSS	CSS	PROP	INST	CSS S/S ENGINEER	EPS
	G	[illegible] 4-17	[illegible] 4/17/70	[illegible] 4-16-70	[illegible] 4-16-70	[illegible] 16 MAR 1970	[illegible] 4-17-70	[illegible] 4/17/70	[illegible] 4-17-70

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-25000	G

SCALE NONE SHEET 1.23

ENG 77.18 3-66

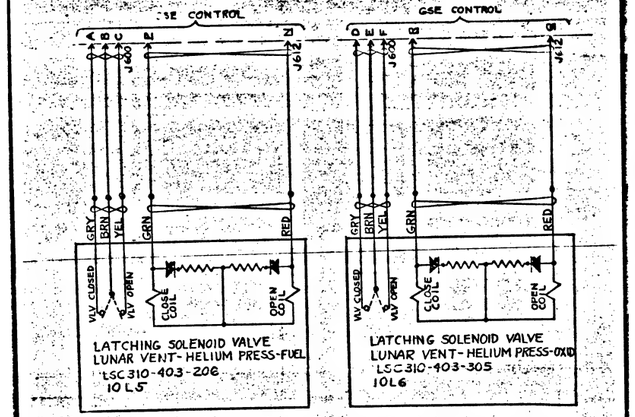
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NAS 9-1100

LDW 270 - 25000 F1

CODE IDENT NO. 26512 — ENGINEERING ORDER — No. LDW270-25000 E — CONTRO. INFO NO. LDW267A63212

SH 6.00 ZONE 35 & 36
ADD 10L5 & 10L6, J600 & J612 & ASSOCIATED WIRING AS SHOWN



REF DESIG	PART NO.	DESCRIPTION	SHEET	ZONE
SH 2.00	ADD			
10L6	LSC310-403-305	LATCHING SOLENOID VALVE	6.00	35A
10L5	LSC310-403-205	LATCHING SOLENOID VALVE	6.00	36A

ISSUED

ISSUED

CABLES AFFECTED LDW390-25107 S/N 6623, LDW390-25014 S/N 6624 Inst. Dwg
PANELS AFFECTED NONE

LCD 2672 CCA667

CCA-667 ADDED LUNAR SURFACE PRESSURE RELIEF

SH 6.00 ADDED 10L5, 10L6, J600 F-A, B, C, D, E/F, J612-A, B, C, D, E/F
PLUS ASSOCIATED WIRING.
SH 2.00 ADDED 10L6 LSC310-403-305, 10L5 LSC310-403-205

MODEL	EFFECTIVITY			DISPOSITION OF PARTS	APPROVED BY						
	EFFECTIVITY SER.	BASIC DWG. NO.	END ITEMS DWG. NO.								
LM		LTA-5J(1S)		V NOT REVISED	D	PROP	LTC				

DRAWING TITLE: SCHEMATIC LTA-5 DESCENT PROPULSION SUBSYSTEM
DRAWING NO. LDW270-25000 F1

ISSUED BY E. GLUECKLER (X1657) SECTION LTC GROUP NO. 7 PL 5

LDW 270-25000-F1

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

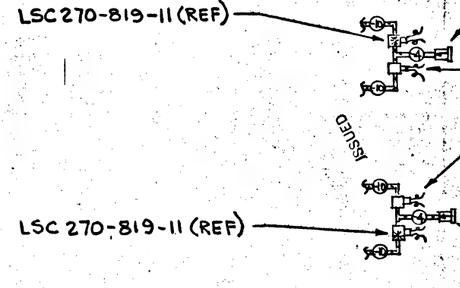
GMO 22.1 REV 3-65

ENGINEERING ORDER

DWG NO. LDW270-25000 | EO NO. F2

CONTROL INFO NO. LDW267A 88222

REVISE F/D AS FOLLOWS:
SH 4.00 ZONE 6-7 A-C



CABLES AFFECTED: NONE
PANELS AFFECTED: NONE

LEVEL 3 DWG CHANGE ORDER
FOR ENGRG INFO ONLY

DETAIL SPEC REQ | | CL II ENGRG CHG | ✓ | CL I ENGRG CHG | | LCD 2672 CCA667

REASON FOR EO: CCA-667 ADDED LUNAR SURFACE PRESSURE RELIEF

DESCRIPTION OF EO: ADDED: GQ 9449, GQ 9448, LSC 310-403-206, LSC 310-403-305, LSC 270-813-24, LSC 270-813-25 & -4 LINES (2).

(5) (8) GAEC EO RELEASE 6/28/68

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECOND EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	DATE	EJG					HG	
LM		LTA-5(15)		✓		NOT	REQD	D	4/4/68	2/29/68		3/11/68			4/29/68	3-5-68

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
E	SCHEMATIC LTA-5 DESCENT PROPULSION SUB SYSTEM	LDW270-25000	F2

ISSUED BY B. ZANG X1472 27 FEB '68 SECTION PROPULSION DESIGN GROUP NO. 345 PL 25

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW270-25000 | EO NO. F3

CONTROL INFO NO LDW 267A 66111

SH 2.00 & SH 5.00 ZONE 20A REVISE P/N ON 10A3 (IS) LSC270-713-9-3 (WAS)-1

SH 2.00 & SH5.00 ZONE 20A REVISE P/N ON 10A4 (IS) LSC 270-713-10-3 (WAS)-1

SH 4.00 ZONE 9A ON GQ3309 REVISE P/N (IS) LSC 270-713-9-3 (WAS)-1

SH 4.00 ZONE 8C ON GQ3310 REVISE P/N (IS) LSC 270-713-9-3 (WAS)-1

SH 2.00 ON 10A3 ADD EFF. NOTE "LTA-5"
ADD SECOND 10A3 ENTRY - "10A3 LSC 270-713-9-2 (OP SPARE)

ON 10A4 ADD EFF. NOTE "LTA-5"
ADD SECOND 10A4 ENTRY "10A4 LSC 270-713-10-2 (OP. SPARE)

PANELS AFF: NONE
CABLES AFF: NONE

LEVEL 3 DWG CHANGE ORDER
FOR ENGRG INFO ONLY

DETAIL SPEC REQ | OLM ENGRG CHG | OLT ENGRG CHG | ✓ LCD 3377A

REASON FOR EO: IDENTIFY SPARES FOR HE, SOLENOID VALVES

DESCRIPTION OF EO: IN F/D & B/M
LSC 270-713-9-3 WAS -1 ; LSC 270-713-10-3 WAS -1
ADDED 10A3 & 10A4 ENTRIES FOR OP SPARES

GAEC RELEASE 5/23/67

MODEL	EFFECTIVITY: EI PROTOTYPE	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LEM-B5	LTA-5D(15)	

DRAWING CHANGE REQD: ✓ REVISE DWG | RECORD EO
DISPOSITION OF PARTS: NOT REQ'D REWORK | SCRAP

APPROVED BY		(B ZANG)						
DATE	1/17/67	1/16/68					1/17/68	5-2-68
	LTC	PROP	REL IAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	REL

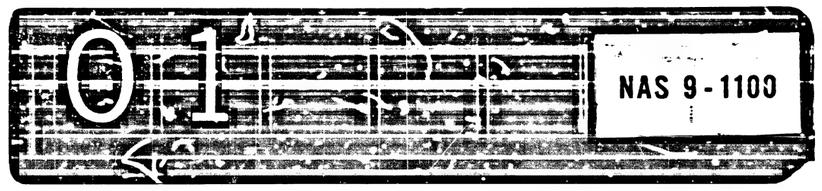
PRIORITY: E

DRAWING TITLE: SCHEMATIC LTA-5 DESCENT PROPULSION SUBSYSTEM

DRAWING NO.: LDW270-25000

EO NO.: F3

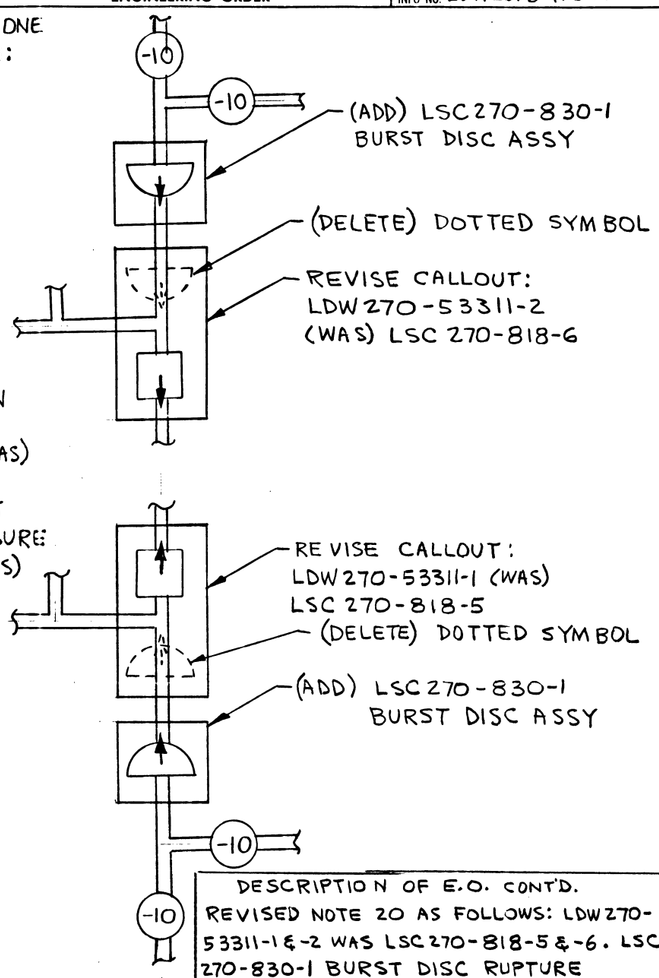
ISSUED BY E. GLUECKLER (X1657) SECTION LTC GROUP NO. 267 PL 5



GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENG 32.2 REV 3-65
ENGINEERING ORDER

DWG. NO. LDW270-25000	EO NO. F4
CONTROL INFO NO. LDW267B41811	

REVISE SH 4.00 ZONE 7B & C AS SHOWN:



REVISE NOTE #20 ON SH 3.00 AS FOLLOWS: LDW270-53311-1 & -2 (WAS) LSC270-818-5 & -6. LSC270-830-1 BURST DISC RUPTURE PRESSURE: 260 TO 275 PSIG (WAS) BURST DISC RUPTURE PRESSURE 288 ± 20 PSIG.

DESCRIPTION OF E.O. CONT'D.
REVISED NOTE 20 AS FOLLOWS: LDW270-53311-1 & -2 WAS LSC270-818-5 & -6. LSC 270-830-1 BURST DISC RUPTURE PRESSURE 260 TO 275 PSIG WAS BURST DISC RUPTURE PRESSURE 288 ± 20 PSIG.

CABLES AFFECTED: NONE
PANELS AFFECTED: NONE

LEVEL 3 DWG CHANGE ORDER FOR ENERG INFO ONLY

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCD 2721 (CCA 959)

REASON FOR EO: INSTALLATION OF DESCENT BURST DISC ASSY

DESCRIPTION OF EO: ADDED LSC270-830-1 (2) & LDW270-53311-2 WAS LSC270-818-6. LDW270-53311-1 WAS LSC270-818-5 IN F/D DELETED BURST DISC SYMBOL (2 PLACES) (SEE ABOVE)

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 270	LTA5 (15)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: NOT REWORK	REQD SCRAP
✓			

APPROVED BY							
DATE	10-25-68	10-18-68	10-25-68	10/31/68	10/31/68	11-4-68	REL
	PROP	CSS	INST	GROUP LEADER	PROJ ENGRG		

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
E	SCHEMATIC LTA-5 DESCENT PROPULSION SUB SYSTEM	LDW270-25000	F4

GAEC RELEASE 11-4-68

ISSUED BY B. ZANG X1472 9 OCT 1968 SECTION PROPULSION DESIGN GROUP NO. 345 PL 25

NAS 9-1100
GAEC

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

NO 32.1 REV 3-65

DWG. NO. LDW270-25000 | EO NO. F5
CONTROL INFO NO. LDW2C7B63111

ISSUED

ON SHEET 3.02
ADD NOTE *:
FOR RETROFIT REVISE PART NO'S AS FOLLOWS
LDW 270-10030-1 & -2 WAS LSC 270-817-5 & -6
LDW 270-10031-1, -3 & -5 WAS LSC 270-813-23, -24 & -25

ON SHEET 4.00 ZONE A,C-7 ADD "SEE NOTE *" TO PART NO'S LSC270-817-5 & -6
"* = USE NEXT AVAILABLE NOTE NO." & LSC270-813-23, -24 & -25
CABLE DWG AFF: NONE None
PANEL DWG AFF: NONE None
OTHER DWG AFF: LDW 270-54201

LEVEL 3 DWG CHANGE ORDER
FOR ENGRG INFO ONLY

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LGD 3491	(5)

REASON FOR EO: REVISE CLEANING PROCEDURES & CLEANLINESS LEVEL FOR CHECK VALVES & PLUMBING UPSTREAM OF CHECK VALVE

DESCRIPTION OF EO: ADDED NOTE * & ASSOC C/O "SEE NOTE *"

GAEC EO RELEASE 4/21/69 VK 4/21/69

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: NOT REWORK	REQD SCRAP	APPROVED BY	DATE								
2A1		LTA-5(15)						SOD	3-27-69	CSS	PROP	INST	4/6/69	4/16/69	4/16/69	4-18-69	REL
				PRIORITY	DRAWING TITLE					GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	DRAWING NO.		EO NO.	
				E	SCHEMATIC LEVEL III PROPULSION SUBSYSTEM									LDW270-25000		F5	

ISSUED BY E. BENNETT X2148 SECTION CSS GROUP NO. 247 PL 25

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW270-25000 | L NO. FG

CONTROL INFO NO. LDW267B69811

ON SHEET 1.00
ADDED EFF LTA-5R SAME AS LTA-5D EXCEPT AS SHOWN BELOW.
ON SHEET 4.00 ZONE 6-A,B&C

P/N		WAS	
	LSC 280-4000-1	WAS	LSC 280-4-63-1
	LSC 280-4000-2	WAS	LSC 280-4-59-1
	LSC 280-4000-3	WAS	LSC 280-4-65-1
	LSC 280-4000-4	WAS	LSC 280-4-61-1

CABLE DWG AFF: NONE

PANEL DWG AFF: NONE

OTHER DWG AFF: LDW270-54201

LEVEL 3 DWG CHANGE ORDER FOR ENGRG INFO ONLY

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD 3890 REV "G" CCA 2205

REASON FOR EO: D/S PROPELLANT TANK ENLARGEMENT

DESCRIPTION OF EO: ADDED EFF LTA-5R IN F/D FOR LTA-5R, PT NO'S LSC 280-4000-1,-2,-3 & -4 WERE LSC 280-4-63-1,-59-1,-65-1 & -61-1 RESP.

(5) GAEC EO RELEASE: 9-2-69

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM		LTA-5R (159)	

DRAWING CHANGE REQD: ✓ REVISE DWG | RECORD EO

DISPOSITION OF PARTS: NOT REQD REWORK | SCRAP

APPROVED BY / DATE: CSS 26 AUG 69 | PROP 8/26/69 | INST 8/26/69 | GROUP LEADER 9-2-69 | LIAISON ENGRG 9-2-69 | PROJ ENGRG 9-2-69

PRIORITY: E

DRAWING TITLE: SCHEMATIC LEVEL 3 PROPULSION SUBSYSTEM

DRAWING NO.: LDW270-25000

EO NO.: FG

ISSUED BY E. BENNETT X2148 SECTION CSS GROUP NO. 27 PL -

GRUMMAN AEROSPACE CORPORATION

CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LDL 270-25000 | EO NO. H3

CONTROL INFO NO. LDW267B84111

BMO 22.1 REV 3-65

ON SH 2.00 & 4.00 ~ ZONE 3C & 4C

AT 10A1

LSC270-00600-30 (WAS) LSC270-00600-25

LSC270-00600-31 (WAS) LSC270-00600-19

DELETE NOTE 47

DWGS AFFECTED: LDW270-25100

PNLS AFFECTED: NONE

CABLES AFFECTED: NONE

LEVEL 3 DWG CHANGE ORDER
FOR ENGRG INFO ONLY

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | LCD 51348-3 PG 1

REASON FOR EO: ADDITIONAL D/E'S FOR NASA WSTF PROGRAM

DESCRIPTION OF EO: ON SH 2.00 & 10A1 DELETED NOTE 47, LSC270-00600-30 (WAS) LSC270-00600-25, LSC270-00600-31 (WAS) LSC270-00600-19

GAEC EO RELEASE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA-5R(1S9)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: NOT REQD REWORK	NOT REQD SCRAP
✓			

APPROVED BY	CAUSE	DATE	CSS	PROG	GROUP LEADER	PROJ ENGR
WB	6-1-70	6-1-70	6-1-70	6-1-70	6-1-70	6-4-70
CSS						

PRIORITY: E

DRAWING TITLE: SCHEMATIC-LEVEL 3 PROPULSION SUBSYS

DRAWING NO.: LDW270-25000

EO NO.: H3

ISSUED BY W BURGERMEISTER X214B SECTION CSS GROUP NO. 267 PL 25

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	SH CHG LTR	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.10 2.01 2.02 3.00	2D						EO A1	ON -1 & -3 ADDED LDW270M10031-11, LDW270M10032-11 & -12, (2) LDW270M10033-11, AN310C5, (3) AN960C416L, (2) AN960C516L, AN960C516, (3) MS21043-4, MS21043-5, MS24665-153, NAS674V4, NAS675V12D, NAS675V20, NOTE #5, VIEWS N-N & P-P. ADDED SH 1.10.	LTA-5(15)	✓		A. HENDRICKS 11-7-67		
	2	1.10 2.00 2.02 3.00	6B						EO A2	FOR -1 INSTL: REMOVED AN815-6C (2), ADDED 220T1-6TT (2), AN894C6-4, GS13AJ-506.						
	3	1.10 2.01 2.02 3.00	6B						EO A3	REFERENCE EO A2. ADDED (1) AN832-6C, (1) AN6289-6C, (1) AN939-6C, (3) GS13AJ-506.						
	4	1.10 2.00 2.01 2.02 3.00	2A 4B 4C 5A 6B 6C 7D 8H 9D						EO A4	REVISED NOTE 1, WAS: COMMERCIAL PART-SEE SPECIFICATION CONTROL DWG NO. LSC 270-00600-19 & -14; REVISED NOTE 2, WAS: ENGINE TO BE INSTALLED IN ACCORDANCE WITH LTP-279-27 PARA 6.12. PART NO. LDW420-13360 IS TO BE USED FOR POSITIONING ENGINE FOR; DELETED NOTE 3; REVISED NOTE 4, WAS: BOND PLUG TO ABLATIVE LINER OF THE COMBUSTION CHAMBER USING NARMCO 7343 ADHESIVE PER LSP-14-22602. IN ELEVATION & PLAN VIEW ADDED PICTURE OF PRE VALVE. REMOVED FROM -1 & -3 INSTL (1) LDW270-51458-11, (1) LDW270-51458-13, (1) LDW270-51458-15, (8) NAS654V7, (11) NAS654V9. ADDED TO -1 & -3 INSTL (2) LDW270M10034-11, (2) GS13AJ-502, (1) GS13AJ-504, (1) GS13AJ-505, (1) AN815-4C, (1) AN919-3C, (19) NAS654V8, ON -1 & -3 INSTL: (4) LDW270-51458-9 WAS (1) LDW270-51458-9, LDW280M17469-3 WAS LDW280M17469-1, AN960D516L WAS AN960D516, (21) MS21043-4 WAS (29) MS21043-4. CONTD ON SH 1.11						

FOR CONTINUATION OF REVISIONS SEE SHEET 1.11

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-25100	A

SCALE NONE | SHEET 1.1C

ENG 77.3 5-64

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	SH CHG LTR	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	QUALITY APPD
A	4								EO A4 CONT FROM SH 1.10	ON -3 INSTL ONLY: LSC270-00600-20 WAS LSC270-00600-14 ADDED SH 1.10, 1.11, 2.01, 2.02.	LTA-5(15)	✓		A. HENDRICKS 11-8-67		
	5	2.01 2.02 3.00	C4						EO A5	-1 & -3, ADDED (1) AN815-4C & (1) GH12B-4-0140.						
	6	2.00 3.00	4D					✓	EO A6 LCD19-1033	FOR -3 INSTL: LSC270-00600-25 WAS LSC270-00600-20.						
	7	2.00 3.00	7B 7C 9A 11B					✓	EO A7 LCD1576	ADDED PR-240AC LUBRICANT TO PROPELLANT INTERFACE FLANGE BOLTS & TORQUE PATTERN (DET N) TO F/D OF DWG.						
	8	3.00	2A	C			✓		LEO 270-57 LCD 1894	ADDED NOTE NO. 6. ADDED NOTE NO. 9.			✓			
	9	2.01 2.02 3.00	4C					✓	EO A9	ON -3 ADDED: GH12B-4-0970 (1), GH12B-4-0720 (1), AN815-4C(2) GV500BN-1 (1), GS13AJ-504 (2), AN929-4C (1), AN833-4C (1). MS6289-4C (1), MS9058-4.		✓				
	10	3.00	11A 11B	B			✓		LEO 270-62 LCD 1894	REF DETAIL "N". REVISED TORQUE NOTE: INSTALL ALL NUTS, AND TORQUE IN SEQUENCE AS FOLLOWS: (ALL TORQUES NOTED ARE IN ADDITION TO THE TORQUE REQD TO OVERCOME THE LOCKING FEATURE OF THE NUT AND ARE TO BE APPLIED AS THE NUT CONTACTS THE WASHER.		NOT	REQD			
	11									REF EO A2: REMOVED AN815-6C (2) - NOT APPLICABLE (NEVER APPEARED ON DRAWING ADDED NOTE NO. 8.		✓				

FOR CONTINUATION OF REVISIONS SEE SHEET 1.12

ENG 77.3 5-64

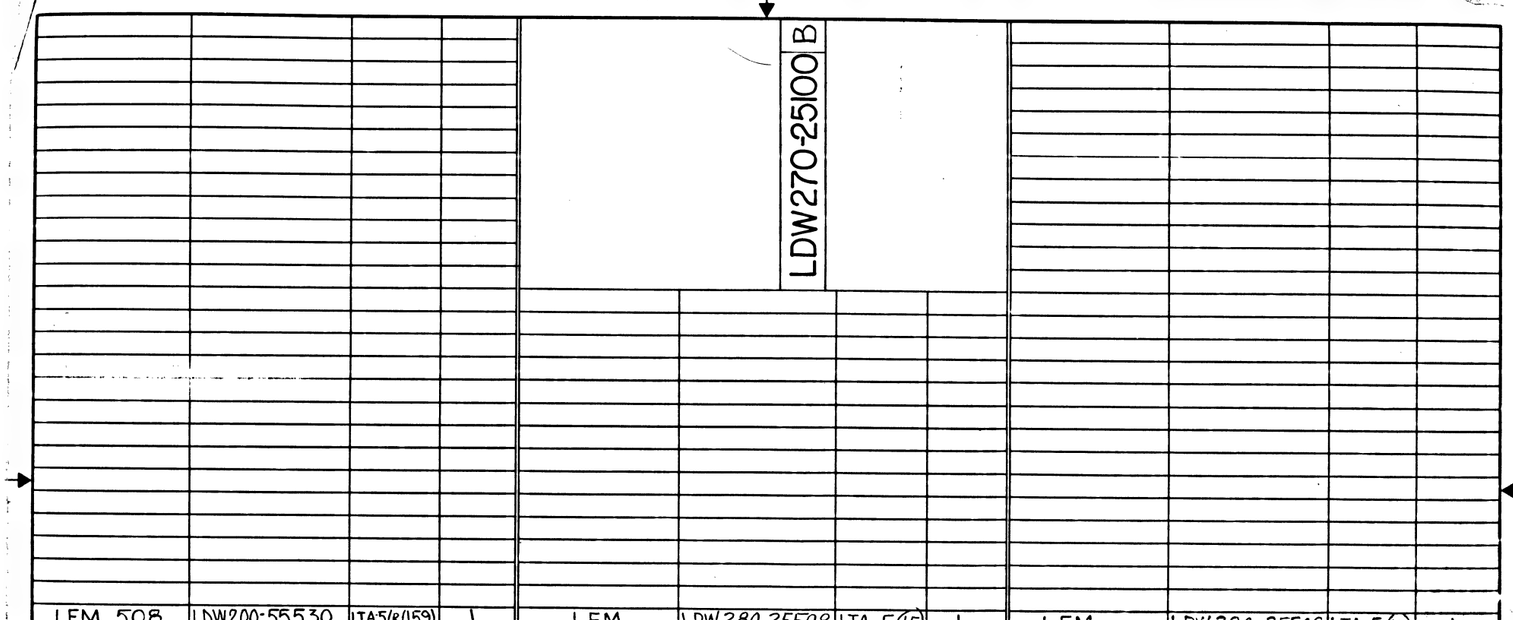
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-25100	A

SCALE NONE SHEET 1.11

01

NAS 9-1100



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
LEM 508	LDW200-55530	ITA-5(16)	1
PART NO. LDW270-25100-5&-7			

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-25508	LTA-5(16)	1
PART NO. LDW270-25100-3			

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. / GAEC SCH NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-25508	LTA-5(16)	1
PART NO. LDW270-25100-1		55	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH								
SHEET	1.00	1.10	1.11	1.12	2.00	2.01	2.02	3.00
REV	B	A	A	B	B	B	B	B
SHEET								
REV								
SHEET								
REV								

LAST SECT LTR USED	R
LAST DASH NO. USED	-7

GRUMMAN REL^G INFO. B
PRIM NO. VK 0091
470 MOD-10A-11/22/67

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES — NOTED —

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	
LCD 5134 B PKG 1	

CONTRACT NO. NAS-9-1100 | LINE ITEM # 9 | DOCUMENTATION TYPE II

DRAWN BY (A)	E. RIMMAUDO	9-8-66		
LAYOUT BY				
CHECKED BY				
GROUP LEADER		9/13/66		
PROP				
STRUCT		9/13/66	PROJ ENGR	9/16
V. D. I.			REL (B) GROUP	9/23/66
Drafts		9/20		

(A) GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

INSTALLATION - DESCENT ENGINE

SIZE	CODE IDENT NO.	
B	26512	LDW270-25100 F

SCALE NONE | SHEET 1.00 OF 8 (B)

77 1 12-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	SH CHG LTR	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	CUST APPD
A	12							✓	LCD-1576	REF EO A7: DETAIL R WAS DETAIL N-DETAIL N CALLED OUT IN ERROR - ADDED NOTE NO.7., ADDED SH 1.12.	LTA-5(15)	✓		A. HENDRICKS 11-8-67	T. SCHWARTZ 11-20-67	
	13							✓		REF EO A9: AN6289-4 WAS MS6289-4. MS6289-4 CALLED OUT IN ERROR.						
	14				B		✓		LCD-1894 (R)	REF EO A10: DETAIL R WAS DETAIL N-DETAIL N CALLED OUT IN ERROR.						
B	1	3.00 2.01 2.02	5C					V	EO B1	ON-3 REMOVE THE FOLLOWING: GH12B-4-0970, GH12B-4-0720, AN814-4C, GV500BN-1, GS13AJ-504(2) AN815-4C, AN833-4C, AN6289-4, MS9058-4, AN929-4C	LTA-5(15)	✓		A. LITWIN 4-22-70		
	2	3.00 2.00 2.01 2.02	6A 10C					V	EO B2	ON-1&-3 ADDED GH12B-4-0140, AN815-4C. NAS1587-5C(4) MS21043-4(4) REMOVED AN837-6D (REF) AN960D516L (4)						
	3	3.00	12				✓		EO B3 LCD1894	DELETED NOTE 6			✓			
	4	3.00 2.00 2.01 2.02 1.00	3A				✓		LCD 5134 PKG 1	IN FLD & B/M ADDED -5 & -7 INSTALLATION	LTA-5/R(15)	✓				
	5	3.00 2.00	6D 7C							IN FLD & B/M ON -1, -3, -5 & 7, INSTL. REVISED VIEW "A-A". REMOVED - LDW270-51458-9(4) PLACES. ADDED LDW270-51458-23(4) & GS570J-4C, GS570J-6C(4) GS13AJ-504, AN815-4C, & IN SECT "D-D" & "F-F" & DETAIL "G" ADDED GS570J-4C(3), ADDED NOTE 10 & LDW200-55529 (REF)				T. SCHWARTZ 11-20-67		
	6	3.00 2.01	11C					✓	EO B2	REF EO B2: "REMOVED AN837-6D (REF)" S/B "AN837-6C WAS AN837-6D	LTA-5(15)	NOT REQ'D	NOT REQ'D			

JDC Szalinski 4-21-70

FOR CONTINUATION OF REVISIONS SEE SHEET

ENG 77.3 5-64

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-25100	B

SCALE NONE — SHEET 1.12 (B)

01

NAS 9-1100

QTY PER ASSEMBLY					CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
A/R	A/R	AS REQD	AS REQD			PR-240AC	E	LUBRICANT			LSM 14-6004				
			2		91816	220TI-6TT	E	CHECK VALVE	SEE NOTE 8						
4	4	4	4			NAS1272H34	E	BOLT	STD PART						
4	4	4	4			NAS1272H11		BOLT							
10	10	10	10			NAS654V18		BOLT							
4	4	4	4			NAS1587-5C		WASHER							
28	28	28	28			MS21043-4		NUT							
A/R	A/R	AS REQD	AS REQD			MS20995NC32		LOCKWIRE							
6	6	6	6			AN960D516L		WASHER							
29	29	29	29			AN960D416	E	WASHER	STD PART						
1						LSC270-00600-30	S	DESCENT ENG	SEE NOTE 1						
2	2	2	2			GB511J-08-2	E	BOLT	GRUMMAN STD						
2	2	2	2			G-C500A-9	E	CLAMP	GRUMMAN STD						
	1					LSC270-00600-31	S	DESCENT ENG	SEE NOTE 1						
						LDW270-25100-7	E	INST DES ENG							
						LDW270-25100-5	E	INSTL-DES-ENG							
		1				LSC270-00600-25	S	DESCENT ENG	SEE NOTE 1						
			1			LSC270-00600-19	S	DESCENT ENG	SEE NOTE 1						
2	2	2	2			LDW280M17469-3	E	PLATE	SEE DWG						
		1	1			LDW270-51458-17		HOSE ASSY							
4	4	4	4			-23									
						-7									
						-3									
		1	1			LDW270-51458-1		HOSE ASSY							
		1	1			LDW270-23101-1	E	THERMAL PLUG	SEE DWG						
						-3		INSTL-DES. ENG							
						LDW270-25100-1	E	INSTL-DES. ENG							
-7	-5	-3	-1												

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH ; LCP-19-2 (GRUMMAN), LCP-19-3 (VENDOR)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-25100	B

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

QTY PER ASSEMBLY				PART NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
-7	-5	-3	-1											
1	1	1	1	NAS675V20	E		BOLT	STD PART						
1	1	1	1	NAS675V12D			BOLT							
1	1	1	1	NAS674V4			BOLT							
19	19	19	19	NAS654V8			BOLT							
1	1	1	1	MS24665-153			COTTER							
1	1	1	1	MS21043-5			NUT							
4	4	4	4	AN837-6C			ELBOW-BLKHD 45°							
			1	AN6289-6C			NUT-FLARED TUBE							
1	1	1	1	AN960C516			WASHER							
3	3	3	3	AN960C416L			WASHER							
			1	AN939-6C			UNION-FEMALE							
1	1	1	1	AN919-3C			REDUCER							
			2	AN894C6-4			BUSHING							
			1	AN832-6C			UNION-BLKHD							
4	4	4	4	AN815-4C			UNION							
1	1	1	1	AN310C5	E		NUT	STD PART						

SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH LPC-19-2 (GRUMMAN) LPC-19-3 (VENDOR)

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-25100	B

SCALE NONE SHEET 2.01

ENG 77.2 5-64

01 NAS 9-1100

QTY PER ASSEMBLY -7	-5	-3	-1	PART NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
✓	✓	✓	✓	SEE NOTE #5	E		SHIM							
			2	GS13AJ-506			"O" RING	GRUMMAN STD						
1	1	1	1	GS13AJ-505			"O" RING							
4	4	4	2	GS13AJ-504			"O" RING							
2	2	2	2	GS13AJ-502			"O" RING							
2	2	2	2	GH12B-4-0140			HOSE ASSY	GRUMMAN STD						
2	2	2	2	LDW270M10034-11			REDUCER	SEE DWG						
2	2	2	2	LDW270M10033-11			BOLT							
1	1	1	1	LDW270M10032-12			PLATE							
1	1	1	1	LDW270M10032-11			PLATE							
1	1	1	1	LDW270M10031-11	E		FITTING	SEE DWG						

SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH LPC-19-2 (GRUMMAN) LPC-19-3 (VENDOR)

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

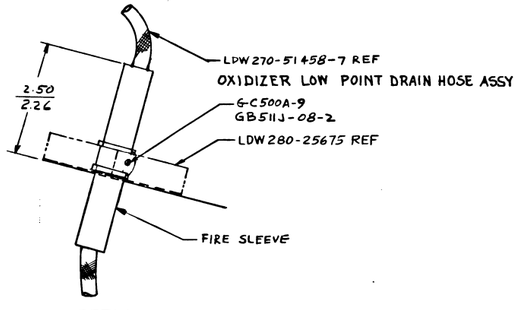
SIZE	CODE IDENT NO.		
B	26512	LDW270-25100	B

SCALE NONE SHEET 2.02

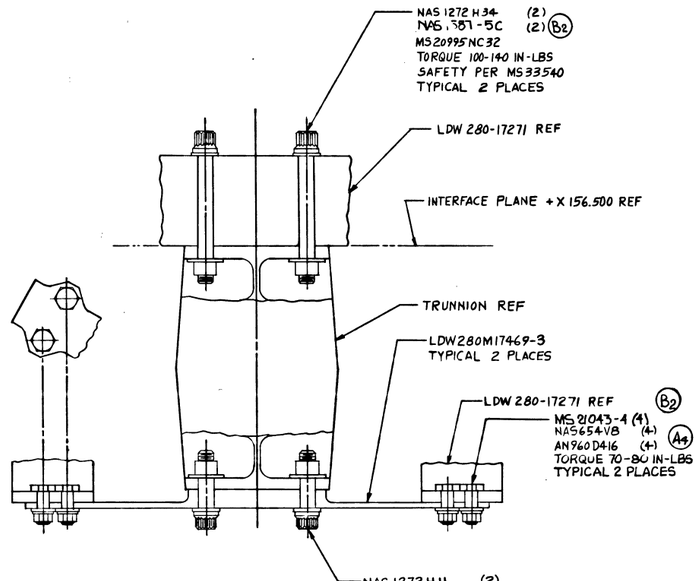
ENG 77.2 5-64

01

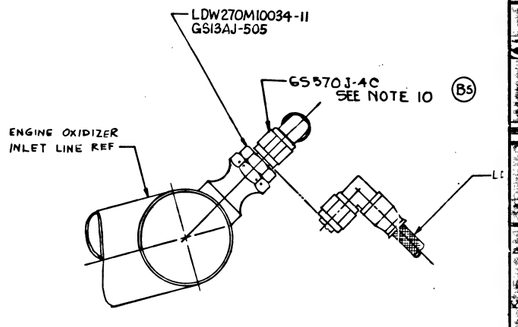
NAS 9-1100



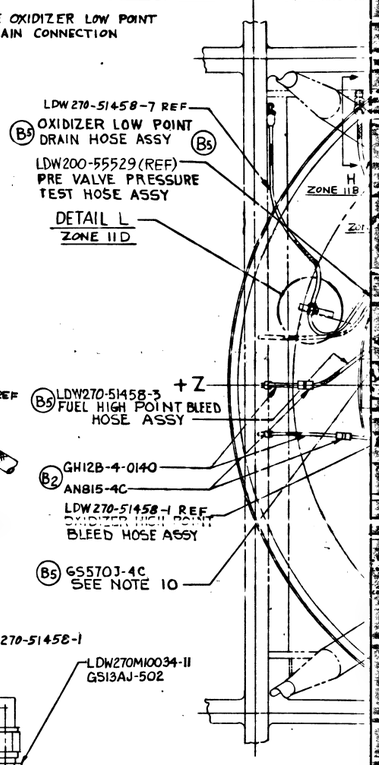
DETAIL L ZONE 7C
FULL SIZE

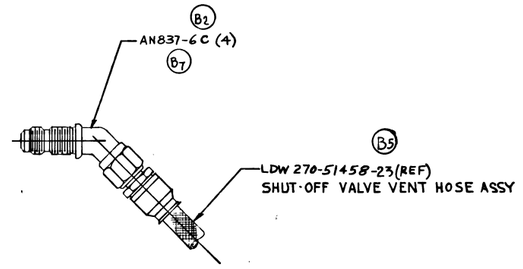


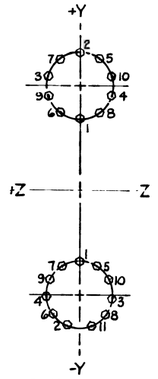
A4 SECTION E-E FULL SIZE ZONE 7B
ENGINE SUPPORT HARDWARE



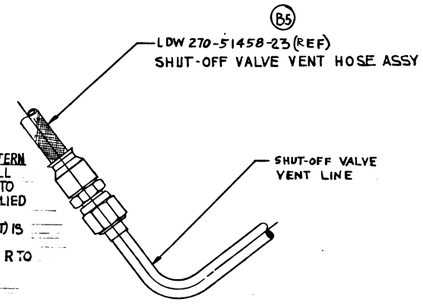
A4 SECTION D-D FULL SIZE ZONE 7C
ENGINE OXIDIZER LOW POINT
DRAIN CONNECTION







VIEW H-H FULL SIZE ZONE 7C A4
TYPICAL HOSE CONNECTION
4 PLACES

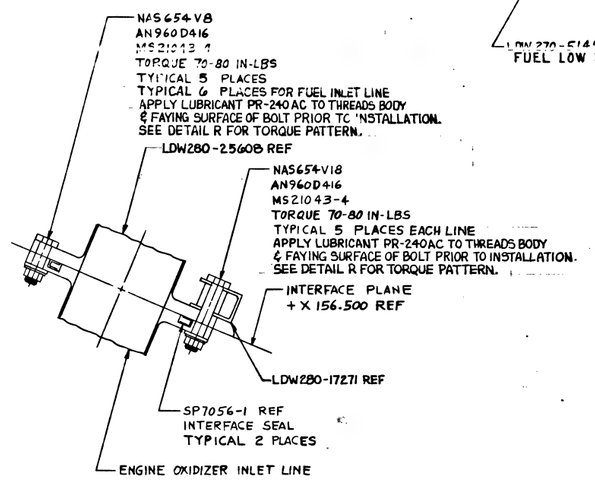


DETAIL R (NO SCALE) (ZONE 7C) A7 A10

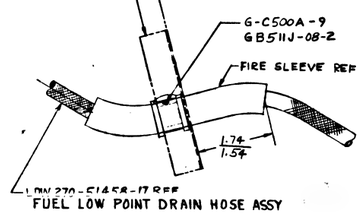
PROPELLANT LINES INTERFACE FLANGE NUT/BOLT TORQUE PATTERN
INSTALL ALL NUTS AND TORQUE IN SEQUENCE AS FOLLOWS: (ALL TORQUES NOTED ARE IN ADDITION TO THE TORQUE REQUIRED TO OVERCOME THE LOCKING FEATURE OF THE NUT ARE TO BE APPLIED AS THE NUT CONTACTS THE WASHER).

A. PHYSICAL LOCATION FOR START OF SEQUENCE (#1 NUT/BOLT) IS OPTIONAL FOR EACH FLANGE.
B. TORQUE ALL NUTS/BOLTS PER SEQUENCE SHOWN IN DETAIL R TO 15 IN.-LBS.
C. REPEAT STEP B APPLYING 30 IN.-LBS.
D. REPEAT STEP B APPLYING 45 IN.-LBS.
E. REPEAT STEP B APPLYING 70-80 IN.-LBS FOR FINAL TORQUE.

VIEW J-J FULL SIZE ZONE 7C A4
TYPICAL HOSE CONNECTION
4 PLACES

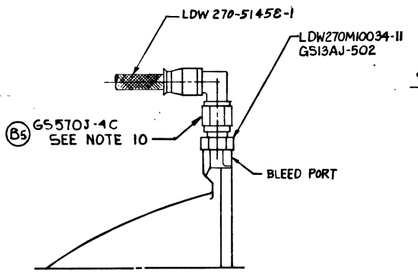


SECTION C-C FULL SIZE ZONE 6C A4 A7
PROPELLANT LINES INTERFACE CONNECTION
AND SUPPORT HARDWARE



FUEL LOW POINT DRAIN HOSE ASSY

DETAIL K ZONE 6B
FULL SIZE



A4 DETAIL G - FULL SIZE ZONE 4B
ENGINE OXIDIZER HIGH POINT
BLEED PORT CONNECTION
TYPICAL FOR ENGINE FUEL
HIGH POINT BLEED PORT EXCEPT
FOR HOSE ASSY NUMBER

NOTE 10 (B5)

GQ9472 "B" (REF)
GQ9473 "C" (REF)
GQ9474 "D" (REF) (B6)
GQ9471 "A" (REF)
(A4)

LDW 270-51458-7

LDW 270-51458-23 (4) (B5)
SHUT-OFF VALVE VENT HOSE ASSY

AN815-4C (B5)
GS13AJ-504

GS570J-6C (4) (B5)

OXIDIZER INLET LINE

SEE DETAIL R (A7) (ZONE 11B)

+Z 27.000 REF

-Z 27.000 REF

+Y

-Y

ZONE 11B
ZONE 11A
ZONE 8D
ZONE 9A
ZONE 9D
ZONE 5D
ZONE 5A
ZONE 4W

LDW280-25545 REF (A2)

GH12B-6C-0252 (REF)

220TI-6TT
AN894C6-4
GS13AJ-506
} ON -1 INSTL ONLY

FUEL INJECTOR PURGE PORT (REF)

GIMBAL DRIVE ACTUATOR

-Z (B2)

OXID. INJECTOR PURGE PORT (REF)

AN832-6C
AN6289-6C
AN939-6C
GS13AJ-506 (3)
220TI-6TT
} (A2) (A3) ON -1 INSTL ONLY

FUEL INLET LINE

LDW 270-51458-17 REF
FUEL LOW POINT DRAIN HOSE ASSY

GH12B-6C-0324 (REF) (A2) (A3)

DETAIL K
ZONE 8B

GIMBAL DRIVE ACTUATOR

VIEW A-A ZONE 4D (A4)

J-560 REF
J-564 REF
J-563 REF
J-562 REF
J-561 REF

ELECTRICAL J-BOX

VIEW B-B ZONE 6C

ENGINE FUEL INLET LINE REF

AN815-4C
GS13AJ-504

LDW 270-51458-17

(B5) GS570J-4C
SEE NOTE 10

(A4) SECTION F-F FULL SIZE ZONE 6B

ENGINE FUEL LOW POINT DRAIN CONNECTION

BLAST DEFLECTOR

A ZONE 6B

DETAIL G
ZONE 8A

LSC270-00600-31 ON-5 INSTL (B4)
LSC270 00600-30 ON-7 INSTL
LSC 270-00600-19 ON-1 INSTL
DESCENT ENGINE — SEE NOTES 1 & 2
LSC 270-00600-25 ON-3 INSTL (A4) (A6) A

OXIDIZER INLET LINE

+X 196.000 REF

LDW 280-25508 REF

LDW 280-25545 REF

FUEL INLET LINE

LDW 300-25170 REF
TYPICAL 2 PLACES

LDW 270-51458-1 REF
OXIDIZER HIGH POINT BLEED HOSE ASSY
(A5) AN815-4C (REF)

(A5) GH12B-4-0140 (REF) (B6)

(A5)

(A5)

(A4)

GIMBAL AXIS + X 154.000 REF

LDW 270-51458-17 REF
FUEL LOW POINT DRAIN HOSE ASSY

LDW 280-51608 REF

LDW 280-25575 REF

+X 131.140 REF

BASE HEAT SHIELD

DETAIL M
ZONE 2B

ENGINE NOZZLE EXTENSION

LDW 270-25100-1 INSTL
-3 INSTL

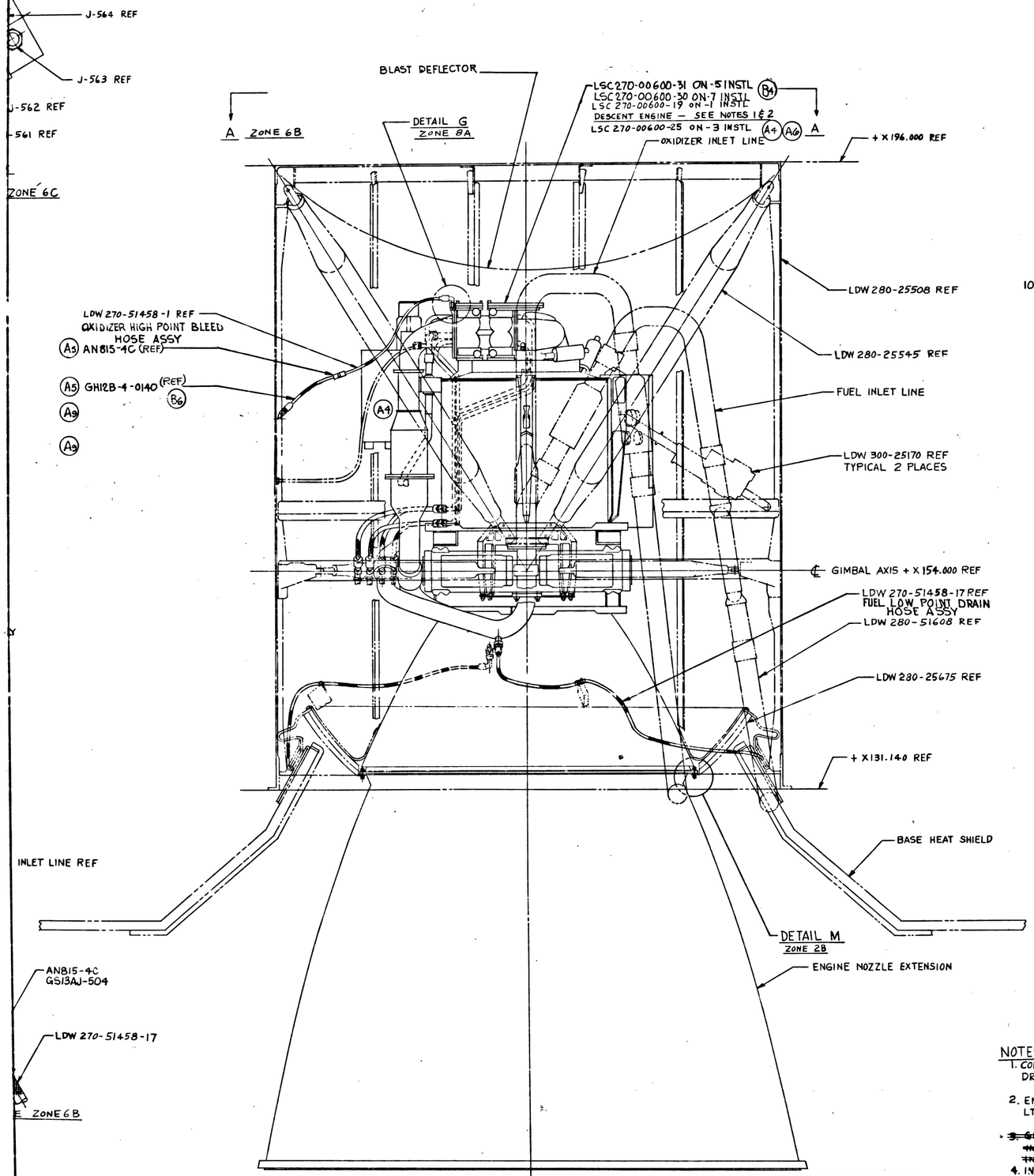
LDW270-25100-5 INSTL (B4)
-7 INSTL

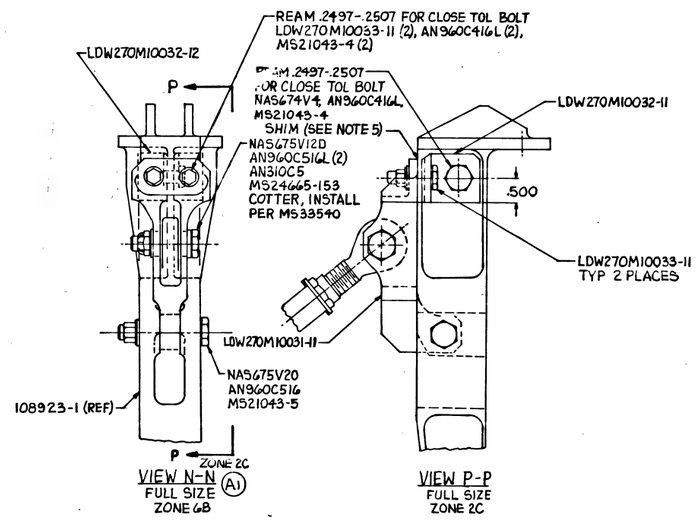
108923-1 (RE

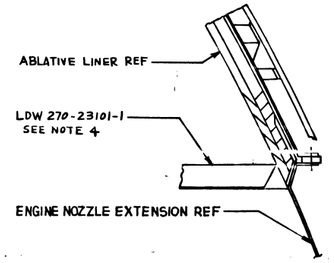
NOTES:
1. COMMERCIAL F
DRAWING BEF
2. ENGINE TO B
LTP-279-27
~~3. GIMBAL DRIV~~
~~HOSE ASSY L~~
~~INSTL 4 EN~~
4. INSTALL PLUG
NOZZLE EXTE
CHAMBER PER
INSTALLATION
EXTENSION.

02703

NAS 9-1100







DETAIL M HALF SIZE
ZONE 3B

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTFRSECTING SURFACES.
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .002 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
500 FOR ALL DRILLED HOLES
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
SYMBOL ✓ DENOTES SURFACE TO BE MACHINED
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
TOLERANCE ON LOFTED DELINEATIONS IS

NOTES (CONTD):

5. SHIM AS REQD .060 MAX USING ST STEEL SHEET 301-MIL-S-5059 OR 321-MIL-S-6721.
6. ~~IN THE EVENT THAT EITHER OR BOTH MAIN PROPELLANT LINE INTERFACE FLANGES ARE DISCONNECTED, REMOVE THE EXISTING TRW PART NO. 8P7056-1 AND REPLACE WITH A NEW SEAL OF THE SAME PART NO. DO NOT REUSE OLD SEAL.~~
7. TORQUE ALL -4 HOSE ASSY END FITTINGS 70-120 IN.-LBS. TORQUE ALL -6 HOSE ASSY END FITTINGS 100-250 IN.-LBS. CAUTION DURING TORQUING OPERATION RETAIN STATIONARY FITTING WITH WRENCH.
8. MAY BE PURCHASED FROM JAMES POND & CLARK, INC., PASADENA, CALIF.
9. THIS DRAWING AFFECTED BY THE FOLLOWING LFM(S): LFM-31, SEE LFM FOR EFFECTIVITY AND MODIFICATION.
10. INSTALL GS570J-4C ON ENGINE FITTING PRIOR TO FLEX HOSE INSTL

NOTES:

1. COMMERCIAL PART - SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING.
2. ENGINE TO BE INSTALLED IN ACCORDANCE WITH LTP-279-27 PARA. 6.12.
3. ~~GIMBAL DRIVE ACTUATOR ADJUSTMENT HOSE ASSY LENGTH TO BE DETERMINED ON INSTL @ ENGINEERING NOTIFIED.~~
4. INSTALL PLUG RING JUST UPSTREAM OF THE ABLATIVE-NOZZLE EXTENSION JOINT AND BOND TO THE COMBUSTION CHAMBER PER LSP-14-22602. CARE MUST BE TAKEN ON INSTALLATION TO AVOID GETTING ANY ADHESIVE ON NOZZLE EXTENSION.

03 / 03 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LEM	SIZE J	CODE IDENT NO. 26512	LDW 270-25100 B
MODEL OR END ITEM	SCALE ½ NOTED		SHEET 3.00

LDW270-25100 B

LDW270-25100 B

LDW270-25100 B

LDW270-25100 B

DWG SIZE 34 X

PRINTING INFO ONLY

FULL SIZE SHEET AREA OR 34 X
1/2 SIZE SHEET AREA (1/4 OF FULL)

PRINT TRIM LINE

NO. 17.
NO. 17.

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW270-25100 | EO NO. B1

CONTROL INFO NO. LDW82-3577

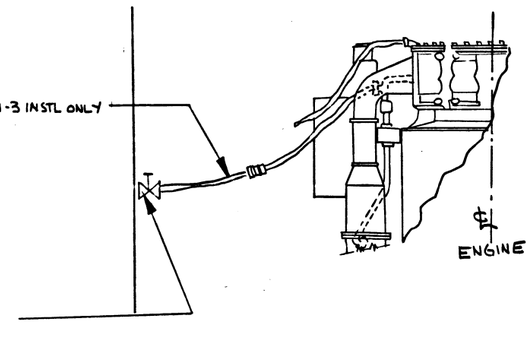
IN ZONE 3
ON -3

(REMOVE)

GH12B-4-0970
GH12B-4-0720
AN 815-4C
} (ON-3 INSTL ONLY)

(REMOVE)

GV500BN-1
GS13AJ-504 (2)
AN929-4C
AN 815-4C
AN 833-4C
AN 6289-4
MS9058-4
(ON-3 INSTL ONLY)



DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG
		✓

(82)

REASON FOR EO
LTA-5 NOT CONFIGURED TO ACCEPT THIS HARDWARE

DESCRIPTION OF EO
ON-3
REMOVE THE FOLLOWING; GH12B-4-0970, GH12B-4-0720, AN814-4C, GV500BN-1, GS13AJ-504(2), AN929-4C, AN815-4C, AN833-4C, AN6289-4, MS9058-4

GAEC EO RELEASE: VC 2/23/68

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM		LTA-5	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		✓	

APPROVED BY								
DATE	2/21/68			2/21/68			2/19/68	2/16/68
	PROP	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	INSTALLATION-DESCENT ENGINE	LDW270-25100	B1

ISSUED BY R.J. HEINDELL, X5214 SECTION DEV. ENGR. MSC/WSTF GROUP NO. 862 PL 82

01 A

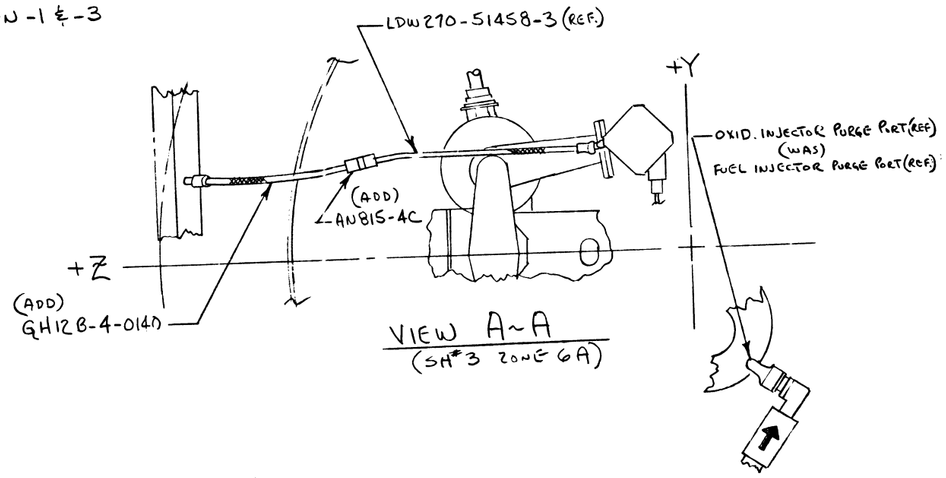
NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.2 REV 3-65

DWG. NO. LDW 270-25100		EO NO. B2
CONTROL INFO NO. LDW 82- 3773		

ON -1 & -3



VIEW A~A
(SH#3 ZONE 6A)

REVISE THE FOLLOWING CALLOUTS IN FIELD & B/M

IN VIEW H~H (SH#3)

AN 337-6C
(WAS)
AN 337-6D (REF.)

IN SECTION E~E (SH#3)

NAS1272-H34 (2) (REF)
(ADD) NAS1587-5C (2)
(REMOVE) AN 960D516L (2)
ETC

NAS654V8 (4) (REF)
AN960D416 (4) (REF)
(ADD) MS21043-4 (4)
ETC

NAS1272H11 (2) (REF)
(ADD) NAS1587-5C (2)
(REMOVE) AN960D516L (2)
ETC

DETAIL SPEC REQ		CL II ENGRG CHG	✓	CL I ENGRG CHG	

REASON FOR EO: TO UPDATE DWG TO TEST CONFIGURATION

DESCRIPTION OF EO: ON -1 & -3 ADDED - GH12B-4-0140, AN815-4C, NAS1587-5C (4) & MS21043-4 (4). REMOVED AN 337-6D (REF) & AN960D516L (9).

GAEC EO RELEASE (5): HF 4/4/68

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA5	

DRAWING CHANGE REQD: REVISE DWG ✓; RECORD EO
DISPOSITION OF PARTS: REWORK ✓; SCRAP

APPROVED BY									
DATE				SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	DEPT
						[illegible]		4-11-68	4/11/68	4/11/68

PRIORITY: C

DRAWING TITLE: INSTALLATION DESCENT ENGINE

DRAWING NO.: LDW 270-25100

EO NO.: B2

ISSUED BY: P. DUJAI XS214 SECTION: DCN. ENG'G/MSC. WITT GROUP NO. 81.2 PL 82

NAS 9-1100

LDW270-25300 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
IEM	LDW280-25508	LTA5(15)	1
PART NO. LDW270-25300-1		GAEC SCH NO. 55	

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	2.00	3.00	1.10					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	
LAST DASH NO. USED	-1

GRUMMAN REL INFO

PRIM NO.	JKR(009)
	486 ME-3A 11/26/18

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES ~ ~ ~

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS 9 1100 LINE ITEM 9 DOCUMENTATION TYPE II

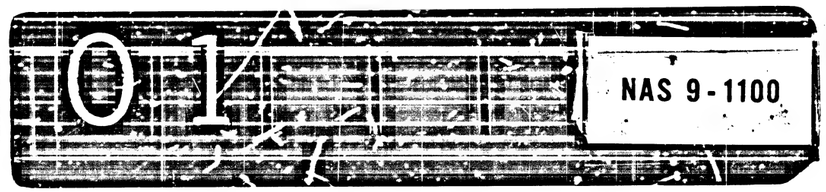
DRAWN BY	J.C. GRAU 9/19/66	WEIGHTS	L. Garcia 9/6/66
LAYOUT BY			
CHECKED BY			
GR LEADER	J. Perutti 9/19/66		
PROP	M. Dowden 9/19/66		
V.D.I.		PROJ ENGR	[illegible] 9-10
RELIABILITY	[illegible] 9/6	REL GROUP	[illegible] 9-10-66

(R) GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

INSTALLATION - PROP. HELIUM PRESSURIZATION DESCENT STAGE SUBSYSTEM

SIZE	CODE IDENT NO.		
B	26512	LDW270-25300	A (1)
SCALE NONE		SHEET 1.00 OF 4	

ENG 77.1 12-65



REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.10, 2.00 3.00	4B				✓	EOA1	ON-1: DELETED LDW270-25303-3, ADDED LDW280-17388(REF) ADDED SH 1.10	LTA-5	✓		A DUMITRESKU 11-16-68		
	2	2.00,3.00	10A				✓	EOA2	ON-1: LDW270-25310-1(WAS) LDW270-25301-1		✓				
	3	3.00	2C 10A	LFM41		✓		EOA3 LCD1866	FOR-1: IN B/M & FLD TO LDW270-25310-1 ADDED (SEE NOTE 1). IN NOTES ADDED NOTE NO.1 & 2		✓				
	4	3.00	2C 10A	LFM 41			✓	EOA4 LCD1866	REF EOA3: ADDED "OR LDW270-25310-3 TO LDW270-25310-1 CALLOUT; REVISED NOTE 1		NOT	REQD			
	5	2.00 3.00		LFM 85		✓		EOA5 LCD2377	REVISED CALLOUT: LDW270-25310-1 OR-3 TO READ LDW270-25310-5. REMOVED NOTE 1			✓			
	6	3.00	8A 9B	LFM143		✓		EOA6, CCA667 LCD2672	REVISED FIELD OF-1 INST'L TO SHOW COMPLETE LUNAR DUMP SYSTEM		NOT	REQD			
	7	3.00	8A 9B			✓		EOA7, CCA959 LCD2751	REVISED PICTURE OF LDW270-25300-1 INSTL TO ADD LSC270-830-1 BURST DISC	NOT REQD	NOT	REQD			

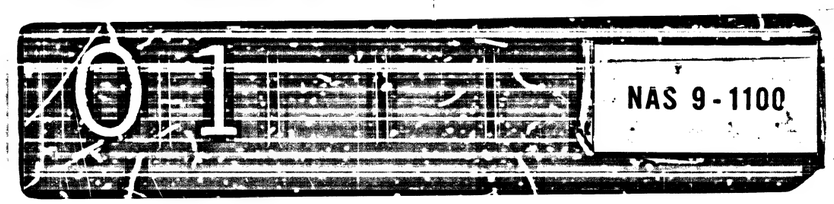
CHG APPROVED	LTR	GROUP LDR	PROP.	VDI	RELIAB	WEIGHTS
	A					

EN.r 77.16 3-66

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-25300	A

SCALE NONE SHEET 1.10



C L	QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
	-1		LDW270-25300-1	E	INSTALLATION	—	—	—	—	—	—	
K	1		LDW270-25310-5	E	He MODULE ASSY							10A
L	1		LDW270-23308-1	E	TANK INSTL-AMB.	SEE DWG						4B
K	1		LDW270-25302-1	E	TANK INSTL-SH.							5A
K	1		LDW270-25304-1	E	CHECK, REL. & EXP VL. INSTL.							8B
K	1		LDW270-25304-3	E	CHECK, REL. & EXP VL. INSTL.							8B
K	1		LDW270-25305-1	E	DISC. CPLG INST'L.							10B
K	1		LDW270-25305-3	E	DISC. CPLG INST'L.							8B
K	1		LDW270-25306-1	E	EXPL. VALVE INST'L.							8A
K	1		LDW270-25309-1	E	VALVE, FILTER & CPLG INSTL	SEE DWG						4C
C	3		GB511J-3-2	E	BOLT	GRUMMAN STD						
C	3		AN960D10L	E	WASHER	STD PART						

CLEANLINESS LEVEL PER LSP14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

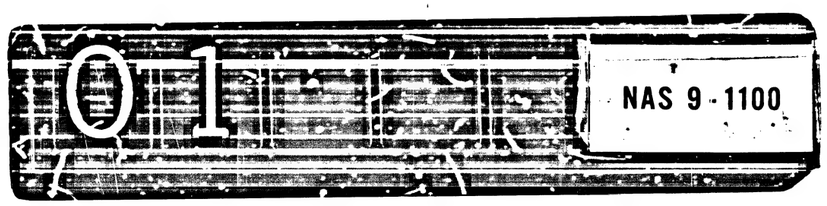
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

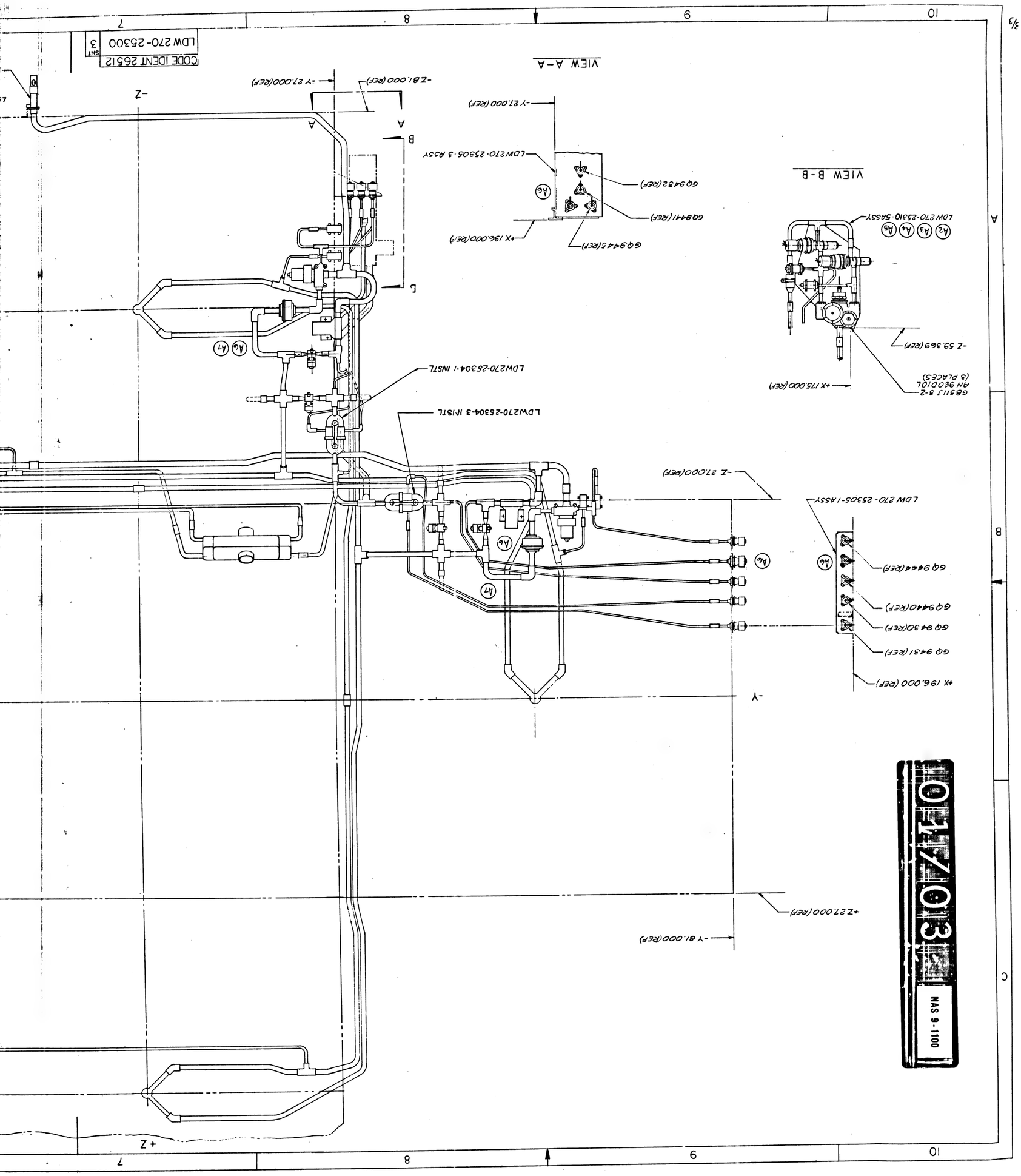
SIZE	CODE IDENT NO.		
B	26512	LDW270-25300	A

SCALE NONE SHEET 2.00

ENG 77.2 7-65



CODE IDENT 26512 | LDW 270-25300 | SHT 3



0170103

NAS 9-1100

7 6 5 4

+Z

D D

GQ 9442 (REF)

LDW 270-25451-131NSTL (REF)

VIEW D-D

+X 190.033 (REF)

+X 196.000 (REF)

GQ 9415 (REF)

+Y 81.000 (REF)

LDW270-

TL

+Y 65.000 (REF)

NAS 9-1100

10/2/03

+Y 38.483 (REF)

+Y

+X 189.750 (REF)

-Y 27.000 (REF)

VIEW C-C

A

LDW 280-

LDW270-25309-1 INSTL.

LDW270-23308-1 INSTL.

GQ 9415 (REF)

C

LDW280P162.18 INSTL (REF)

+Y 81.000 (REF)

+X 165.540 (REF)

LDW 270-25302-1 INSTL

GQ 9479 (REF)

GQ9409 (REF)

GQ 9437 (REF)

GQ9405 (REF)

GQ 9403 (REF)

GQ9477 (REF)

GQ9464 (REF)

GQ 9404 (REF)

+X 196.000 (REF)

+X 191.140 (REF)

LDW270-25451-15 INSTL (REF)

+X 121.420 (REF)

GQ 9453 (REF)

-Z

LDW270-25451-1 INSTL GQ 9443 (REF)

LDW280P162.18 INSTL (REF)

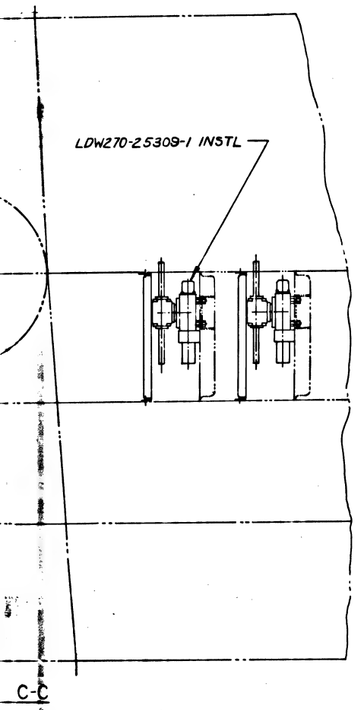
NT 26512

-25300 SHT 3

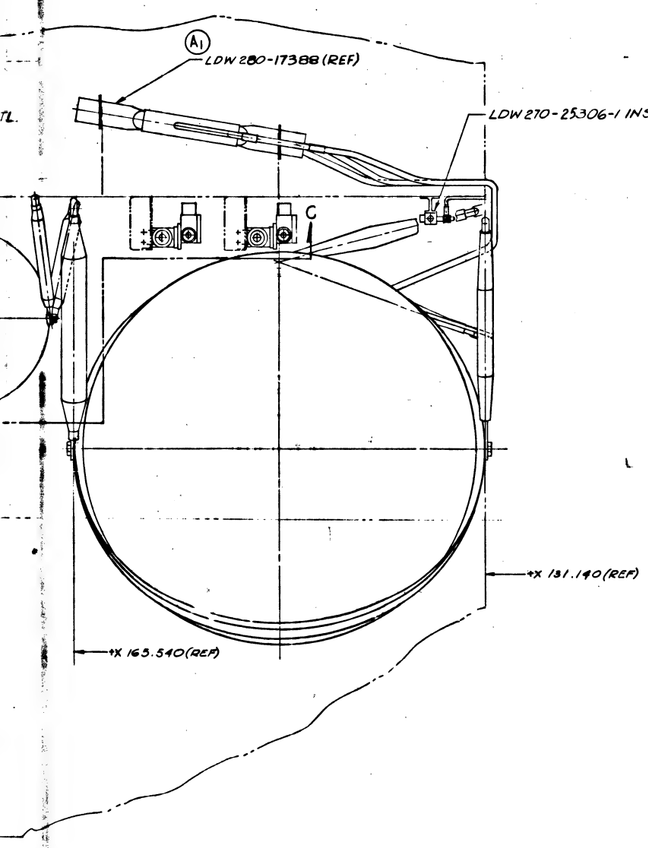
CODE IDENT 26512

LDW 270-25300 SHT 3

7 6 5 4



C-C



NOTES:

1. ~~ONE OF LDW270-25310-1 OR ONE OF LDW270-25310-3 IS REQUIRED ON LDW270-25300-1 INSTL. LDW270-25310-3 TO BE USED FOR REPLACEMENT AND SPARES.~~
2. THIS DWG AFFECTED BY THE FOLLOWING LFMS. SEE LFM FOR EFFECTIVITY AND MODIFICATION. LFM 85, LFM143

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.

- PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.
- FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010; .063R TO .250R ± .015; OVER .250R ± .030
- DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.
- EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
- DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
- MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
- DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
- HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
- ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
- 125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
- 250 FOR ALL DRILLED HOLES
- REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
- INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
- SYMBOL DENOTES SURFACE TO BE MACHINED
- UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
- LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
- TOLERANCE ON LOFTED DELINEATIONS IS

NAS 9-1100

0934034

DWG SIZE 48 X 96

DIRECTIONS DECL. COSS.Y.
FULL SIZE SHEET AREA 1.98 — 28.500
1/2 SIZE SHEET AREA 1/4 OF FULL — 7.125

PRINT TRIM LINE

NO. PT.
NO. PT.

LDW 270-25300 A

LDW 270-25300 A

LDW 270-25300 A

ENT 26512
25300 SHT 3

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
I.E.M. MODEL OR END ITEM	SIZE K	CODE IDENT NO. 26512	LDW 270-25300	A
	SCALE 1/4		SHEET 3.00	

LDW270-25301 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LEM	LDW270-25300	LTA-5 (15)	1
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW270-25301-1		GAEC SCH NO. 55	

22

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	1.10	2.00	2.01	3.00	4.00			
REV	A	A	A	A	A	A			
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	
LAST DASH NO. USED	-1

GRUMMAN REL INFO //
PRIM NO. (E6009) 486 MD-14 @ 11-2-66

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/16 ~ ~

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS 9-1100 LINE ITEM 9 DOCUMENTATION TYPE II

DRAWN BY	J. PAVLICA/NGrumol	INSTRUMENTATION	8/26/66
LAYOUT BY		RELIABILITY	9/19
CHECKED BY			
GR. LEADER	8/17/66		
PROP	9/16/66		
VDI	9/16/66	PROJ ENGR	9/16/66
WEIGHTS	L. Garcia 8/13/66	REL GROUP	9/16/66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

HELIUM MODULE ASSEMBLY
DESCENT PROPELLANT
PRESSURIZATION SUB-SYSTEM

SIZE	CODE IDENT NO.	
B	26512	LDW270-25301 A

SCALE NONE SHEET 1.00 OF 5

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

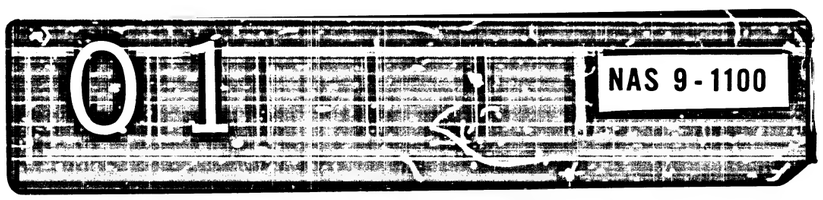
CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	APPD
A	1	2.00 2.01 4.00	3D 4D 6D					A1	IN FIELD & B/M - MS28775-011 (2) WAS MS28775-002, LDW280-17388-246DSH-8 WAS LDW280-17388-240DSH-8.	NOTED	✓		A. HENDRICKS 10-25-66		
	2	2.00 4.00	7D					A2	FOR -1 REMOVE LSC270-816-11, ADD LSC270-816-11-1. REVISE P/N LDW280-17834-15 & -17 (WAS) LDW280-17384-15 & -17. CLEAN LEVEL "L" (WAS) "C" FOR LDW280-17388-236DSH-8, -245 DSH-8, -171V-2, -172V-2, -240DSH-8, & -262 DSH-4.	NOTED	✓				
	3	2.00 2.01 4.00	7E 40/5C 40/3E 5F 6E					A3	IN B/M & F/D FOR -1 ASSY, REMOVED 1-GB511J-4-5, 1-MS21043-4, 1-LSC269-380-1 & 1-LSC360-601-109. ADD 1-GB511J-3-5, 1-MS21043-3, 1-LSC269-228-8, 1-LSC360-624-111, & 1-LDW390-21325-7 ADAPTER HARNESS. ADDED NOTE NO. 10 & REVISED TRANSDUCER PICTURE.	NOTED	✓				
	4	2.00 4.00	5F 6F 7D						ON -1 ASSY, LSC270-814-3 WAS -1, LSC269-218-8 WAS LSC269-382-1, LSC270-816-11-3 WAS -11-1.	LTA-5	✓				

FOR CONTINUATION OF REVISIONS SEE SHEET _____

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-25301	A
SCALE NONE		SHEET 1.10	



C.L.	QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
L	1		LSC270-816-11-3	S	REDUCING VALVE	SEE NOTE*1						
L	1		LSC270-814-1		FILTER							
L	1		LSC269-382-1		UNION							
L	1		LSC269-391-1		TEE							
L	1		LSC269-228-8		TEE							
L	1		LSC269-255-4		CROSS							
L	2		LSC269-218-8		UNION							
N	1		LSC360-601-109		TRANSDUCER	SEE NOTE*1						
L	1		LDW390-28070-9		SOLE. LATCH VALVE	SEE DWG						
L	1		LDW390-28070-7	S	SOLE. LATCH VALVE	SEE DWG						
N	1		LSC360-624-111	S	TRANSDUCER	SEE NOTE*1						
C	1		LDW280-17834-17	E	HAT	SEE DWG						
C	1		LDW280-17834-15		HAT							
C	1		LDW280-23681-1		PLATE ASSY							
C	1		LDW280-17834-21		TEE							
C	1		LDW280-17834-13		TEE							
L	1		LDW280-17388-262DSH4		TUBE							
L	1		-246DSH8		TUBE							
L	1		-172V-2		TUBE ASSY							
L	1		-171V-2		TUBE ASSY							
L	1		-245DSH8		TUBE							
L	1		LDW280-17388-236DSH8		TUBE							
C	1		LDW280-17176-7		BRACKET ASSY							
C	1		-5									
C	1		-3									
C	1		LDW280-17176-1	E	BRACKET ASSY	SEE DWG						
C	1		LDW330-21325-7	E	JUMPER	SEE DWG						
L	-1		LDW270-25301-1	S	MODULE ASSY							

CLEANLINESS LEVEL PER LSP-14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : LPC 19-2 (GRUMMAN) LPC 19-3 (VENDOR)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-25301	A

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01 NAS 9-1100

C.L.	QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
C	2		MS28775-011	E	PACKING	STD PART						
C	10		MS21043-3		NUT							
C	4		MS21043-06		NUT							
C	✓		MS20470AD3		RIVET							
C	4		AN960C10L		WASHER							
C	1		AN960D8		WASHER							
C	2		AN815-2C		UNION							
C	2		AN735D31		CLAMP	STD PART						
C	7		GR500A-4C		RIVET (BLIND)	GRUMMAN STD						
C	1		GC12H-16		CLAMP							
C	4		GC12H-8									
C	1		GC12H-4		CLAMP							
C	3		GB511J-3-5		BOLT							
C	6		GB511J-3-3									
C	1		GB511J-3-2									
C	1		GB511J-08-3									
C	4		GB511J-06-2	E	BOLT	GRUMMAN STD						
	-1											

CLEANLINESS LEVEL PER LSP-14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : LPC19-2 (GRUMMAN) LPC19-3 (VENDOR)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-25301	A

SCALE NONE SHEET 2.01

ENG 77.2 7-65

Q1 NAS 9-1100

NOTES:

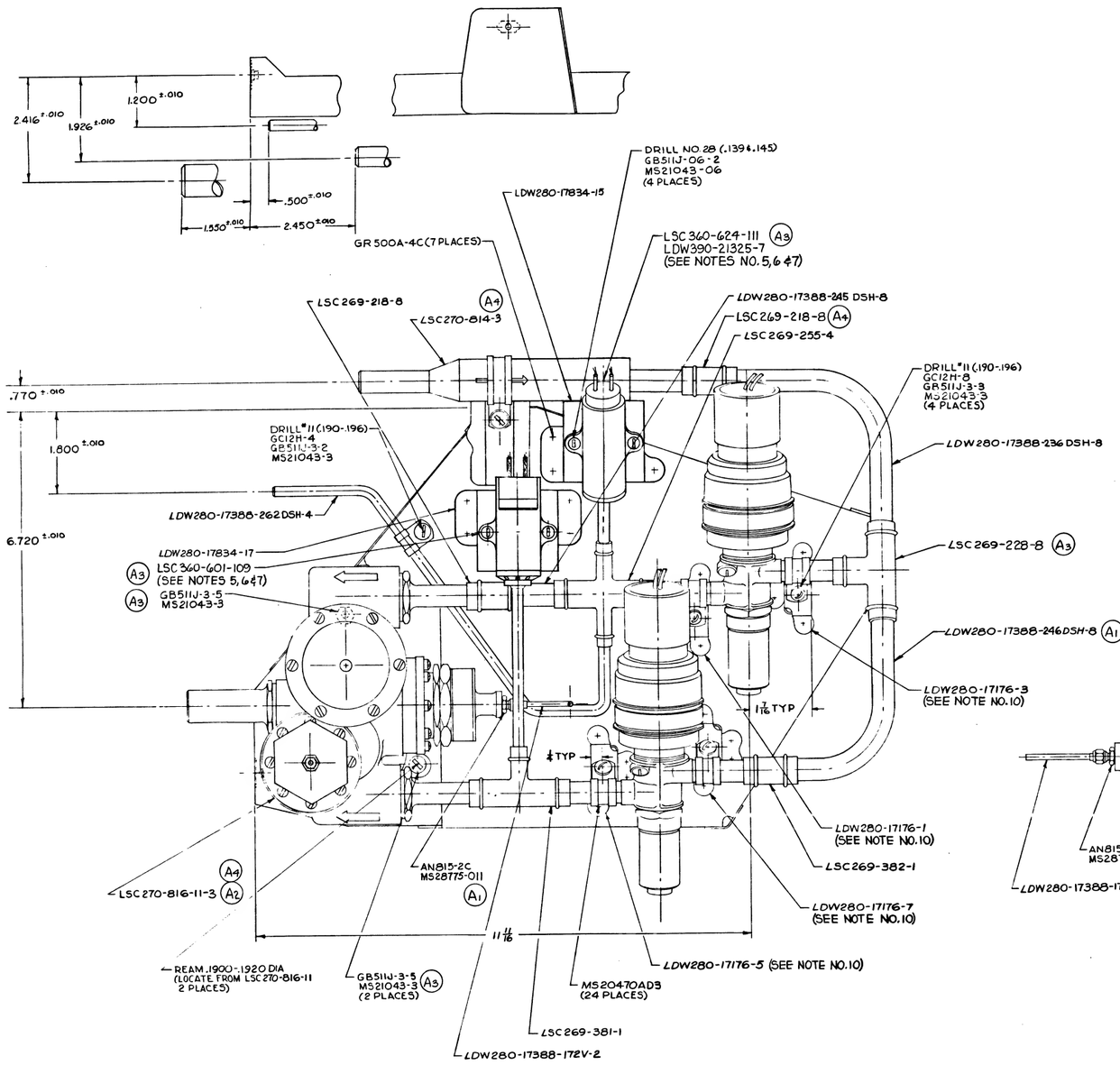
1. COMMERCIAL PART SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING.
2. TORQUE MECHANICAL FITTINGS 50-60 INCH-LBS.
3. INDUCTION BRAZING OF FITTINGS SHALL BE IN ACCORDANCE WITH LSP-14-6303.
4. LDW270-25301-1 MODULE ASSEMBLY SHALL BE TESTED IN ACCORDANCE WITH LTP270-301 "PRE-INSTALLATION TEST PLAN FOR MODULE ASSEMBLY-DESCENT HELIUM PROPELLANT PRESSURIZATION SUBSYSTEM."
5. LSC360-601-109 TRANSDUCER SHALL BE PREPARED IN ACCORDANCE WITH LSP-14-17450 PRIOR TO BRAZING INTO SYSTEM.
6. ELECTRICALLY BOND LSC360-601-109 TRANSDUCER IN ACCORDANCE WITH LSP390-001.
7. TUBE STUBS SHALL BE CAPPED PER LSP-14-009 FOR SHIPMENT AND STORAGE. REMOVE CAPS PRIOR TO BRAZING INTO SYSTEM.
8. INSTALL AN960C10L WASHER ON BOTH SIDES OF TEE BRACKET BETWEEN BRACKET AND AN735D31 CLAMP.
9. INSTALL MS20470AD3 RIVETS PER LSP-14-15302. INSTALL GR500A-4C BLIND RIVETS PER LSP-14-15303.
10. LDW280-17176-1, -3, -5 & -7 MAY BE ROTATED 180° FROM POSITION SHOWN TO ACCOMPLISH THE INSTALLATION OF BRACKET & TUBE CLAMP #GC12H-8.

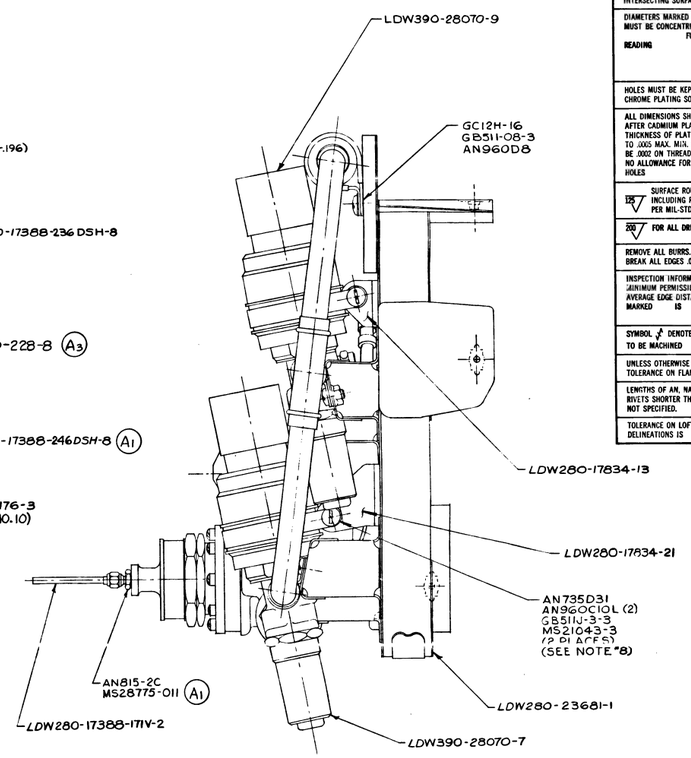
GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-25301	A
SCALE NONE		SHEET 3.00	

ENG 73.1 6-64

01

NAS 9-1100





MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.

- ELECTROETCH-PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED — USE BOTH SIDES IF NECESSARY. ✓
- FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010; .063R TO .250R ± .015; OVER .250R ± .030
- DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.
- EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
- DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
- MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
- DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
- HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
- ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
- 125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
- 250 FOR ALL DRILLED HOLES
- REMOVE ALL BURRS. BREAK ALL EDGES .015-.031 ✓
- INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
- SYMBOL ∢ DENOTES SURFACE TO BE MACHINED
- UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
- LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED. ✓
- TOLERANCE ON LOFTED DELINEATIONS IS

LDW270-25301-1 HELIUM MODULE ASSEMBLY

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
E	26512	LDW270-25301	A

LEM — MODEL OR END ITEM — SCALE FULL — SHEET 4.00

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LDW270-25301 | EO NO. B1
CONTROL INFO NO. LM270-735

IN B/M FOR-1

LSC270-814-1 SHOULD BE LSC270-814-3

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG

REASON FOR EO: DRAWING ERROR

DESCRIPTION OF EO: IN B/M FOR-1, REMOVED LSC270-814-1
ADDED LSC270-814-3

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	NOT	REQD	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: NOT REWORK	REQD SCRAP
✓			

APPROVED BY / DATE: SUPPORT | RELIAB. GROUP | GROUP LEADER | STRESS GROUP | LIAISON ENGRG | PROJ ENGRG

								KO	—	—			
								11/4/66	—	—	11-5-66		

GAEC ECO RELEASE: 11/8/66

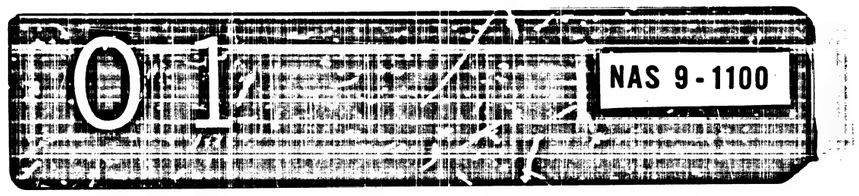
PRIORITY: E

DRAWING TITLE: HELIUM MODULE ASSY
DESCENT PROPELLANT PRESSURIZATION SUB-SYS

DRAWING NO.: LDW270-25301

EO NO.: 31

ISSUED BY W. KUTNER X7427 SECTION PROPULSION GROUP NO. 345 PL 35



LDW270-25302

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		LEM	LDW270-25300	LTA-5(15)	1
								PART NO. LDW270-25302-1		GAEC SCH NO. 55	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00	1.10	2.00	3.00						
REV	A	A	A	A						
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED	
LAST DASH NO. USED	-1

GRUMMAN REL<INFO A
PRIM NO. 486 (REL 00A) MP12 25 4-4

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS — ANGLES
~
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100 LINE ITEM 9 DOCUMENTATION TYPE III

DRAWN BY	J. PAVLICA 3-22-66	Rel	Hunga 4/8
LAYOUT BY	—		
CHECKED BY	J. Waldo 3-23-66 / J. Perotti 3-23-66		
S/S ENGR	W. Davidson 3/24/66		
PROJ ENGR		Della Mae 4-8-66	
REL GROUP		Bette 4.9.66	

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

HELIUM TANK INSTALLATION - DESCENT PROPELLANT PRESSURIZATION SUBSYSTEM

SIZE	CODE IDENT NO.		
B	26512	LDW270-25302	A

SCALE NONE SHEET 1.00 OF 4

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00, 1.10 2 & 3	2A 7B				✓	EO-A1	ON-1 IN B/M & F/D REMOVED LDW280M17360-1 & -3 ADD LDW280M17360-5 & -7 BOLT. ADDED SHEET 1.10, SHEET 1.00 OF 4 WAS 1.00 OF 3	LTA-5 LEM-1	✓		JESAITIS, T 7-19-66		
	2		7B					EO-A2	ON-1 INSTL ADDED; LDW270-51307-1 TANK ASSY, ADDED NOTE #2. ON LDW 270-25307-1 ADDED SEE NOTE #2						

CHG APPROVED	LTR	GROUP LDR	SS ENGR	RELIABILITY
	A			

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-25302	A

SCALE NONE SHEET 1.10

ENG 77.18 3-68

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
– 1											
✓		MS20995NC40		SAFETY WIRE	STD PART						
SEE NOTE 2 1		LDW270-513071	S	HE TANK ASSY	SEE DWG						
SEE NOTE 2 1		LDW270-25307-1	S	HE TANK ASS'Y	SEE DWG						
1		LDW280M17360-7		BOLT	SEE DWG						
2		LDW28DM17360-5		BOLT	SEE DWG						
		LDW270-25302-1	E	HE TANK INST'L							

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : E

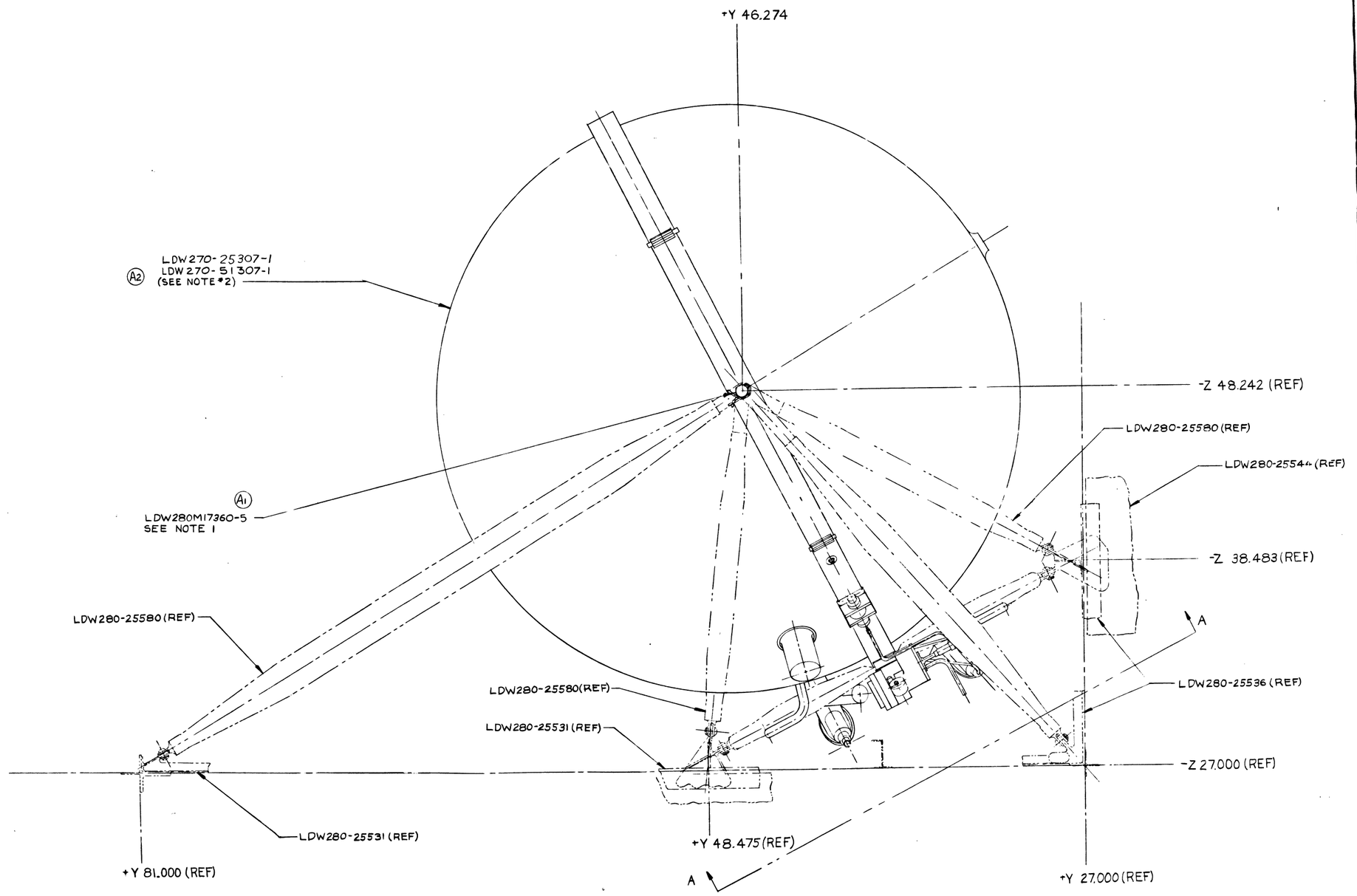
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-25302	A

SCALE NONE SHEET 2.00

ENG 77 ? 7-65

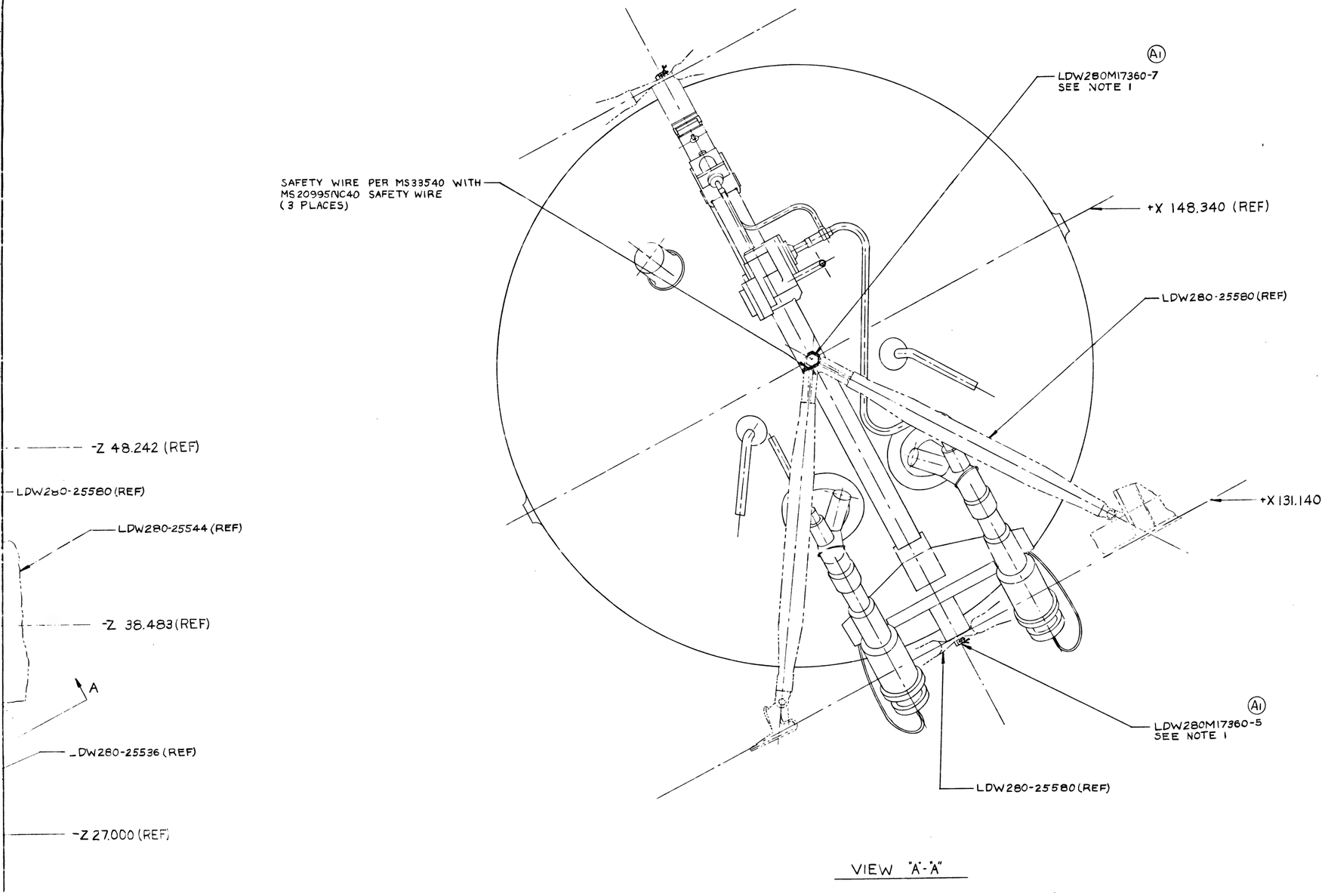
01 NAS 9-1100



LDW270-25302-1 SUPERCRITICAL HE TANK INST'L

CODE IDENT 26512
LDW270-25302
SHEET 300

01/02 NAS 9-1100

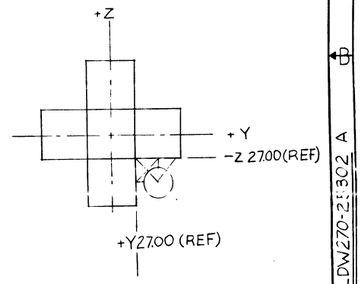


VIEW "A"-"A"

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY.
FILLET AND INSIDE CORNER RADII TOLERANCES .018R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
DIAMETERS MARKED ⌀ MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
200 FOR ALL DRILLED HOLES
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
SYMBOL ✓ DENOTES SURFACE TO BE MACHINED
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
TOLERANCE ON LOFTED DELINEATIONS IS

DWG SIZE 34 X 88

PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X 10)= 303 SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL)= 76 SQ. FT.
PRINT TRIM LINE



NOTES:

1. TORQUE VALUE ON BOLT TO BE 30 TO 40 INCH LBS.
2. 1 OF LDW270-25307-1 TANK ASSY OR LDW270-51307-1 TANK ASSY WHICH ARE INTERCHANGEABLE REQD ON INSTL.

LDW270-25302 A

LDW270-25302 A

402/402 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE J	CODE IDENT NO. 26512	LDW270-25302	A
MODEL OR END ITEM EM	SCALE 1/2	SHEET 3.00	

CODE IDENT 26512
LDW270-25302 SHEET 3.00

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-25302 | EO NO. B1
CONTROL INFO NO. LM270-1430

SHT. 2: IN B/M, REPLACE LDW270-25307-1 WITH LDW270-25307-2

SHT. 3: IN F/D & NOTE 2, CHANGE LDW270-25307-1 TO LDW270-25307-2.

ADD LTA-5R(159) & REMOVE LTA-5(15) IN M/B

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG ✓ LCD 5430 OK. (5)

REASON FOR EO: UPDATING LTA-5 SHE. TANK

DESCRIPTION OF EO: REPLACE LDW270-25307-1 WITH LDW270-25307-2 IN -1 INSTL.

GAEC EO RELEASE: 3/17/70

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LEM563	LTA-5R (159)	

DRAWING CHANGE REQD: ✓ REVISE DWG | RECORD EO
DISPOSITION OF PARTS: ✓ REWORK | SCRAP

APPROVED BY								
DATE	2/24/70			2/19/70			RB 4/1/70	3/19/70
	PROP.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

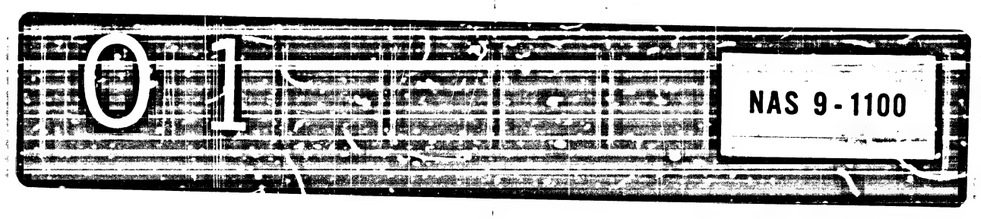
PRIORITY: C

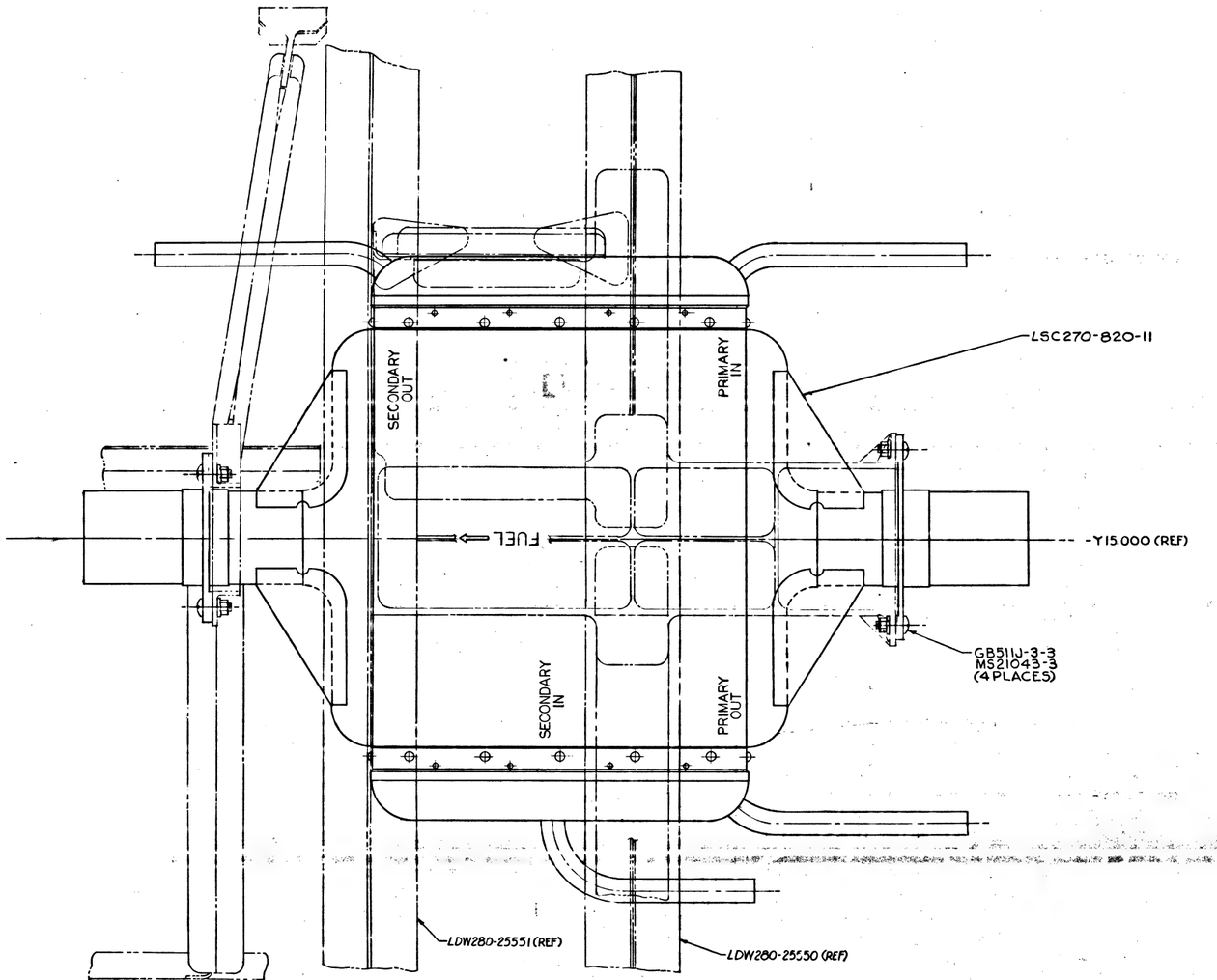
DRAWING TITLE: HELIUM TANK INSTL: D/S PROP. PRESS.

DRAWING NO.: LDW270-25302

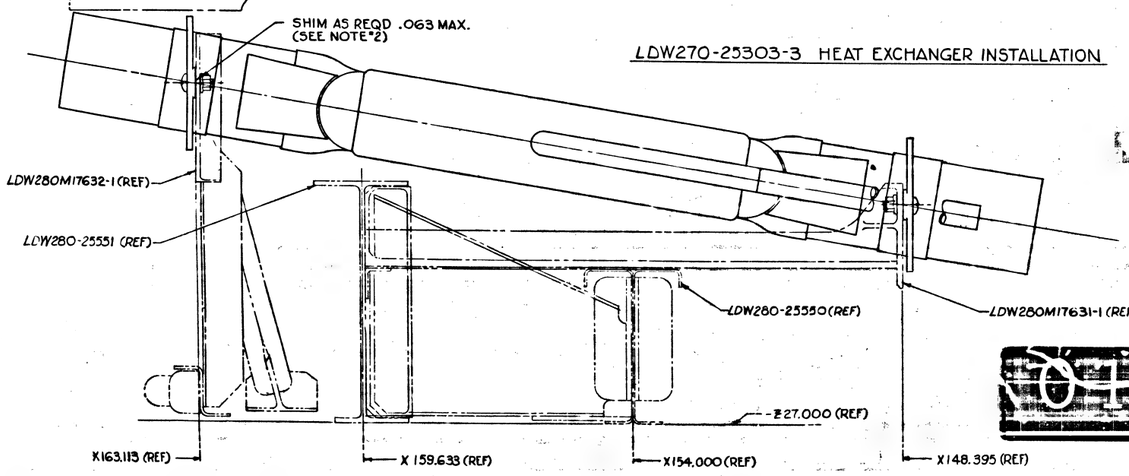
EO NO.: B1

ISSUED BY G. CUDONE (X1661) 2/27/70 SECTION PROPULSION GROUP NO. 270 PL 25



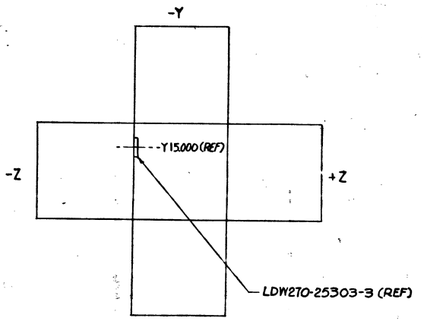


LDW270-25303-3 HEAT EXCHANGER INSTALLATION



NOTES:

1. COMMERCIAL PART SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING.
2. SHIM AS REQ'D USING ALUM. LAMINATED SHIM .003 LAMINATIONS, 5052-H39, WHICH MAY BE PURCHASED FROM LAMINATED SHIM CO., INC, GLENBROOK, CONN (CODE IDENT 75495).



NAS 9-1100

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.

FILLET AT INSIDE CORNER RADII TOLERANCES
.01R TO .062R ± .010
.063R TO .250R ± .015
OVER .250R ± .030

DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.

EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.

DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.

MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.

DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING

HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.

ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES

125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10

200 FOR ALL DRILLED HOLES

REMOVE ALL BURRS. BREAK ALL EDGES .015-.031

INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS

SYMBOL ✓ DENOTES SURFACE TO BE MACHINED

UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32

LENGTHS OF AN, MAS & MS 7/L ALY BOLTS SHORTER THAN 1 INCH ARE NOT SPECIFIED.

TOLERANCE ON LOFTED DELINEATIONS IS

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
E	26512	LDW270-25303	B

LEM — MODEL OR END ITEM — SCALE FULL — SHEET 4 OF 00

LDW270-25304 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW270-25300	LTA-5 (US)	1
PART NO. LDW270-25304-3		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW270-25300	LTA-5 (US)	1
PART NO. LDW270-25304-1		GAEC SCH NO. 55	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	
LAST DASH NO. USED	-3

GRUMMAN REL^E INFO A

PRIM NO.	(Rev 9)	
486	UMP 17	6 BJ 6.6

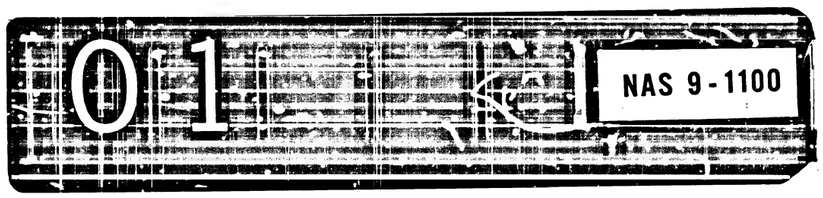
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
~

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS 9-1100 LINE ITEM 9 DOCUMENTATION TYPE II

DRAWN BY	J. PAVLICA 5/19/66	WEIGHTS	L. Garcia 6/8/66	GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE, L. I., NEW YORK
LAYOUT BY	~			
CHECKED BY	J. Perrett 5-20-66 R. Wade			CHECK, RELIEF & EXPLOSIVE VALVE INSTALLATION-DESCENT PROPELLANT PRESSURIZATION SUBSYSTEM
G.D. LENKER				
PROP				
STRESS		PROJ ENGR	Plunkett 6-13-66	SIZE B | CODE IDENT NO. 26512 | LDW270-25304 | A
STRUCT.		REL GROUP		SCALE NONE | SHEET 1.00 OF 3
RELIABILITY				

ENG 77.1 12-65



REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00 1.10 2.00 3.00	C8 C2					LEO 270-7	ON-1 REMOVED LSC 270-818-4, ADDED LSC 270-818-6 ON-3 REMOVED LSC 270-818-3, ADDED LSC 270-818-5 SH 1 OF 4 WAS 1 OF 3 ADDED SH 1.10	LTA-5	✓		D Grus 12-21-66 RB		
	2	1.10 2.00 3.00	B2 B8					EOAZ (1)	FOR -1 & -3 INSTL. ADDED (3) AN 960 C10 WASHERS						

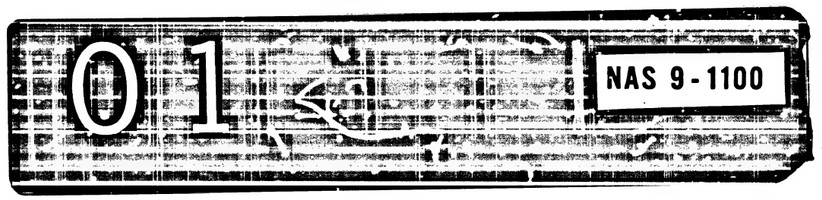
CHG APPROVED	LTR	GROUP LDR	PROP	STRESS	STRUCTURES	WEIGHTS	RELIABILITY
	A						

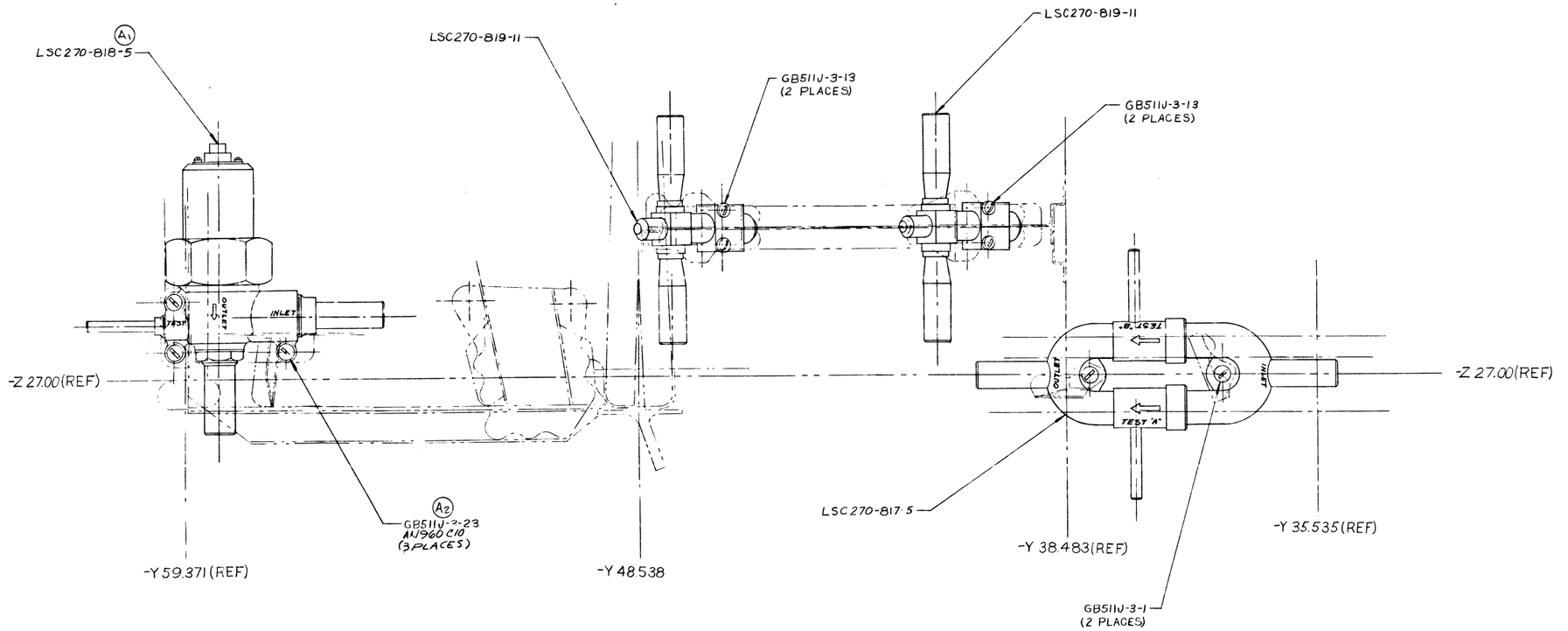
GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-25304	A

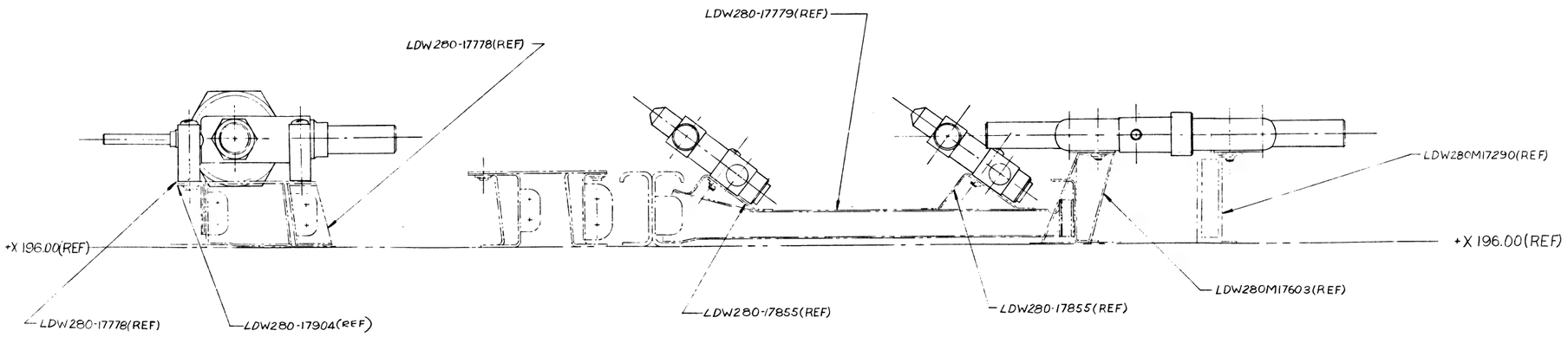
SCALE NONE SHEET 1.10

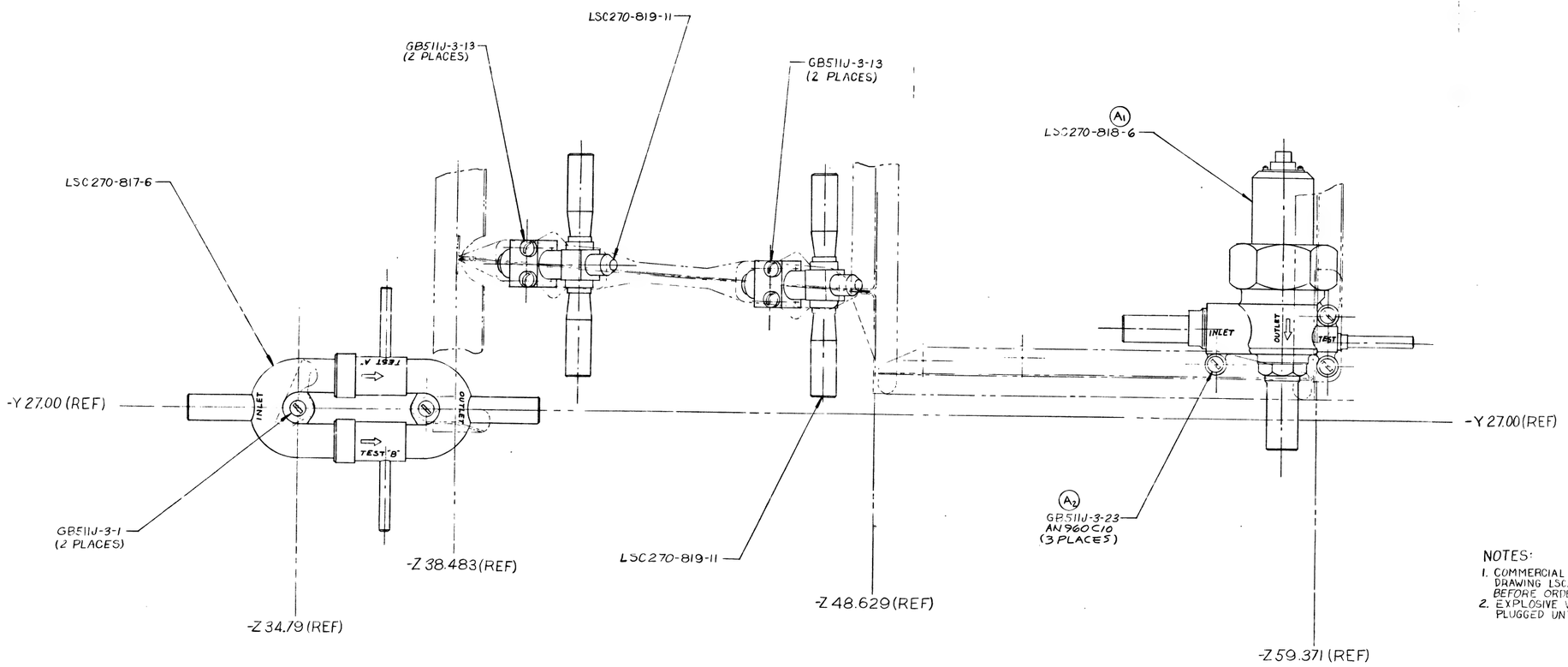
ENG 77.16 3-66





LDW270-25304-3 CHECK, RELIEF & EXPLOSIVE VALVE INSTALLATION(OX)





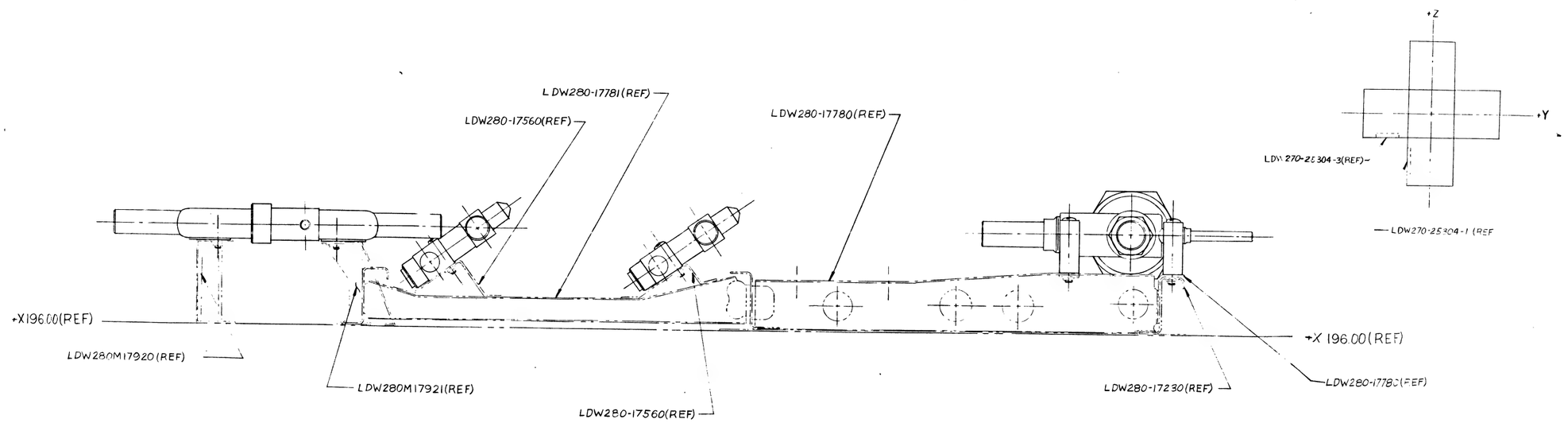
MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

- PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED — USE BOTH SIDES IF NECESSARY.
- FILLET AND INSIDE CORNER RADII TOLERANCES .018R TO .062R ± .010; .063R TO .250R ± .015; OVER .250R ± .030
- DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.
- EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
- DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
- MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
- DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
- HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
- ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
- 125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
- 250 FOR ALL DRILLED HOLES
- REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
- INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
- SYMBOL ∿ DENOTES SURFACE TO BE MACHINED
- UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
- LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
- TOLERANCE ON LOFTED DELINEATIONS IS

DWG SIZE 34 × 58
PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X 60) = 34 SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL) = 8 1/2 SQ. FT.
PRINT TRIM LINE

NOTES:
1. COMMERCIAL PART. SEE SPECIFICATION CONTROL DRAWING LSC270-817, LSC270-818 & LSC270-819 BEFORE ORDERING.
2. EXPLOSIVE VALVE INITIATOR PORTS TO REMAIN PLUGGED UNTIL INSTALLATION OF INITIATORS.

LDW270-25304-1 CHECK, RELIEF & EXPLOSIVE VALVE INSTALLATION (FUEL)



LDW270-25304 A
LDW270-25304 A

CODE IDENT 26512
LDW270-25304 SHT 3.00

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LEM	SIZE J	CODE IDENT NO. 26512	LDW270-25304 A
MODEL OR END ITEM	SCALE FULL		SHEET 3 OF 3

0 2 / 0 2 NAS 9-1100

ZFR

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-25304 | EO NO. B1
CONTROL INFO NO. LDW82-3521

ON-3 LSC270-817-3 (WAS) LSC270-817-5
ON-1 LSC270-817-4 (WAS) LSC270-817-6

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG ✓

REASON FOR EO: UPDATE TO LATEST LM CONFIGURATION

DESCRIPTION OF EO: LSC270-817-3 (WAS) LSC270-817-5 ON-3
LSC270-817-4 (WAS) LSC270-817-6 ON-1

(82) GAEC EO RELEASE: JA 12/28/72

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA-SD	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		✓	✓

APPROVED BY	RB			RB (LDW)				
DATE	12/13/72			12/19/72				12/19/72
	PROP	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ. ENGRG	DEPT

PRIORITY: C

DRAWING TITLE: CHECK, RELIEF & EXPLOSIVE VALVE INSTALLATION-DESCENT PROPELLANT PRESSURIZATION SUBSYSTEM

DRAWING NO.: LDW270-25304

EO NO.: B1

ISSUED BY R.J. HEINDELL, X5214 SECTION DEV. ENGR. MSC/WSTE GROUP NO. 862 PL 82

01

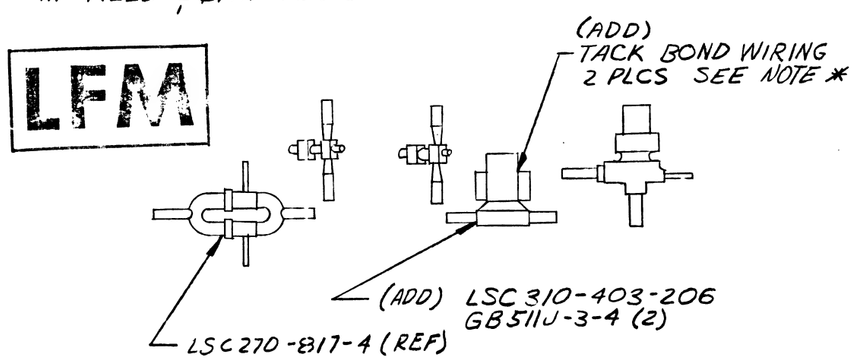
NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.2 REV 3-65

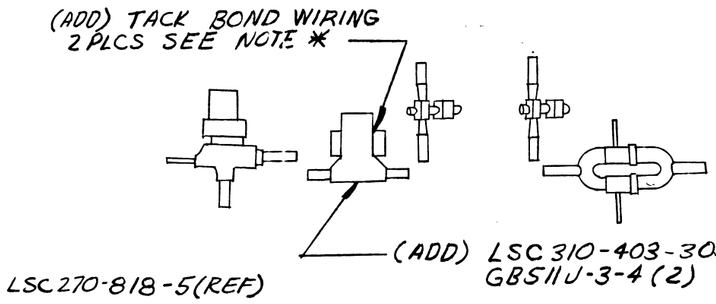
DWG. NO. LDW270-25304		EO NO. B2
CONTROL INFO NO. LM270-1192		

IN FIELD & B/M REVISE -1 ASSY AS SHOWN BELOW:



NOTE TO DRAFTING SERVICES: (DO NOT INCORPORATE ON DWG) FRONT VIEW OF -1 & -3 TO BE REVISED TO INCORPORATE LSC310-403 VALVE.

IN FIELD & B/M REVISE -3 ASSY AS SHOWN BELOW:



ADD NOTE * TACK BOND WIRING TO BODY OF VALVE ON INSTL USING RTV-731 APPLIED IN ACCORDANCE WITH LSP14-22601. WHEREVER BONDING TOUCHES TEFLON COATED WIRE, ETCH SAME PER LSP14-7100 PRIOR TO BONDING.

* USE NEXT AVAILABLE NOTE NUMBER

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓ LCD2672 CCA 667												(5)
REASON FOR EO: ADD COMPLETE LUNAR DUMP SYSTEM TO LTA-5					DESCRIPTION OF EO: ADDED NOTE *, FOR -1 ADDED LSC310-403-206 FOR -3 ADDED LSC310-403-305.												(6) GAEC EO RELEASE: JK 2/24/68
MODEL	EFFECTIVITY: PROCURING ACTIVITY NO. EI	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	RD			D. Tate					MHD Edmond
								DATE	2/13/68			2/15/68				2/16/68	2-24-68
									PROD	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG		EO NO
LM	LFM 143	LTA-5		✓		✓											
				PRIORITY C	DRAWING TITLE: CHECK, RELIEF & EXPLOSIVE VALVE INSTL, DESCENT PROPELLANT PRESSURIZATION SUB-SYSTEM							DRAWING NO. LDW270-25304					B2

ISSUED BY J. PAVLICA x1471 SECTION LM PROPULSION GROUP NO. 270 PL 25

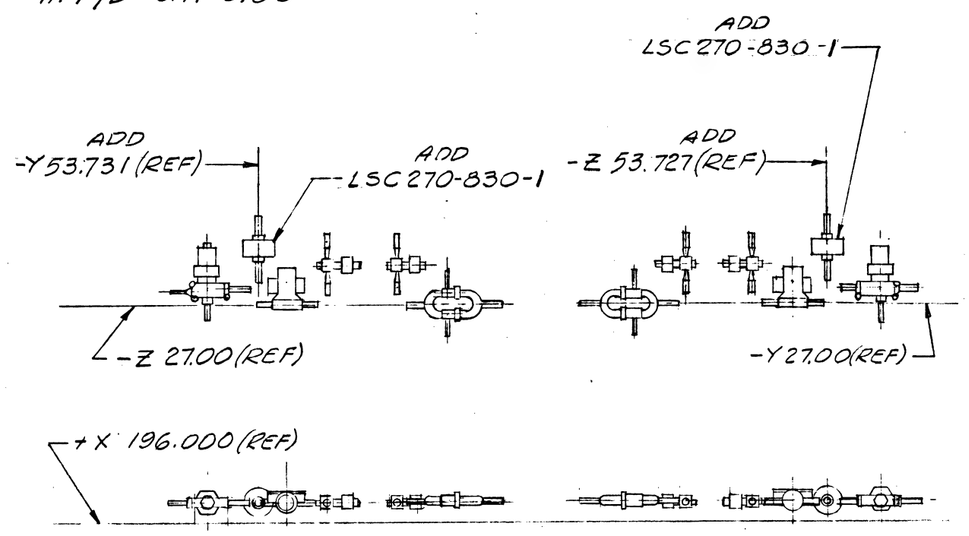
TO
NAS 9-1100

LFM

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW 270-25304 | EO NO. B4
CONTROL INFO NO. LM 270-1343

IN F/D SHT 3.00



REVISE -3 INSTL
AS SHOWN ABOVE
(SECT 7-E)

REVISE -1 INSTL.
AS SHOWN ABOVE
(SECT 3-B)

REVISE CALLOUTS
(SECT 8-C)

LDW 270-53311-1
WAS
LSC 270-818-5

(SECT 2-C)

LDW 270-53311-2
WAS
LSC 270-818-6

IN B/M SHT 2.00

REMOVE FROM -1 & -3

LSC 270-818-5	RELIEF VALVE	1 REQD
LSC 270-818-6	RELIEF VALVE	1 REQD

ADD TO -1 & -3

LDW 270-53311-1	RELIEF VALVE	1 REQD
LDW 270-53311-2	RELIEF VALVE	1 REQD

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	LCD 2721 CCA 959
REASON FOR EO: TO INSTALL BURST DISC LTA-5			DESCRIPTION OF EO: ON -1 & -3 ADDED: LSC 270-830-1 BURST DISC TO INSTL. REMOVED LSC 270-818-5 & -6, ADDED LDW 270-53311-1 & 2

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
LM	LFM 270	LTA-5 (1S)		✓		✓	

APPROVED BY	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
DATE						

PRIORITY: C
DRAWING TITLE: CHECK, RELIEF, EXPLOSIVE VALVE INSTL DESCENT PROPELLANT PRESS SUB-SYS
DRAWING NO.: LDW270-25304
EO NO.: B4

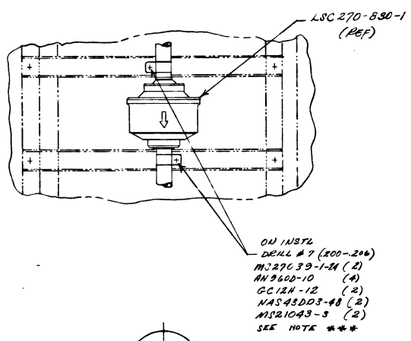
GAEC & EO RELEASE

ISSUED BY P. A. CAPPELLI 1471 SECTION PROPULSION GROUP NO. 270 PL 25

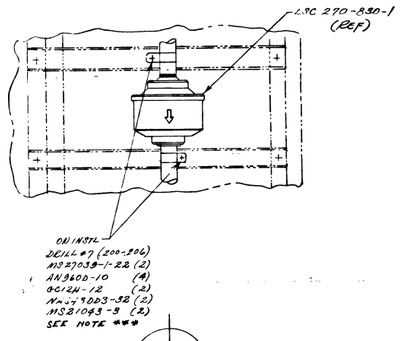
NAS 9-1100

ON-1 & -3 - ADD DETAILS AS SHOWN

DWG LDW270-25304 SH NO 2 OF 2
CONTROL INFO NO LDW 82-4009
ED NO B5



DETAIL *
LDW270-25304-1 (FUEL)



DETAIL **
LDW270-25304-3 (OX)

ADD NOTE ***
CLAMPING SHALL BE IN ACCORDANCE WITH LPC 110-22.

*, ** DENOTES NEXT AVAILABLE LETTERS
*** DENOTES NEXT NOTE NUMBER

DETAIL SPEC REQD	CLASS II ENGRG CHG	CLASS I ENGRG CHG	✓ LDD 2721-CCA 953	CONTROL INFO NO.	LDW 82-4009

REASON FOR ED: TO PROVIDE MOUNTING FOR BURST DISCS

DESCRIPTION OF ED: ON-1 & -3 ADDED DETAILS *, ** & NOTE ***

ED TO BE USED ON: 82

MODEL	LIFECYCLITY PROCURING ACT. NO.	LIFECYCLITY BASIC UNIT NO.	LIFECYCLITY SUB CONTR UNIT NO.
LM	LFM 270	LM1-5(15)	

DRAWING REVISION REQD: REVISE DWG ✓ — RECORD ED

DISPOSITION OF PARTS: SCRAP ✓ — REWORK

PRIORITY: C

B	PAW								
A	10/17								
	12/20								

SUPPORT | RELIAB GROUP | GROUP LEADER | STRESS GROUP | TUBING LAYOUT | PROJ ENGR

DRAWING TITLE: CHECK RELIEF & EXPLOSION VALVE INSTL. DESCENT PROPULSANT PRESS SUBSYSTEM

ENGINEERING ORDER
DRAWING NO. LDW270-25304
ED NO. B5

ISSUED BY: J. Hannan / P. Dalzell, SECTION CHIEF — DATE 12/20/66 — ASSC-105TF — GROUP NO. 274 — X5219 — PL 82 — CODE IDENT NO. 26512

GRUMMAN AIRCRAFT ENGINEERING CORP
BETHPAGE, L. I., N. Y.

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-25304 | EO NO. B6
CONTROL INFO NO. LM270-1942

ENG 32.1 REV 3-65

LFM INFO ONLY

ON -1 ASSY
LSC310-403-406-2 WAS LSC310-403-206

ON -3 ASSY
LSC310-403-105-2 WAS LSC310-403-305

ADD NOTE * LSC310-403-406-2 AND LSC310-403-105-2 ARE INSTALLED OPPOSITE TO THE NORMAL SYSTEM FLOW DIRECTION.

* USE NEXT AVAILABLE NOTE NUMBER

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCD 5542 D	REG 2

REASON FOR EO: PERMIT VALVE FUNCTION IN A LIQUID VENTING MODE

DESCRIPTION OF EO: ADDED LFM INFO.

GAEC EO RELEASE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM #598	LTASR(152)	

DRAWING CHANGE REQD: ✓ REVISE DWG; RECORD EO
DISPOSITION OF PARTS: ✓ REWORK; SCRAP

APPROVED BY									
DATE	9/4/70	PROD	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	EOT
					KB 9/10/70			9/2/70	9/3/70

PRIORITY: C

DRAWING TITLE: CHECK, RELIEF-BURSTING VALVE INSTL-DESCENT PROPELLANT PRESSURIZATION SUB-SYSTEM

DRAWING NO. LDW270-25304

EO NO. B6

ISSUED BY J. PAVLICA x1472 SECTION LM PROPULSION GROUP NO. 357 PL 39

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO	LDW270-25305		EO NO.	A2
CONTROL INFO NO.	LEM 270-640			

SHEET 2.00
IN B/M FOR-1 INSTL - LSC270-813-25 Qty 4 (WAS) Qty 5
GB511J-08-2 Qty 12 (WAS) Qty 15

FOR-3 INSTL - LSC270-813-24 Qty 4 (WAS) Qty 5
GB511J-08-2 Qty 15 (WAS) Qty 18

SHEET 3.00
IN F/D FOR-1 INSTL - REVISE CALLOUT - LSC270-813-25 (4) WAS (5)
GB511J-08-2 (12) WAS (15)

REMOVE CALLOUT - TEST LUNAR DUMP OX
GQ9448

FOR-3 INSTL - REVISE CALLOUT - LSC270-813-24 (4) WAS (5)
GB511J-08-2 (15) WAS (18)

REMOVE CALLOUT - TEST LUNAR DUMP FUEL
GQ9449

2

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG

REASON FOR EO
REMOVE REQMTS FOR 1 EA. LSC270-813-24 & -25 DISC. CPLG

DESCRIPTION OF EO
FOR-1 REMOVED 1-LSC270-813-25 CPLG, 3-GB511J-08-2 BOLTS & *GQ9448. FOR-3 REMOVED 1 LSC270-813-24 CPLG, 2-GB511J-08-2 BOLTS & *GQ9449

GAEC EO RELEASE: 9-10

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LTA-5 (1S)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		✓	

APPROVED BY	PROP	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
DATE	7-1			11/4	11-15		7-10-66

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	DISCONNECT COUPLING INSTL - DESCENT STAGE - PROP PRESS. SUB-SYSTEM	LDW270-25305	A2

ISSUED BY N. GRAUL x1471 SECTION PROPULSION GROUP NO. 270 PL 35

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-25305 | EO NO. A3
CONTROL INFO NO. LEM 270-644

IN B/M & F/D FOR-1 INSTL

REMOVE 12 - GB511J-08-2 BOLT
ADD 12 - NAS1132V-1 BOLT

FOR-3 INSTL

REMOVE 15 - GB511J-08-2 BOLT
ADD 15 - NAS1132V-1 BOLT

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG

REASON FOR EO: SUBSTITUTE HARDWARE - ORIG CALL OUT NOT AVAIL

DESCRIPTION OF EO: IN B/M & F/D FOR-1 & -3 REMOVED GB511J-08-2(12)-1 ADDED NAS1132V-1(12) FOR-1, (15) FOR-3, (15)-3

GAEC EO RELEASE: FR 9/14/66

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LTA-5 (1S)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: REWORK | SCRAP ✓

APPROVED BY	PROJ	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
H. Dreyfuss				W.H.			
DATE 9/2/66	9/2/66			9/2/66		9-13-66	9/13/66

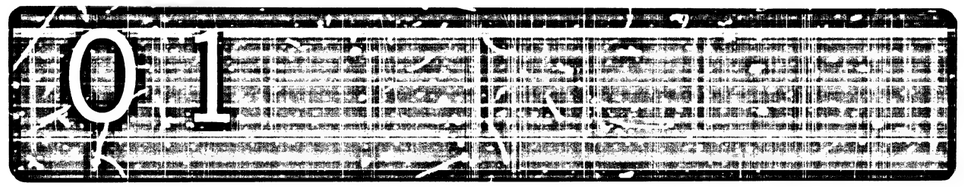
PRIORITY: C

DRAWING TITLE: DISCONNECT COUPLING INSTL - DESCENT STAGE - PROP. PRESS. SUB-SYSTEM

DRAWING NO.: LDW270-25305

EO NO.: A3

ISSUED BY N GRAUL X1471 9/7/66 SECTION PROPULSION GROUP NO. 270 PL 35



NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-25305		EO NO. A4
CONTROL INFO NO. LEM 270-649		

SHEET 3.00

TO CALLOUT - NAS1132V-1 (2 PLACES)
ADD - (SEE NOTE *)

ADD NOTE * ADD 1-AN960C8L WASHER PER BOLT WHERE REQUIRED.

* USE NEXT AVAILABLE NOTE NUMBER

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG

REASON FOR EO: ADD WASHER WHERE BOLT GRIP LENGTH PREVENTS PROPER SQUEEZE

DESCRIPTION OF EO: IN F/D - ADDED SEE NOTE * TO BOLT CALLOUT. ADDED NOTE *

GAEC EO RELEASE: FR 9/14/66

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	DATE	WTS.	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
LEM		LTA 515						[illegible]	9/6/66				[illegible] 9-7	9/12/66		9/13/66

PRIORITY: C

DRAWING TITLE: DISCONNECT COUPLING INSTL - DESCENT STAGE - PROP. PRESS. SUBSYSTEM

DRAWING NO.: LDW270-25305

EO NO.: A4

ISSUED BY U. GRAUL x1471 SECTION PROPULSION GROUP NO. 270 PL 35

01

NAS 9-1100

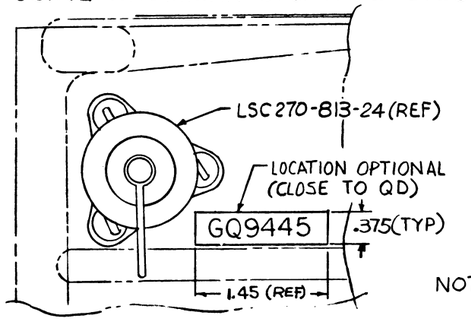
ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LDW270-25305		EO NO. A5
CONTROL INFO NO. LM270-685		

MANUFACTURE & INSTALL IDENTIFICATION TAPES, MARK IN APPROX AREA AS SHOWN IN ACCORDANCE WITH LSP-14-002, TYPE VII, CL. 2, MARK 4/16 HIGH LETTERS. USING GRUMMAN STD. TAPE GT535B-1-145 SILVER & GT535B-2-145 CLEAR NOTE *



TYP. INSTALLATION

TAPES REQD-FOR INSTL-SEE DWG FOR LOCATION OF SPECIFIC GQ NO.

GQ9425	GQ9433	GQ9445
GQ9430	GQ9440	
GQ9431	GQ9441	
GQ9432	GQ9444	

NOTE TO MFG: PRIOR TO INSTALLING THE ABOVE DESCRIBED TAPES REMOVE DYMO LABELS PRESENTLY AFFIXED TO INTERFACES.

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG

REASON FOR EO: IDENT. LABELS NOT PROVIDED FOR T&Y CREW PROD. GP FOR LTA5D

DESCRIPTION OF EO: IN F/D ADDED GT535 TAPE TO GQ INTERFACE -14-3 INSTLS. ADDED NOTE *

GAEC EO RELEASE 16108

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY: DATE	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	EO NO.
LM		LTA5 (15)		✓		✓		10-5 PROP				10/15/66			A5

PRIORITY: C

DRAWING TITLE: DISCONNECT COUPLING INSTL-DESCENT STAGE-PROP PRESS. SUB-SYSTEM

DRAWING NO. LDW270-25305

ISSUED BY N. GRAUL K1471 SECTION PROPULSION GROUP NO. 270 PL 35

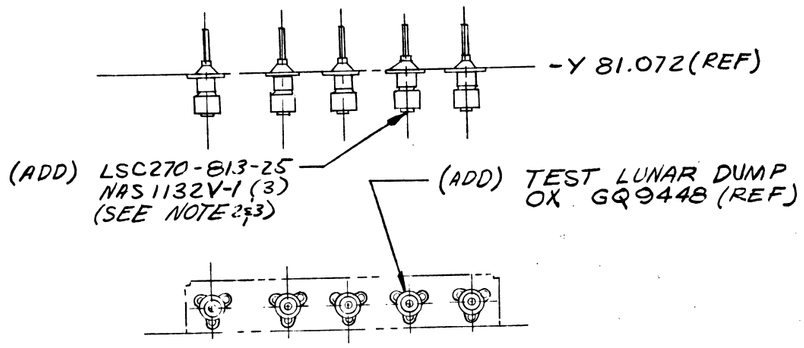
NO 1
NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

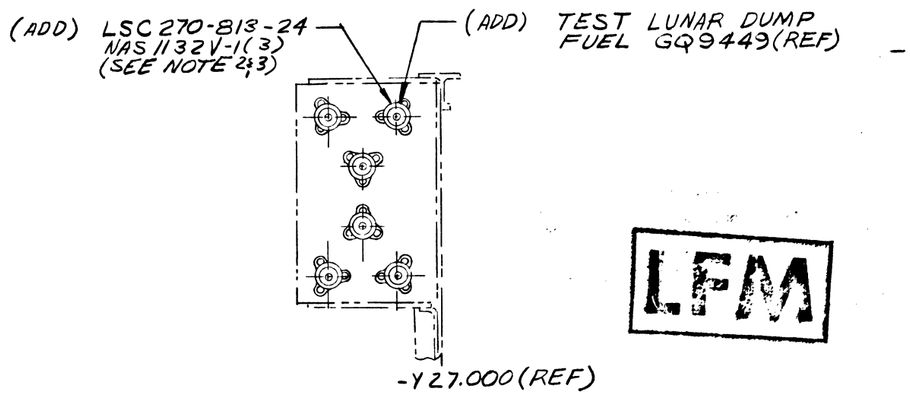
ENG 32.2 REV 3-65

DWG. NO. LDW270-25305		EO NO. A6
CONTROL INFO NO. LM270-1191		

IN FIELD & B/M REVISE -1 ASSY AS SHOWN BELOW:



IN FIELD & B/M REVISE -3 ASSY AS SHOWN BELOW:



ADD TO NOTE 3. GQ9449, GQ9448

LFM

NAS 9-1100

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCD 2672 CCA 667	(5)

REASON FOR EO: ADD COMPLETE LUNAR DUMP SYSTEM TO LTA-5

DESCRIPTION OF EO: IN FIELD & B/M FOR -1 ADDED LSC270-813-25 NAS1132V-1(3) TEST LUNAR DUMP OX. FOR -3 ADDED LSC270-813-24 NAS1132V-1(3) TEST LUNAR DUMP FUEL ADDED GQ9449 & GQ9448 TO NOTE 3.

(B) GAEC EO RELEASE: JK 2-14-68

MODEL	EFFECTIVITY: ~~PREVIOUS~~ NEXT ASSY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM	LFM 143	LTA-5(1S)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		✓	

APPROVED BY	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
DATE: 2/19/68 PROP			2/22/68		2/21/68	2-24-68

PRIORITY: C

DRAWING TITLE: DISCONNECT COUPLING INSTL-DESCENT PROPELLANT PRESSURIZATION SUB-SYSTEM

DRAWING NO.: LDW270-25305

EO NO.: A6

ISSUED BY: J. PAVLICA x1471 SECTION: LM PROPULSION GROUP NO.: 270 PL: 25

LDW270-25306 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
	LEM	LDW270-51300	LEM-1 (31)	1
	LCM	LDW270-25300	LM-3 (10)	1
PART NO. LDW270-25306-1		GAEC SCH NO. 55	

2

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	
LAST DASH NO. USED	-1

GRUMMAN REL INFO A
PRIM NO. 486

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
~ ~ ~

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS 9 1100 — LINE ITEM 9 — DOCUMENTATION TYPE II

DRAWN BY	N. GRAUL 4/28/66	RELIABILITY		
LAYOUT BY	N. GRAUL			
CHECKED BY	D. Waldo 4-29-66			
GR LEADER				
PROPULSION				
V.D.I		PROJ ENGR		
STRESS		REL GROUP		
WEIGHTS	L. Garcia 5/4/66.			

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

EXPLOSIVE VALVE INSTALLATION
DESCENT PROPELLANT
PRESSURIZATION SUBSYSTEM

SIZE	CODE IDENT NO.	
B	26512	LDW270-25306 A

SCALE NONE — SHEET 1.00 OF 4

ENG 77.1 12-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	LTR W NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00, 1.10, 2.00, 3.00					✓	EO A1	REMOVED- AN814-3C(2) & MS28775-003(2) FROM LIST OF MATL. & FLD. OF DWG. REMOVED NOTE #3, ADDED NOTE #6 SH 1 OF 4 WAS 1 OF 3 ADDED SH 1.10	LTA-5(15) LEM-1(31)	✓	SCRAP (EW)	KLUGE 8-8-66		

CHG APPROVED	LTR	GROUP LDR	PROPULSION	V.D.I.	STRESS	WEIGHTS	RELIABILITY					
	A											

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW-270-25306	A

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01 NAS 9-1100

C.L.	QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
C												
C	2		MS21043-3	E	NUT	STD PART						
C												
C	2		GB511J-3-14	E	BOLT	GRUMMAN STD						
L	1		LSC270-714-3	S	EXPLOSIVE VALVE	SEE NOTE #2						
C			LDW270-28306-1	E	VALVE INST'L							
	-1											

CLEANLINESS LEVEL PER LSP-14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-25306	A

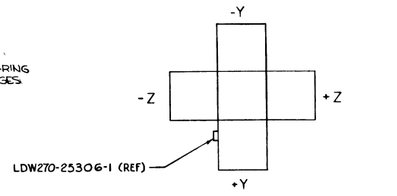
SCALE NONE SHEET 2.00

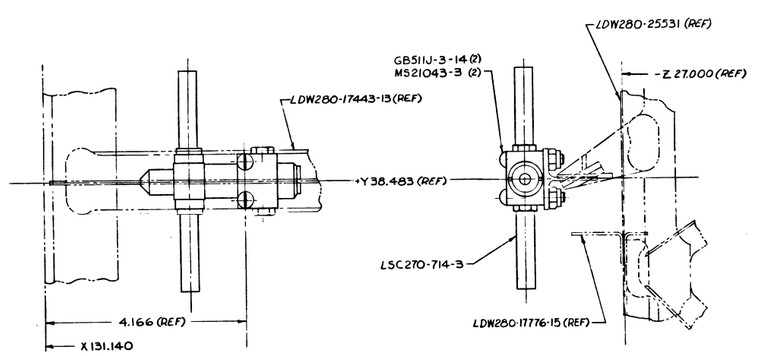
ENG 77.2 7-65

NAS 9-1100

NOTES:

1. FOR MOCKUP OF THIS INSTALLATION USE MOCKUP VALVE LMU270-80014-1.
2. BEFORE ORDERING SEE SPECIFICATION CONTROL DRAWING LSC270-714.
3. PLUG PORTS USING AN814-36 PLUG AND MS28775-008 O-RING PRIOR TO INSTALLING THE VALVE. THE PLUG & O-RING SHALL REMAIN INSTALLED UNTIL THE BOOSTER CARTRIDGES ARE INSTALLED PER DWG LDW320-25400 (LTA-5) AND LDW320-51400 (LEM-1).
4. PARTS SHALL BE CLEANED IN ACCORDANCE WITH LSP-14-7072 AND SHALL CONFORM TO LSP-14-0011 LEVEL "C".
5. INSTALL FASTENERS PER LSP-14-15306.
6. PLASTIC PLUGS TO REMAIN IN INITIATOR PORT UNTIL THE BOOSTER CARTRIDGES ARE TO BE INSTALLED PER DWG LDW320-25400 (LTA-5) AND LDW320-51400 (LEM-1)





LDW270-25306-1 VALVE INSTALLATION

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.

- PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.
- FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010; .063R TO .250R ± .015; OVER .250R ± .030
- DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.
- EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
- DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
- MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
- DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
- HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
- ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
- 16 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
- 250 FOR ALL DRILLED HOLES
- REMOVE ALL BURRS BREAK ALL EDGES .015-.030
- INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
- SYMBOL ∮ DENOTES SURFACE TO BE MACHINED
- UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
- LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
- TOLERANCE ON LOFTED DELINEATIONS IS

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK		
LEM	SIZE C	CODE IDENT NO. 26512	LDW270-25306 A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00

LDW270-25306-A

NAS 9-1100

B

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-25306		EO NO. B1
CONTROL INFO NO. LM270-938		

RESTRICT NOTE 3 TO LTA5 (15) ONLY
ADD NOTE *, "LDW270M10039-11 & GS570W-1 SHALL BE INSTALLED IN LSC270-714-3 EXPLOSIVE VALVE INITIATOR PORTS, HAND TIGHT FOR SHIP MENT & STORAGE. FOR LM1(31) ONLY."

ADD IN FIELD TO LSC270-714-3 (SEE NOTE *).

ADD TO B/M, FOR -1 INSTL, LDW270M10039-11 (SEE NOTE *), 2 REQD. & GS570W-1 (SEE NOTE *).

* USE NEXT AVAILABLE NOTE NUMBER

DETAIL SPEC REQ		CL II ENGRG CHG	X	CL I ENGRG CHG		LCD1571

5

REASON FOR EO
TO PROVIDE A PERMANENT SHIPPING PLUG FOR EXPLOSIVE VALVES

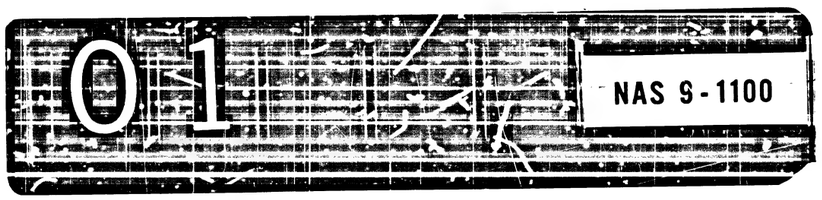
DESCRIPTION OF EO
RESTRICT NOTE 3 TO LTA5 ONLY
ADDED NOTE * ADDED LDW270M10039-11 & GS570W-1 2 REQ'D FOR -1 TO B/M

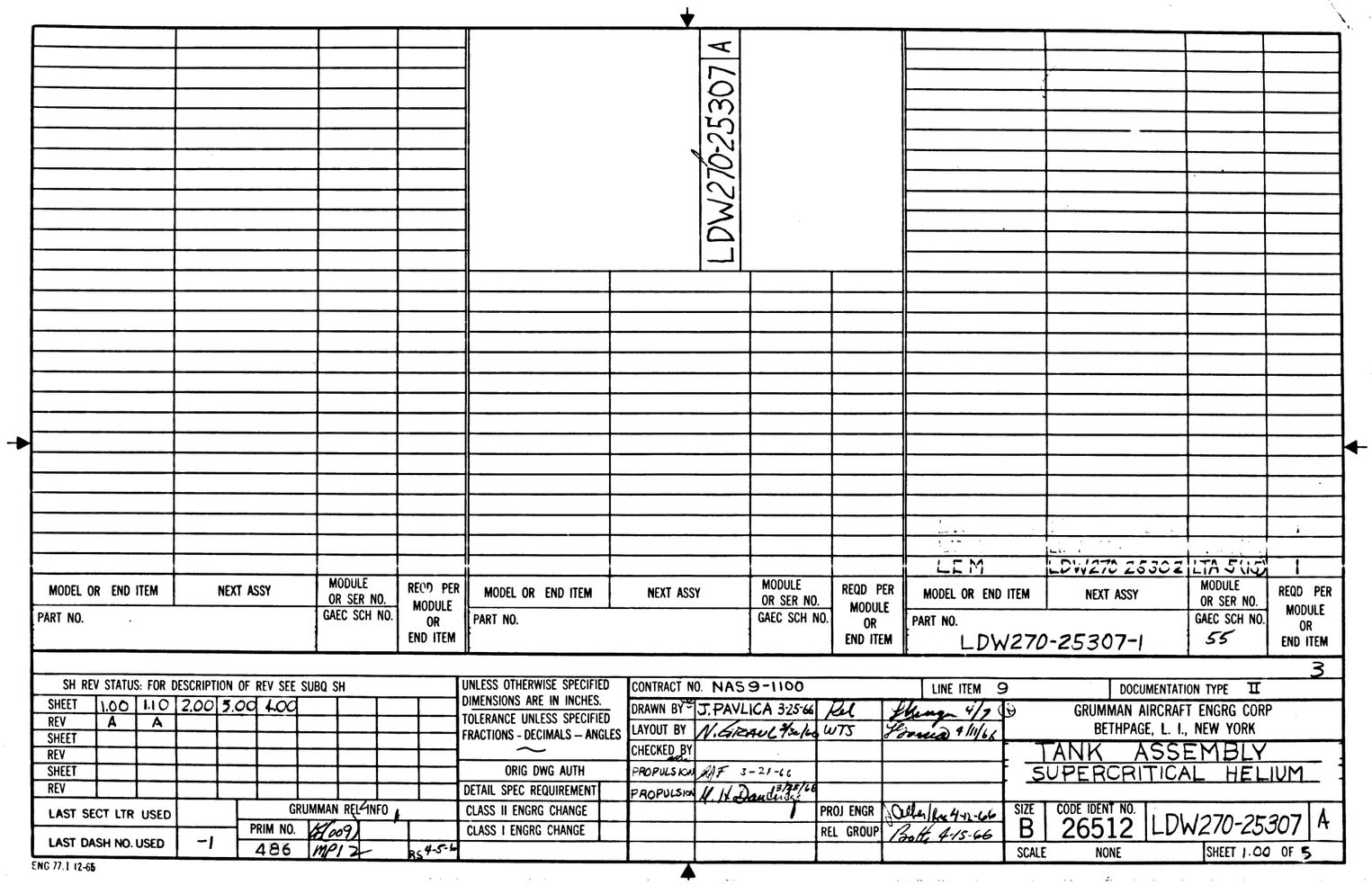
GAEC EO RELEASE: VK 6/13/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	DATE	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
LM		LM1 (31)		✓		✓		RB	6/13/67						
								5	PROP						

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	EXPLOSIVE VALVE INSTL-DESCENT PROP. PRESSURIZATION SUB-SYSTEM	LDW270-25306	B1

ISSUED BY A. HENDRICKS X1471 13 JUNE 1967 SECTION PROPULSION GROUP NO. 345 PL 25





MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LEM	LDW270 25302	LTA 5 (LM)	1
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW270-25307-1		GAEC SCH NO. 55	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	1.10	2.00	3.00	4.00				
REV	A	A							
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO	
LAST DASH NO. USED	-1	PRIM NO.	(009)
		486	MP17

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100 | LINE ITEM 9 | DOCUMENTATION TYPE II

DRAWN BY	J. PAVLICA 3-25-66	Rel	4/7
LAYOUT BY	N. GIRAUD	WTS	4/11/66
CHECKED BY			
PROPULSION	MF 3-21-66		
PROPULSION	M. H. Davis 3/28/66		
PROJ ENGR			4-12-66
REL GROUP			4-15-66

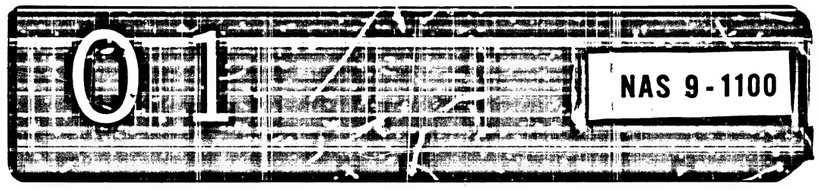
GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

TANK ASSEMBLY
SUPERCRITICAL HELIUM

SIZE	CODE IDENT NO.		
B	26512	LDW270-25307	A

SCALE NONE | SHEET 1.00 OF 5

ENG 77.1 12-65



REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00, 1.10					✓	EO A1	SH 1.00 OF 5 WAS SH 1.00 OF 4 ADDED SH 1.10 IN MODEL BLOCK ADDED N/A-LDW270-25302-LEM-1(31)-1 REQD	LEM-1	NOT	REQD	T. FREDA 6-22-66	X	X
	2	1.00,						EOA2	FOR-1 IN MODEL BLOCK REMOVED LEM-1 REQUIREMENT	LEM-1		✓			

CHG APPROVED	LTR	GROUP LDR	PROPULSION	PROPULSION	WEIGHTS	RELIABILITY					
	A										

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-25307	A

SCALE NONE SHEET 1.10

ENG 77.10 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		LDW270-25307-1	S	TANK ASSY	(MAKE FROM LSC270-821-13)			SEE NOTES	1 THRU 8		

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : LPC 19-3 (VENDOR) LPC 19-2 (GRUMMAN)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW270-25307

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTES:

1. LSC270-821-13 ACCEPTANCE TESTS SHALL BE IN ACCORDANCE WITH SPECIFICATION LTP270-29.
2. AFTER ACCEPTANCE AND JUST PRIOR TO INSTALLATION CUT TUBES OFF ON ELECTRO ETCHED CUTOFF LINE IN ACCORDANCE WITH LSP14-17400A USING AEROQUIP CUTOFF, DEBURRING AND SIZING TOOLS; AEROQUIP AE 506 SERIES OR EQUIVALENT.
3. EXTREME CARE MUST BE EXERCISED IN ORDER TO PREVENT DAMAGE TO, OR CONTAMINATION OF THE TANK AND GLASS BEAD PEENED AREAS OF THE TUBE STUBS DURING CUTTING, DEBURRING AND SIZING.
4. CLEANLINESS PER LSP14-0011 LEVEL "L" MUST BE MAINTAINED DURING CUTTING, DEBURRING AND SIZING.
5. THE TUBE TO BE CUT SHALL BE UNCAPPED AFTER PURGE PRESSURIZATION AND PRIOR TO CUTTING TO INSURE CLEANLINESS.
6. THE TUBE TO BE CUT SHALL BE POINTED IN A DOWNWARD DIRECTION DURING THE CUTTING, DEBURRING AND SIZING OPERATIONS.
7. DURING THE CUTTING, DEBURRING AND SIZING OPERATIONS TUBING SHALL BE PURGED WITH 10 MICRON ABSOLUTE FILTERED NITROGEN OR HELIUM GAS IN ACCORDANCE WITH THE FOLLOWING TABLE:

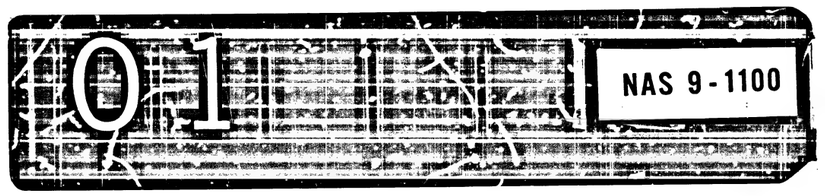
TUBE TO BE CUT	APPLICATION POINT	PURGE PRESSURE
TUBE "A"	FILL COUPLING	5.0 ± 1.0 PSIG
TUBE "B"	TUBE "C"	
TUBE "C"	TUBE "B"	
TUBE "D"	TUBE "E"	
TUBE "E"	TUBE "D"	5.0 ± 1.0 PSIG

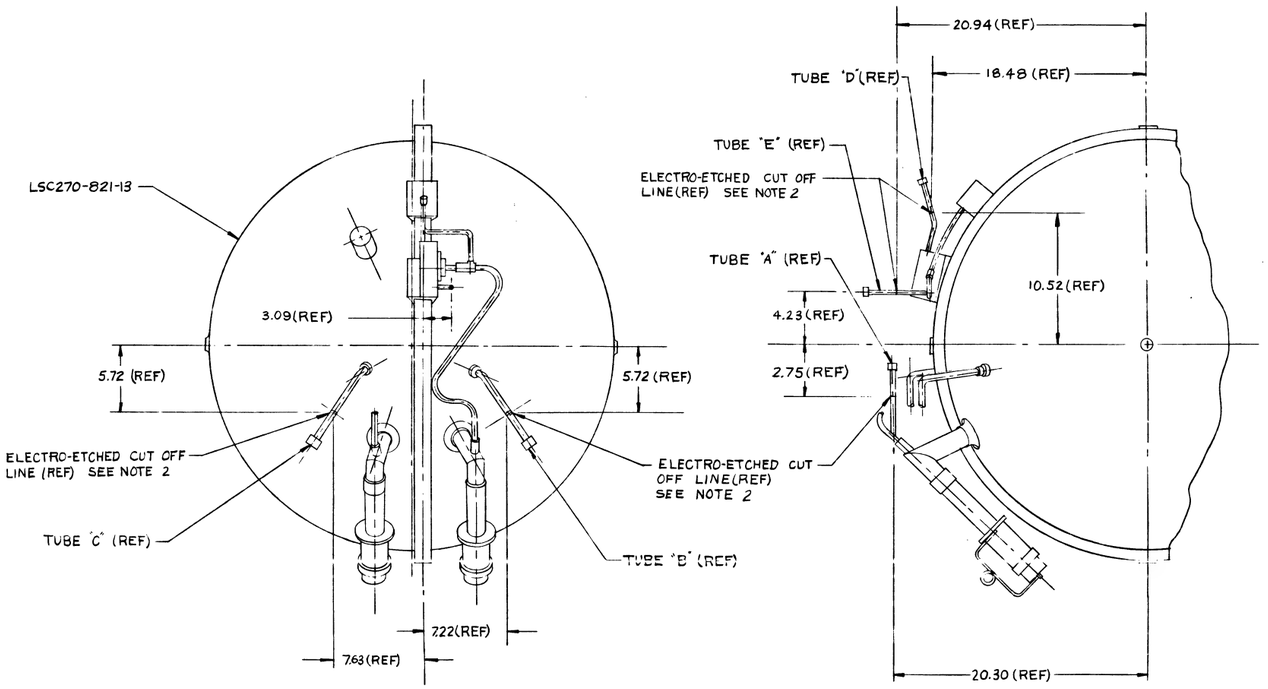
8. AFTER CUTTING OPERATIONS CAP STUB ENDS PER LSP14-009.

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-25307	
SCALE NONE			SHEET 3.00

ENG 73.1 6-64





MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.

FILLET AND INSIDE CORNER RADII TOLERANCES
.016R TO .062R ± .010
.078R TO .250R ± .015
OVER .250R ± .030

DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS TO IMP. THDS. BEYOND PERMISSIBLE

EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.

DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.

MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.

DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING

HOLES MUST BE REFI FREE OF CHROME PLATING SOLUTION

ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES

125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL STD-10

200 FOR ALL DRILLED HOLES

REMOVE ALL BURRS. BREAK ALL EDGES .015-.031

INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS

SYMBOL ⚠ DENOTES SURFACE

UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32

LENGTHS OF AN, NAS & NS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED

TOLERANCE ON LOFTED DELINEATIONS IS

LDW270-25307-1

	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK		
LEM	SIZE D	CODE IDENT NO. 26512	LDW270-25307
MODEL OR END ITEM	SCALE NONE		SHEET 4, 0 C

DWG 73-3 644

LDW270-25307

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-25307 | EO NO. B1
CONTROL INFO NO. LM270-1431

SHT. 1.00: IN M/B, REMOVE -1 ASS'Y AND REPLACE WITH -2 ASS'Y.

SHT. 2.00: IN B/M, REMOVE -1 ASS'Y (MAKE FROM LSC270-821-13) AND REPLACE WITH -2 ASS'Y (MAKE FROM LDW270-25311-1)

SHT. 3.00: IN NOTE 1., CHANGE "LSC270-821-13" TO "LDW270-25311-1" AND CHANGE "LTP270-29" TO "SMP2645".

SHT. 4.00: IN F/D, CHANGE "-1 ASS'Y." TO "-2 ASS'Y." AND CHANGE "LSC270-821-13" TO "LDW270-25311-1".

ADD LTA-5R(159) & REMOVE LTA-5(15) IN M/B

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD 5430

REASON FOR EO: UPDATING LTA-5 SHE TANK

DESCRIPTION OF EO: REPLACE -1 ASS'Y WITH -2 ASS'Y. (5)

GAEC EO RELEASE: VK 2/19/70

MODEL	EFFECTIVITY: PROCURING ACTIVITY NOE	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LEM563	LTA-5R (159)	

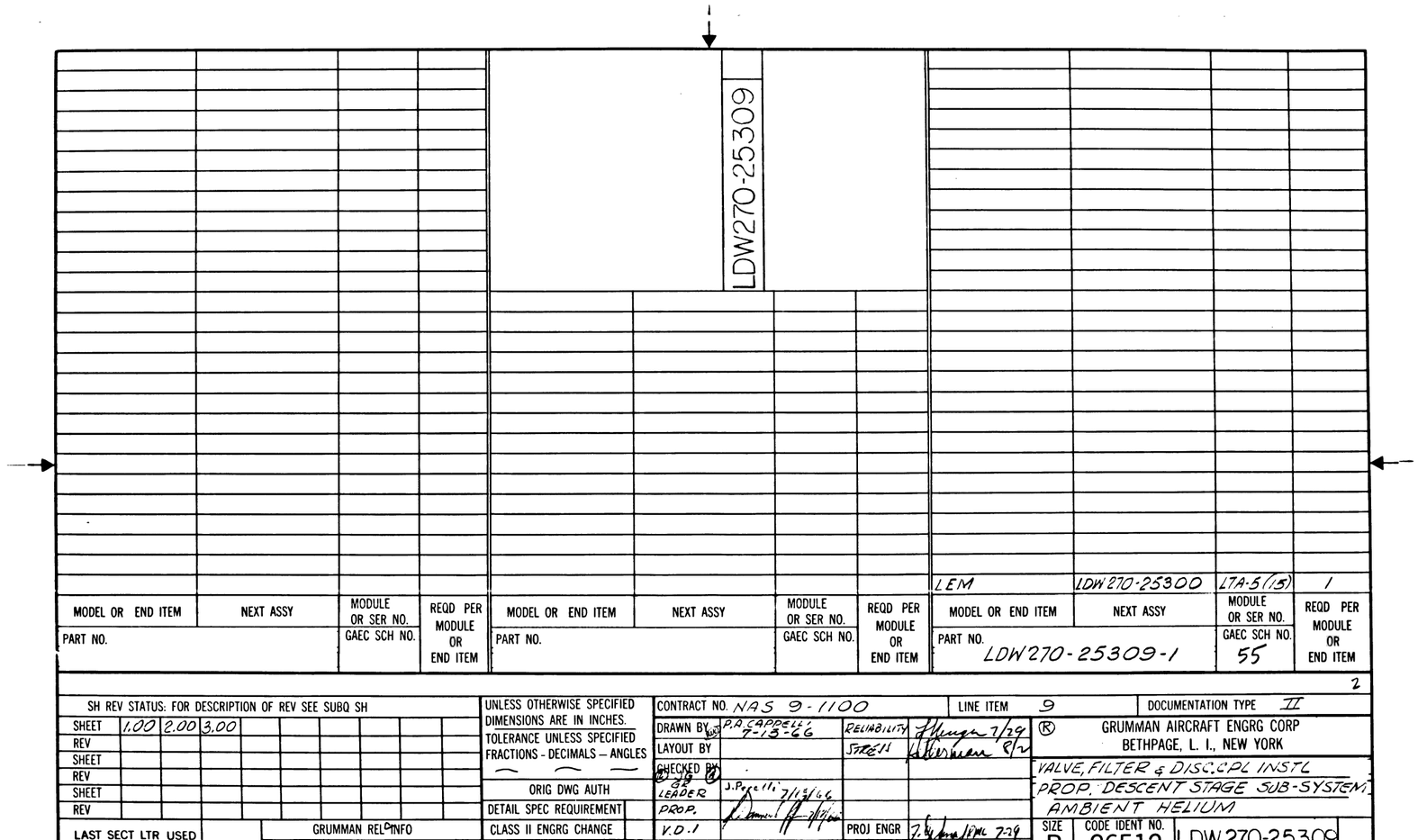
DRAWING CHANGE REQD: ✓ REVISE DWG | RECORD EO
DISPOSITION OF PARTS: ✓ REWORK | SCRAP
PRIORITY: C
DRAWING TITLE: TANK ASSEMBLY SUPERCRITICAL HELIUM
DRAWING NO.: LDW270-25307
EO NO.: B1

APPROVED BY	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
RB					RB	
DATE			2/19/70		2/20/70	2/19/70
PROP						

ISSUED BY G. CUDONE (1661) 2/27/70
SECTION PROPULSION GROUP NO. 270 PL 25

01

NAS 9-1100



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LEM	LDW270-25300	LTA-5(1.5)	1
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW270-25309-1		GAEC SCH NO. 55	

2

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	2.00	3.00						
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO	
LAST DASH NO. USED	-1	PRIM NO. FR(2099) 486 MP 9/21/66	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS — ANGLES

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS 9-1100 LINE ITEM 9 DOCUMENTATION TYPE II

DRAWN BY	P.R. CAPPELLI 7-13-66	RELIABILITY	7/29
LAYOUT BY		STRESS	8/2
CHECKED BY			
GE LEADER	J. Pugelli 7/13/66		
DROP.	7/17/66		
V.D.I		PROJ ENGR	7-29
STRESS	9/21/66	REL GROUP	8-3-66
WEIGHTS			

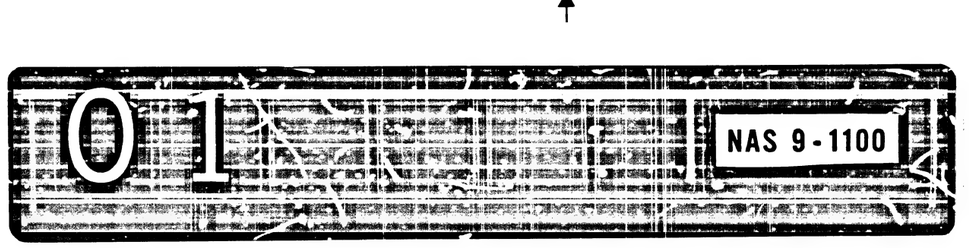
GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

VALVE, FILTER & DISC. CPL INSTL
PROP. DESCENT STAGE SUB-SYSTEM
AMBIENT HELIUM

SIZE	CODE IDENT NO.	
B	26512	LDW270-25309

SCALE NONE SHEET 1.00 OF 3

ENG 77.1 12-65



		QTY PER ASSEMBLY	PART NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
C		18	MS21043-3	E		NUT	STD PART						
C		18	AN960D10L			WASHER	STD PART						
C		12	AN960D8L			WASHER	STD PART						
C		1	GC12H-21			CLAMP	GRUMMAN STD						
C		2	GB511J3-13			BOLT	↕						
C		4	GB511J3-2			↕	↕						
C		12	GB511J3-1			↕	↕						
C		12	GB511J08-2			BOLT	GRUMMAN STD						
K		3	LSC400V0502-3			SOLENOID VALVE	SEE DWG						
K		1	LSC270-813-31			DISC COUPL	↕						
K		1	LSC270-714-3			EXPL VALVE	↕						
K		1	LSC270-712-1			FILTER	↕						
K		3	LDW280-17996-1			BRACKET	↕						
K			LDW270-25309-1	E		VALVE, FILTER & DISC CPL	INSTL						
CL		-1											

CLEANLINESS LEVEL PER LSP 14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH NONE

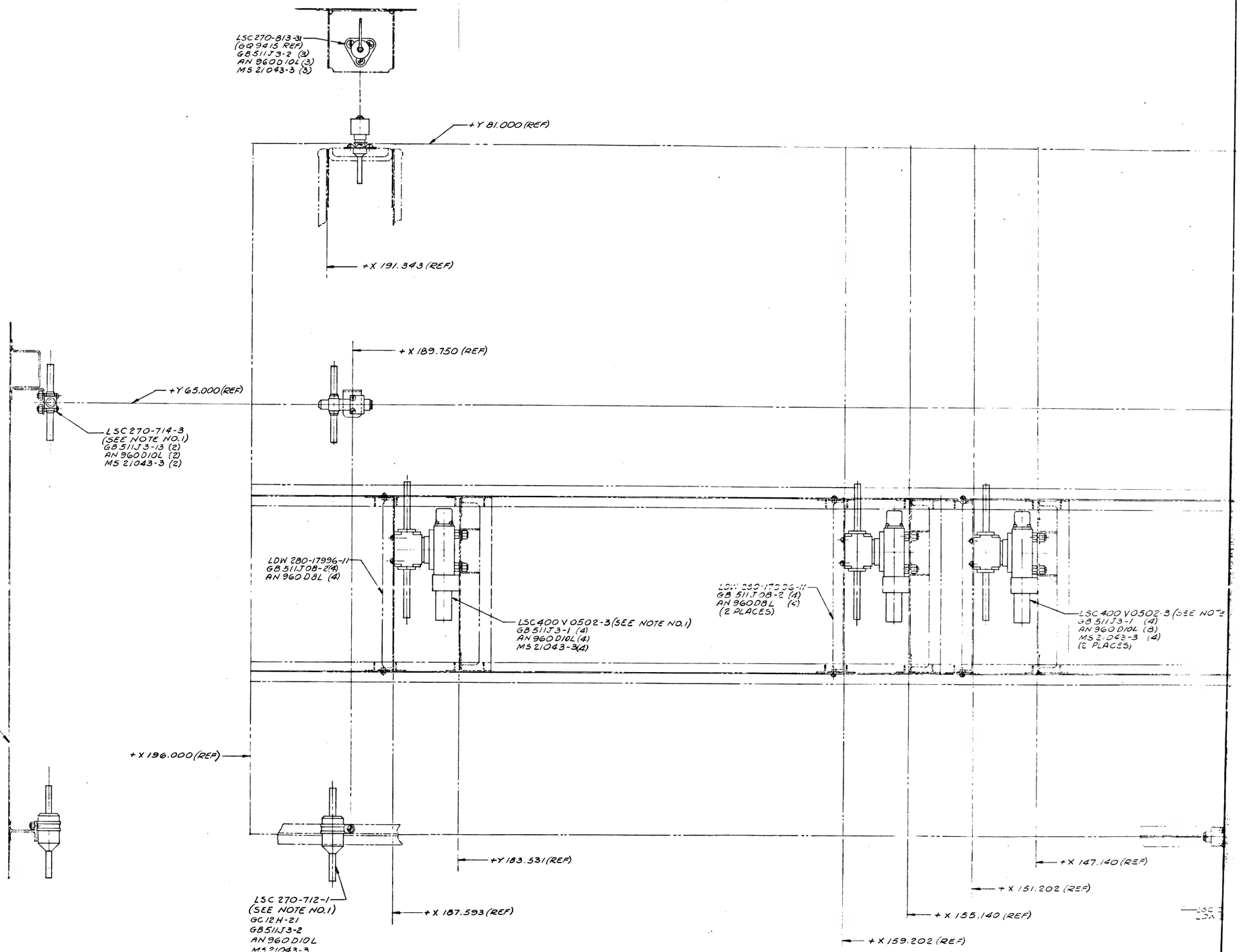
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW270-25309

SCALE NONE SHEET 2.00

ENG 77.2 5-64

0-1 NAS 9-1100



LDW 270 25309-1 INSTALLATION

01702 NAS 9-1100

CODE IDENT 26512

LDW 270-25309 SHT 9.00

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.	
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2.5 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
250 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ⌐ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

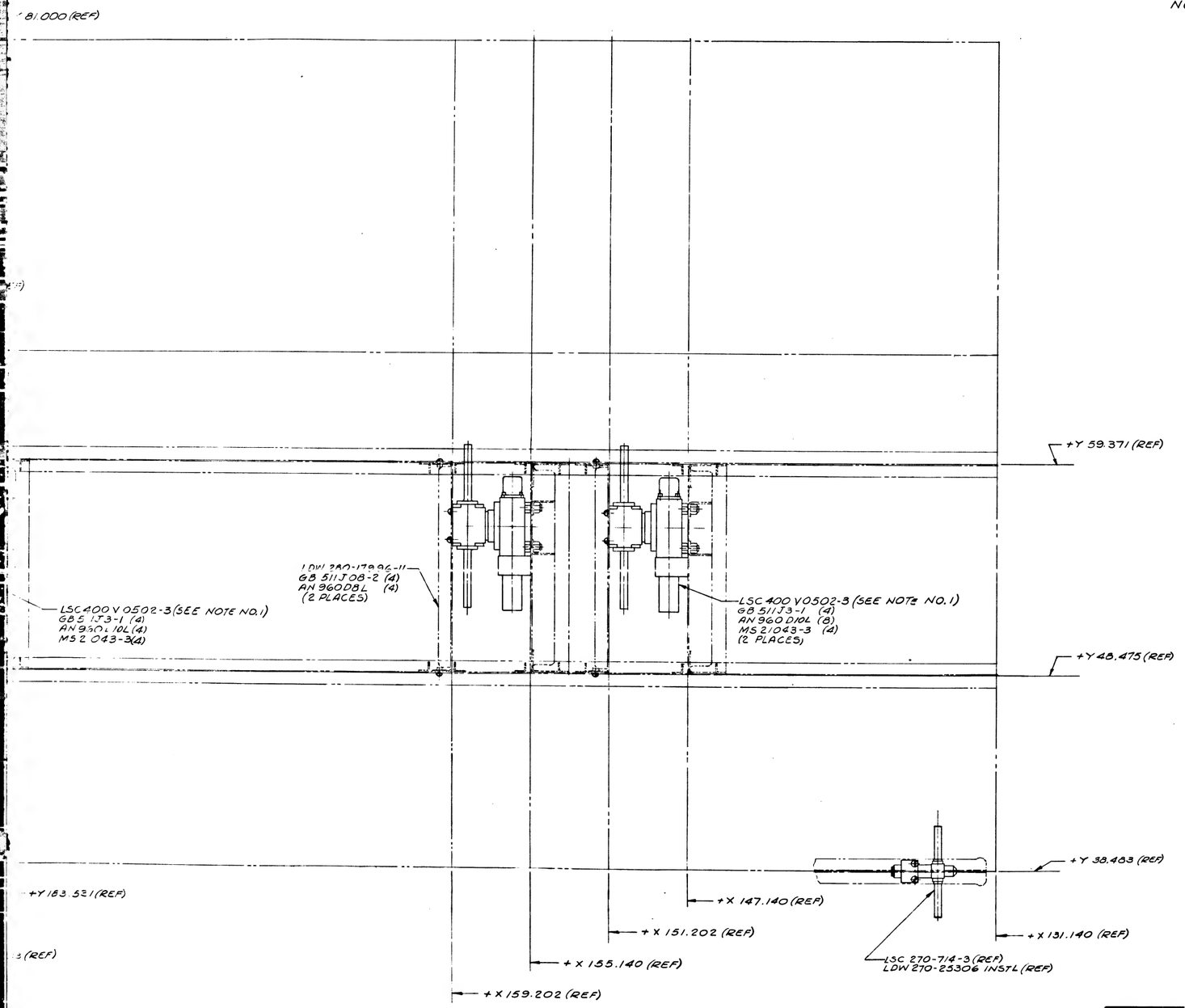
DWG SIZE 34

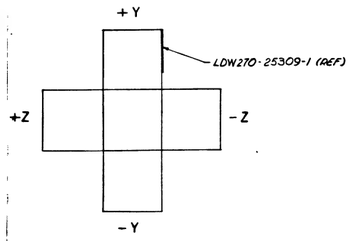
PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X 72)= 18.0 SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL)= 4.5 SQ. FT.

PRINT TRIM LINE

NOTE :

1. BEFORE ORDERING COMMERCIAL PARTS SEE SPECIFICATION CONTROL DRAWING.





LDW 270 25309-1 INSTALLATION

02/02

NAS 9-1100

CODE IDENT 26512	
LDW 270-25309	SHT 3.00

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE J	CODE IDENT NO. 26512	LDW 270-25309	
LEM MODEL OR END ITEM	SCALE 1/2	SHEET 3.00	

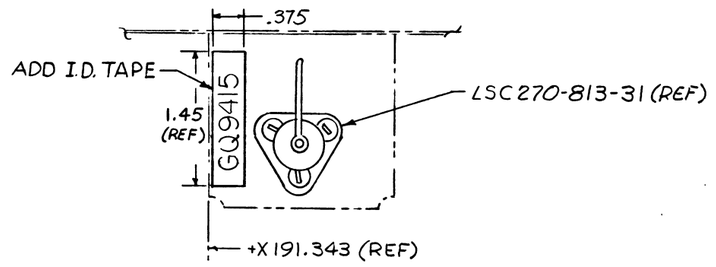
LDW270-25309
LDW270-25309
A

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-25309 | EO NO. A1
CONTROL INFO NO. LM 270-686

MANUFACTURE & INSTALL IDENTIFICATION TAPE - NOTE * MARK IN APPROX. AREA AS SHOWN IN ACCORDANCE WITH LSP-14-002, TYPE VII, CL 2, MARK 4/6 HIGH LETTERS. USING GRUMMAN STD. TAPE GT535B-1-145 SILVER & GT535B-2-145 CLEAR



NOTE TO MFG: PRIOR TO INSTALLING THE ABOVE DESCRIBED TAPE REMOVE DYMO LABEL PRESENTLY AFFIXED TO INTERFACE.

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG

REASON FOR EO: IDENT. LABELS NOT PROVIDED FOR BY CREW PROV. GP. FOR LTA-5D

DESCRIPTION OF EO: IN F/D ADDED GT535 TAPE TO Q.D. INTERFACE -1 INSTL. ADDED NOTE *

GAEC EO RELEASE: 16 | 108

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA-5 (15)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: REWORK ✓ | SCRAP

APPROVED BY	DATE	PROP	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ. ENGRG
	10-5	PROP				wje 14 Oct 66		LMP 10-5-66

PRIORITY: C
DRAWING TITLE: VALVE, FILTER & DISC, CPLG INSTL. PROP: DESCENT STAGE SUBSYS. AMB. He
DRAWING NO.: LDW270-25309
EO NO.: A1

ISSUED BY N. GRAUL X1471 SECTION PROPULSION GROUP NO. 270 PL 35

01
NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW270-25309	EO NO. A2
CONTROL INFO NO. LEM 270-675	

SHEET 1.00 IN L/M FOR -1 INSTL ADD - 24 AN960C10 WASHERS

SHEET 3.00 IN F/D ZONE 3B & 5B TO CALLOUT -

	LSC400V0502-3 (SEE NOTE 1)	LSC400V0502-3 (SEE NOTE 1)
	GB511J-3-1 (4)	GB511J-3-1 (4)
	AN960D10L (4)	AN960D10L (8)
	MS21043-3 (4)	MS21043-3 (4)
(ADD)	AN960C10 (8) (SEE NOTE *)	(ADD) AN960C10 (8) (SEE NOTE *) (2 PLACES)

IN NOTES - ADD NOTE * ADD 2 - AN960C10 WASHERS PER STUD BETWEEN VALVE AND STRUCTURAL MOUNTING SURFACE.

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	2

REASON FOR EO

ADD WASHERS TO BUILD VALVE OFF SUPPORT STRUCTURE TO PREVENT INTERFERENCE

DESCRIPTION OF EO

IN B/M FOR -1 ADDED 24 - AN960 C10 WASHERS
IN F/D ZONES 3B & 5B TO CALLOUT ADDED AN960 C10(8) (SEE NOTE *) ADDED NOTE *.

GAEC EO RELEASE 10-6

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LTA-5 (13)	

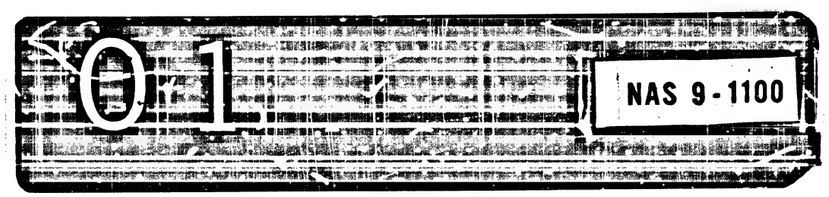
DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		✓	

APPROVED BY / DATE

SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
		9-9	9-2866		10/7/66

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	VALVE, FILTER 3" DISC GR66 INSTL - PROP DESCENT STAGE - SUBSYS - AMBIENT HELIUM	LDW270-25309	A2

ISSUED BY N GRAUL x1471 SECTION PROPULSION GROUP NO. 270 PL 35

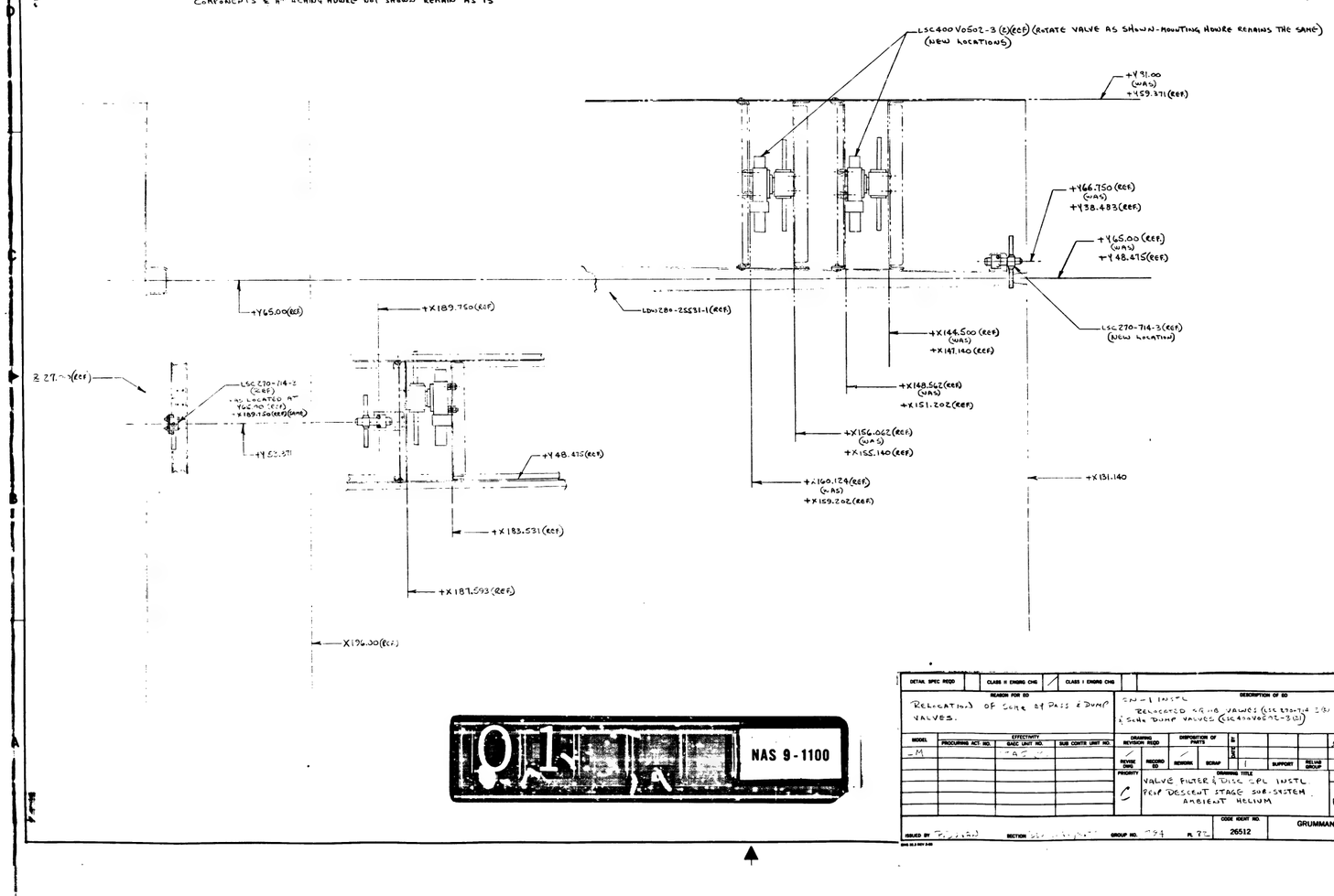


8 | 7 | 6 | 5 | 4 | 3 | 2 | 1

LTR	ZONE	REVISION	DATE	APPROVAL

DWG NO. LDW270-25509 | ED NO. A
CONTRC INFO. NO. LDW80-3976

ON-1 INSTL
REVISE LOCATIONS OF COMPONENTS AS SHOWN
COMPONENTS & MTG HDWE NOT SHOWN REMAIN AS IS



NAS 9-1100

DETAIL SPEC REQD	CLASS II ENGRG CHG	CLASS I ENGRG CHG	CONTROL INFO NO.

REASON FOR ED: RELOCATION OF SCRN & PASS & DUMP VALVES.

DESCRIPTION OF ED: ON-1 INSTL
RELOCATED ASCENT VALVES (LSC270-714-2 (3) & LSC400-V0502-3 (3))
& SCRN DUMP VALVES (LSC400-V0502-3 (2))

GRUMMAN ED RELEASE: JUL 7 64

MODEL	EFFECTIVITY: PROCURING ACT. NO.	BASIC UNIT NO.	SUB CONTR UNIT NO.
-M		-A1	

DRAWING REVISION REQD: REVISE DWG
DISPOSITION OF PARTS: RECORD ED; REWORK; SCRAP
NO. OF SETS AFFECTED: 1
SUPPORT | RELIAB GROUP | GROUP LEADER | STRESS GROUP | LIAISON ENGRG | PROJ MGR | QUAL

PRIORITY: C

DRAWING TITLE: VALVE FILTER & DISC CPL INSTL PERF DESCENT STAGE SUB-SYSTEM AMBIENT HELIUM

ENGINEERING ORDER
DRAWING NO: LDW270-25509
ED NO: A

ISSUED BY: [illegible] SECTION: [illegible] GROUP NO. 754 PL 72
CODE IDENT NO. 26512
GRUMMAN AIRCRAFT ENGINEERING CORP
BETHPAGE L I N Y

LDW270-25310 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		LM PART NO. LDW270-25310-3	LDW270-25300	LTA5(15) GAEC SCH NO.	1	LM PART NO. LDW270-25310-1	LDW270-25300	LTA5(15) GAEC SCH NO. 50	1

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	1.10	2.00	2.01		3.00		4.00	5.00
REV	A	A	A	A		A		A	A
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	
LAST DASH NO. USED	-3

GRUMMAN REL INFO A
PRIM NO. VK(009)
484 MP-16 6-10/12/67

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/16 NONE NONE

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	✓
CLASS I ENGRG CHANGE	
LCD 1032	

CONTRACT NO. NAS 9-1100 LINE ITEM 9 DOCUMENTATION TYPE II

DRAWN BY	A. HENDRICKS 5/31/67	RELIABILITY	
LAYOUT BY			
CHECKED BY			
GR LEADER			
PROP	R.B. 6/1/67		
		PROJ ENGR	J.J. McClenahan 6/7/67
STRESS	W/H 6/2/67	REL GROUP	J. Pogliano 6/7/67
WEIGHTS			

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

HELIUM MODULE ASSEMBLY
DESCENT PROPELLANT
PRESSURIZATION SUB-SYSTEM

SIZE	CODE IDENT NO.		
B	26512	LDW270-25310	A

SCALE NONE SHEET 1.00 OF 7

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	~~SCHED~~ APPD
A									ADDED SHEETS 1.10 & 5.00, ON SHEET 1.00 -1.00 OF 7 WAS 1.00 OF 5.						
	1	2.00 2.01 4.00					✓	EO. A1	FOR -1 IN F/D & B/M DELETED GB511J-06-16(4), GB511-08 -3(1), GB511J-3-3(3), GB511J-3-9(1), GB511J-3-12(3) & MS21043-06(4). ADDED GB511J-08-2(3)	LTA-5	✓			H. Dunkelberger 10-31-67	
	2	1.00, 2.00 2.01, 3.00 & 5.00				✓		LCD 1866	IN M/B, B/M & F/D ADDED - LDW270-25310-3 HELIUM MODULE ASSY. IN NOTES ADDED NOTE 11 & 12	LTA-5			M. Grenul 10-17-67		

FOR CONTINUATION OF REVISIONS SEE SHEET _____

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-25310	A

SCALE NONE — SHEET 1.10

01

NAS 9-1100

C.L	QTY PER ASSEMBLY		CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
	-3	-1											
L	1			LSC360-601-109-2	S	TRANSDUCER	SEE NOTE 1						
L	1	1		LSC270-713-10-1	S	SOL. LATCH VALVE							
	1	1		LSC270-713-9-1	S	SOL. LATCH VALVE							
N		1		LSC360-624-111	S	TRANSDUCER							
N	1	1		LSC360-601-109-1	S	TRANSDUCER							
L	1	1		LSC270-827-1	S	REDUCING VALVE							
L	1	1		LSC270-814-3	S	FILTER							
L	1	1		LSC269-258-7	E	TEE							
L	1	1		LSC269-255-4	E	CROSS							
L	1	1		LSC269-222-8	E	TEE							
L	3	3		LSC269-218-8	E	UNION	SEE NOTE 1						
	1			LDW280H52681-1	E	PLATE ASSEMBLY	SEE DWG						
	1			LDW280-17388-659DSH-4		TUBE							
L		1		LDW280-23681-3		PLATE ASSEMBLY							
L	1	1		LDW280-17388-636DSH-8		TUBE							
L		1		LDW280-17388-262DSH-4		TUBE							
L	1	1		LDW280-17388-246DSH-8		TUBE							
L	1	1		LDW280-17388-245DSH-8		TUBE							
L	2	2		LDW280-17388-171V-2	E	TUBE ASSEMBLY	SEE DWG						
L	1	1		LDW270-25310-11	E	NAME PLATE	MAKE FROM	GNIIAT-4					
				LDW270-25310-3	S	MODULE ASSY							
L				LDW270-25310-1	S	MODULE ASSY							

CLEANLINESS PER LSP14.0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH LPC 19-2 (GRUMMAN), LPC-3 (VENDOR)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-25310	A

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

C.L.	QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
C	10 10		MS21043-3	E	NUT	STD PART						
C	4 4		MS21043-08		NUT							
C	2 2		AN735D3i		CLAMP							
C	4 4		AN960C10L		WASHER							
C	1 1		AN960D8		WASHER	STD PART						
C	3		GB511J-3-2		BOLT	GRUMMAN STD						
C	1		GB511J-3-4		BOLT							
C	2		GB511J-C3-4		BOLT							
C	3		GB511J-3-5		BOLT							
C	1 1		GC12H-16		CLAMP							
C	4 4		GC12H-8		CLAMP							
C	1 1		GC12H-4		CLAMP							
C	3		GB5IIJ 3 12		BOLT							
C	1		GB511J-3-9									
C	6 3		GB511J-3-3									
C	1		GB511J-08-3									
C	4 3		GB511J-08-2	E	BOLT	GRUMMAN STD						
	-3 -1											

CLEANLINESS PER LSP 14.0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : LPC 19-2 (GRUMMAN), LPC 19-3 (VENDOR)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-25310	A

SCALE NONE SHEET 2.01

ENG 77.2 7-65

01

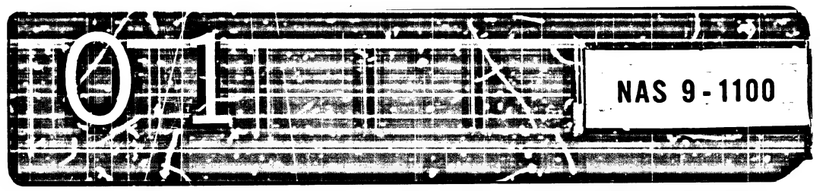
NAS 9-1100

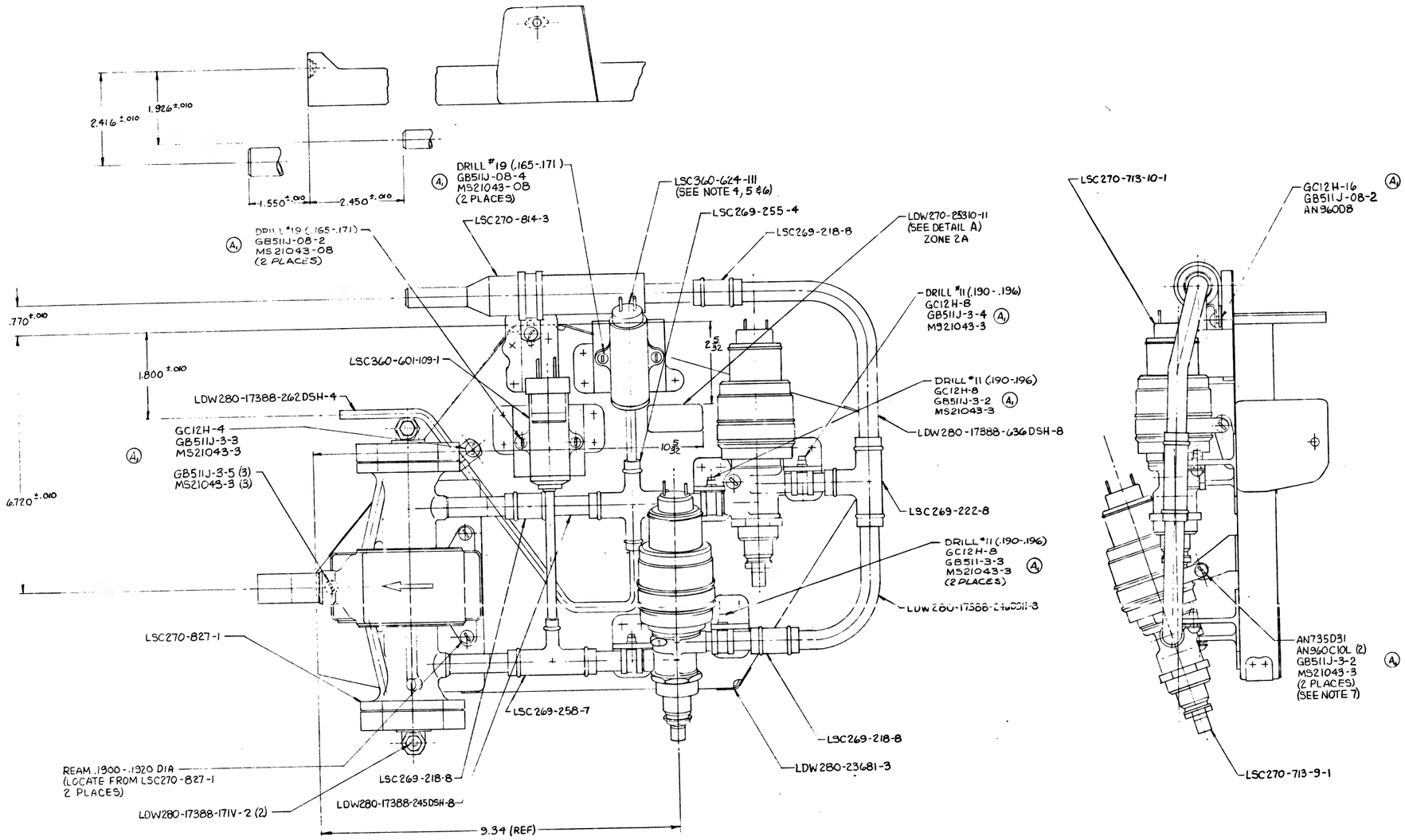
NOTES:

1. COMMERCIAL PARTS SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING.
2. INDUCTION BRAZING OF FITTING SHALL BE IN ACCORDANCE WITH SPEC LSP-14-6303.
3. LDW270-25310-1 MODULE ASSEMBLY SHALL BE TESTED IN ACCORDANCE WITH LPT-270-301. PRE-INSTALLATION TEST PLAN FOR MODULE ASSEMBLY-DESCENT HELIUM MODULE PRESSURIZATION SUBSYSTEM.
4. TRANSDUCERS SHALL BE PREPARED IN ACCORDANCE WITH LSP-14-17450 PRIOR TO BRAZING INTO SYSTEM.
5. ELECTRICALLY BOND TRANSDUCERS IN ACCORDANCE WITH LSP390-001. FOR ELECTRICAL INTERFACE REFER TO INTERFACE CONTROL DOCUMENT LID 360-20001, FOR MECHANICAL INTERFACE REFER TO LID 360-20210 (FOR ENG REF ONLY).
6. TUBE STUBS SHALL BE CAPPED PER LSP-14-009 FOR SHIPMENT AND STORAGE. REMOVE CAPS PRIOR TO BRAZING INTO SYSTEM.
7. INSTALL AN960C10L WASHER ON BOTH SIDES OF TEE BRACKET BETWEEN BRACKET AND AN735D31 CLAMP.
8. PERMISSIBLE TO SHIM WITH AN960C10 ORAN960C10L AS REQUIRED.
9. MARK IN APPROXIMATE AREA SHOWN IN ACCORDANCE WITH SPEC LSP-14-002, TYPE VII, CLASS 2. MARK $\frac{1}{16}$ INCH HIGH LETTERS.
10. EPON #919 (LSM-14-4103) PER LSP-14-14102 BRUSH THIN COAT OVER NAMEPLATE, CURE 72 HOURS AT ROOM TEMPERATURE.
11. BOND IN ACCORDANCE WITH FIG. 7C & 7G OF LSP-14-13334.
12. TRANSDUCER LSC360-624-111 IS AN ALTERNATE FOR AND MAY BE SUBSTITUTED FOR TRANSDUCERS LSC360-601-109-1 OR -109-2.

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-25310	A
SCALE NONE		SHEET 3.00	

ENG 72.1 6-64





LDW270-25310-1 HELIUM MODULE ASSEMBLY

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY	
FILLET AND INSIDE CORNER RADII TOLERANCES .010R TO .062R ± .008 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS 2.3 IMP THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK	
MISMATCH ST'P OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING THICKNESS OF PLATE .0003 MIN TO .0005 MAX MIN THICKNESS TO BE .0002 ON THREADED AREAS NO ALLOWANCES FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL STD 10	
200 FOR ALL DRILLED HOLES	✓
REMOVE ALL BURRS BREAK ALL EDGES .015 031	✓
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ✓ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

SEE NOTE #9

GAEC PART NO. LDW-270-25310-1
GAEC SERIAL NO.

DETAIL A
ZONE 5E
SCALE 2/1

NAS 9-1100

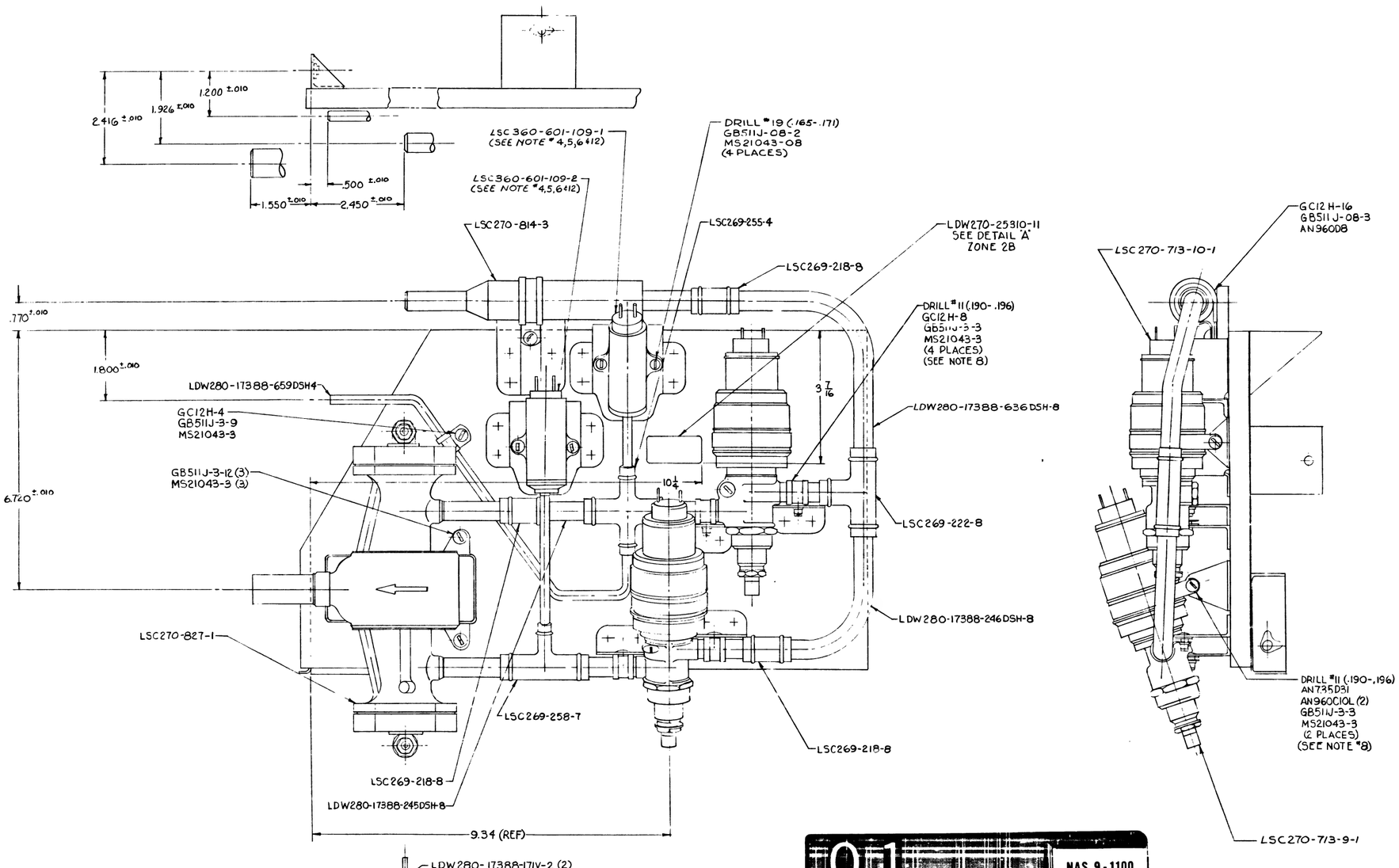
GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	LDW270-25310	A
E	26512		

L.M
MODEL OR END ITEM
SCALE FULL
SHEET 4.00

DRAWING NO. LDW270-25310A

SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.
MARK PART NUMBER IN ACCORDANCE WITH MIL STD 130.
AND ALL OTHER MARKINGS IN REGION MARKED ☐ USE BOTH SIDES IF NECESSARY. PART NUMBER
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
INSTALL RIVETS IN ACCORDANCE WITH



01 NAS 9-1100

DETAIL 'A'
ZONE 4E
SCALE 2X

LDW270-25310-3 HELIUM MODULE ASSEMBLY (A2)

	GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE NEW YORK 11714			
LM MODEL & END ITEM	SIZE E	CODE IDENT NO. 26512	LDW270-25310	A (W)
	SCALE FULL		SHEET 5.00	

DRG 73-4 REV 3-67

LDW270-25310A

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG. NO. LDW270-25310 | EO NO. B1
CONTROL INFO NO. LM270-1116

IN MODEL BLOCK:

REMOVE: LDW270-25310-3 N/A LDW270-25300 LTA5(15), 1 REQD
LDW270-25310-1 OR -3 WAS LDW270-25310-1
ADD FOR (-1 OR -3) LM N/A LPT270-24000 PD2(09) SEE NOTE *
1 REQ'D
FOR (-1 OR -3) LTA5(15) SEE NOTE * WAS LTA5(15)
IN B/M & FIELD FOR -1 & -3 ADD SEE NOTE *

ADD NOTE *
* ONE OF LDW270-25310-1 OR ONE OF LDW270-25310-3 WHICH ARE INTERCHANGEABLE IS REQUIRED. LDW270-25310-3 TO BE USED FOR REPLACEMENT AND SPARES.

LFM

* USE NEXT AVAILABLE NOTE NUMBER

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD 1866	LCRP 270-02 (B)

REASON FOR EO: TO PERMIT MODULE INTERCHANGABILITY BETWEEN PD2 & LTA5

DESCRIPTION OF EO: IN MODEL BLOCK REMOVED -3 N/A LDW270-25300 LTA5(15) (-1 OR -3) WAS -1 ADDED LM N/A LPT270-24000 PD2(09) SEE NOTE * 1 REQD ADDED SEE NOTE * TO LTA5(15) IN FLD & B/M ADDED SEE NOTES * TO -1 & -3 ADDED NOTE *

(R) GAEC EO RELEASE: JK 11/8/67

MODEL	EFFECTIVITY			DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY							
	E.I	GAEC UNIT NO.	SUB CONTR UNIT NO.	REVISE DWG	RECORD EO	NOT REWORK	REQ'D SCRAP	DATE	PROP	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ. ENGRG
LM	LFM #41	LTA5(15)		✓				11/6/67				JK 11/8/67		JWH 11/7/67	RP 11-8-67
		PD2 (09)													

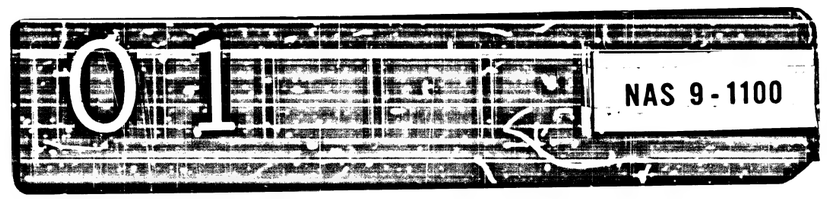
PRIORITY: C

DRAWING TITLE: HELIUM MODULE ASSEMBLY - DESCENT PROPELLANT PRESSURIZATION SUBSYSTEM

DRAWING NO.: LDW270-25310

EO NO.: B1

ISSUED BY J. PAVLICA 11/6/67 x1471 SECTION LM PROPULSION GROUP NO. 270 PL 25



B

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW270-25310		EO NO. B2
CONTROL INFO NO. LM270-1128		

IN FIELD FOR -3 MODULE ASSY

LSC 269-255-4
LDW270M10074-11 WAS LSC269-255-4
SEE NOTE *

IN B/M ADD FOR -3 ASSY

1 LDW270M10074-11 FITTING-CROSS SEE NOTE *

ADD NOTE:

* LDW270M10074-11 FITTING IS INTERCHANGEABLE WITH LSC269-255-4 CROSS AND SHALL BE USED IF LSC269-255-4 CROSS IS NOT AVAILABLE.

LFM

* USE NEXT AVAILABLE NOTE NUMBER

DETAIL SPEC REQ		CL II ENGRG CHG	✓	CL I ENGRG CHG		LCD 2413

REASON FOR EO: TO PERMIT USE OF AN ALTERNATE FITTING, IF PART IS NOT AVAILABLE

DESCRIPTION OF EO: FOR -3 ASSY ADDED LDW270M10074-11 (SEE NOTE *) TO LSC269-255-4 CALLOUT ; ADDED NOTE *

GAEC EO RELEASE: (A) (C)

MODEL	EFFECTIVITY: PROCURING AGENCY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	PROP	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
	E.I														
LM	LFM #87	LTA-5 (15)		✓		✓		DATE 12/1/67				12/7/67	12/11		12/12/67
		PD-2 (C9)													

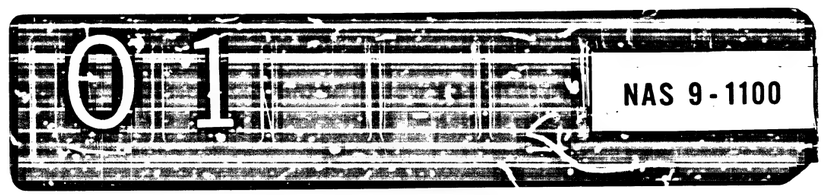
PRIORITY: C

DRAWING TITLE: HELIUM MODULE ASSEMBLY - DESCENT PROPELLANT PRESSURIZATION SUBSYSTEM

DRAWING NO.: LDW270-25310

EO NO.: B2

ISSUED BY J. PAVLICA x1471 SECTION LM PROPULSION GROUP NO. 270 PL 25



GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.2 10-63

DWG NO. LDW 270-25310	EO NO. B3
CONTROL INFO NO. LM 270-1122	

IN MODEL BLOCK:

REMOVE LDW 270-25310-1 OR -3 & N/A LPT270-24000, PD-2(09) SEE NOTE * AND N/A LDW 270-25300, LTA-5(15) SEE NOTE *.

ADD LDW 270-25310-1 LM N/A LPT270-24000, PD-2(09) SEE NOTE ▲ & ADD LDW 270-25310-5, LM N/A LDW270-25300, LTA-5(15) SEE NOTE ▲.

IN B/M: FOR -1 SEE NOTE ▲, WAS SEE NOTE *.
REMOVE LDW 270-25310-3 (S) MODULE ASSY, SEE NOTE *, ADD LDW 270-25310-5 MODULE ASSY, (S) SEE NOTE ▲. (SAME AS -3 MODULE ASSY EXCEPT: LSC 270-713-9-3 SOL. LATCH VALVE & LSC 270-713-10-3 SOL. LATCH VALVE WAS LSC 270-713-9-1 SOL. LATCH VALVE & LSC 270-713-10-1 SOL. LATCH VALVE RESPECTIVELY,
AND LDW 270-25310-13(E) NAME PLATE, MAKE FROM GN11AT-4, WAS LDW 270-25310-11 (E) NAMEPLATE, MAKE FROM GN11AT-4.)

IN F/D: FOR-1, SEE NOTE ▲, WAS SEE NOTE *.
REMOVE: LDW 270-25310-3 SEE NOTE *
ADD: LDW 270-25310-5 SEE NOTE ▲, LSC 270-713-9-3 & -10-3 WAS LSC 270-713-9-1 & -10-1 RESPECTIVELY, LDW 270-25310-13 WAS LDW 270-25310-11.

REMOVE NOTE *
ADD NOTE ▲ – LDW 270-25310-5 SHALL BE USED FOR FUTURE REPLACEMENT AND SPARES.

NAS 9-1100

■ LDW270-25310-5 MAY BE MADE BY REWORKING LDW 270-25310-3
* REF EO B1
▲ USE NEXT AVAILABLE NOTE NUMBER.

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG

REASON FOR EO: TO AGREE WITH SOLENOID LATCH VALVES AVAILABLE FOR ASSY & ADD SPARE P/N.

DESCRIPTION: 1 LCD 2377 & LCD 2377 REV A, (5)
N MOD BLK, -1 FOR N/A LPT270-24000 WAS(-10R-3). ADDED-5 REMOVED -10R-3) FOR N/A LDW270-25300. IN MOD BLK, B/M & F/D SEE NOTE ▲ WAS SEE NOTE * (6 PLACES). IN B/M & F/D, REMOVED -3. ADDED -5 SAME AS -3 EXCEPT LSC270-713-9-3 & -10-3 WAS LSC270-713-9-1 & -10-1 AND LDW270-25310-13 WAS LDW270-25310-11. ADDED NOTE ▲.

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA-5 (15)	
		PD-2 (09)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		■	

APPROVED BY	DATE	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ. ENGRG
KB	11/28/67		12/6/67			12/6/67
PROP						1-16-68

PRIORITY: C
DRAWING TITLE: MODULE ASSY-DESCENT PROP. PRESS SUBSYSTEM
DRAWING NO.: LDW270-25310
EO NO.: B3

GAEC EO RELEASE: 12/6/67

ISSUED BY F.J. ARTUS X1471 11/28/67
GROUP PROPULSION -(270) PL-25

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

EMG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW270-25310		EO NO. B4
CONTROL INFO NO. LM 270-1233		

ON -5 ASSY

IN M/B ADD: N/A LDW 270-25300 DMSM(77) 2 REQD

IN SHT 3.00 ADD NOTE*(NEXT AVAILABLE NO.)

* LSC 270-713-21 & -22 ARE INTERCHANGEABLE WITH LSC 270-713-9-3 AND LSC 270-713-10-3 RESPECTIVELY AND SHALL BE USED FOR FUTURE REPLACEMENTS AND SPARES.

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | V | LCO 2019 CCA 667 | (5)

REASON FOR EO: ADDED - DMSM REQMTS & SOL LATCH VALVE INTERCHANGEABILITY

DESCRIPTION OF EO: ADDED: IN M/B - N/A LDW 270-25300 DMSM(77) 1 REQD. ADDED NOTE *

GAEC EO RELEASE: 6/12/68

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA-5 (15)	
		DMSM (77)	

DRAWING CHANGE REQD: REVISE DWG ✓; RECORD EO

DISPOSITION OF PARTS: NOT REQD; REWORK; SCRAP

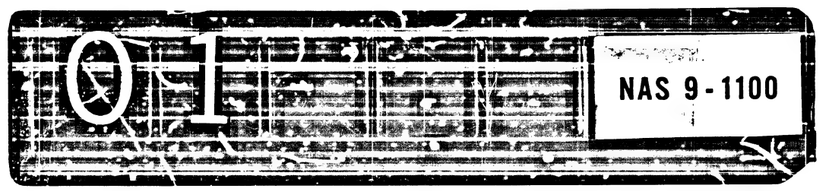
PRIORITY: C

DRAWING TITLE: HELIUM MODUE ASSEMBLY - DESCENT PROPELLANT- PRESSURIZATION SUB-SYST.

DRAWING NO.: LDW 270-25310

APPROVED BY	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	EO NO.
P.A.C.			96				B4
DATE 6/18/68			6/18/68				

ISSUED BY P.A. CAPPELLI 6/18/68 EXT. 1471 SECTION PROPULSION GROUP NO. 270 PL 25



ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-25310 | EO NO. B5
CONTROL INFO NO. LDW82-3987

ON -3

LSC270-713-22
(WAS)
LSC270-713-10-1

LSC270-713-21
(WAS)
LSC270-713-9-1

| DETAIL SPEC REQ | | CL II ENGRG CHG | ✓ | CL I ENGRG CHG | | |

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG. NO. LDW270-25310 | EO NO. B6
CONTROL INFO NO. LM 270-1340

SHEET 3.00 ADD NOTE *

* THE FOLLOWING TRANSDUCERS ARE INTERCHANGEABLE WITH EACH OTHER AND CAN BE USED FOR REPLACEMENT AND SPARES:

LSC360-624-111, LSC360-624-111-2
LSC360-601-109-1, LSC360-601-109-2

ADD TO B/M FOR -5

ALT LSC360-624-111-2 SEE NOTE *
ALT LSC360-601-109-2 SEE NOTE *

* USE NEXT AVAILABLE NOTE NUMBER

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD 2019 CC9667

REASON FOR EO: PERMIT XDUCER INTERCHANGEABILITY

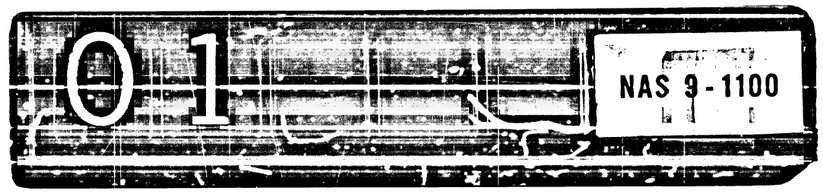
DESCRIPTION OF EO: ADDED NOTE *: ADDED LSC360-624-111-2 & LSC360-601-109-2 ALT PARTS TO B/M FOR -5

GAEC EO RELEASE: 10-2-68

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		OMS#10 (12)	

DRAWING CHANGE REQD: ✓ REVISE DWG | RECORD EO
DISPOSITION OF PARTS: NOT REQ'D REWORK | SCRAP
APPROVED BY: PG | DATE 10/3/68 | PECO | SUPPORT | RELIAB GROUP | GROUP LEADER | STRESS GROUP | LIAISON ENGRG | PROJ ENGRG
PRIORITY: C
DRAWING TITLE: MODULE ASSY - DESCENT PROPELLANT PRESSURIZATION SUB-SYSTEM
DRAWING NO.: LDW270-25310
EO NO.: B6

ISSUED BY J. PAVLICA X1471 SECTION LM PROPULSION GROUP NO. 270 PL 25

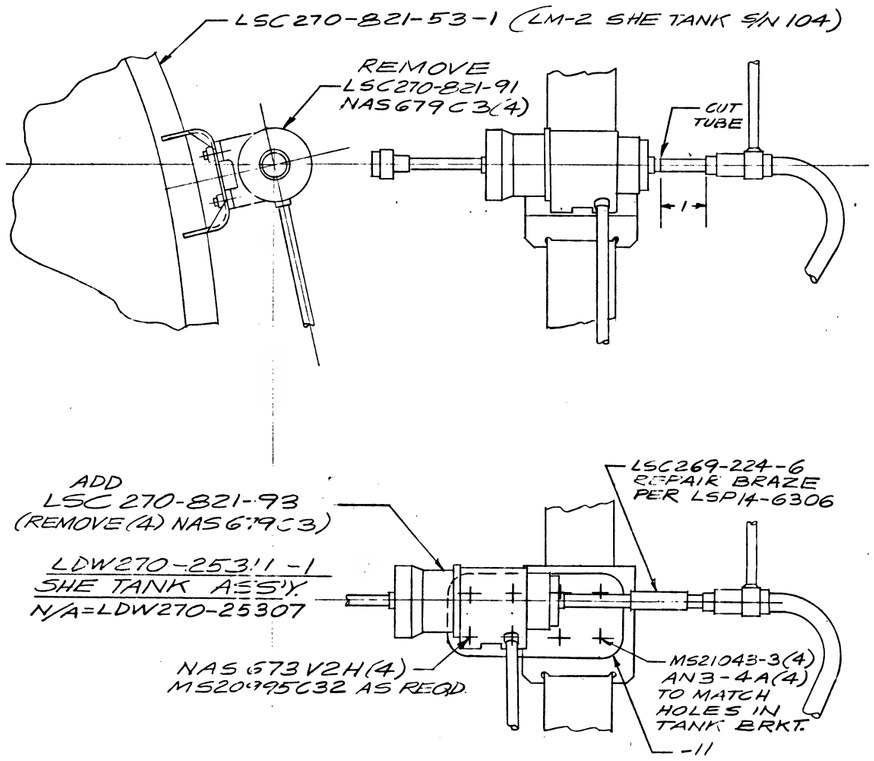


ENG 32.2 REV 3-65

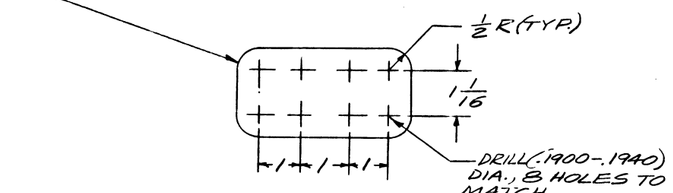
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-25311 | EO NO. A1
CONTROL INFO NO. LM270-1425

-1 ASS'Y IS CREATED FROM LSC270-821-53-1 AS SHOWN:



LDW270-25311-11
MAKE FROM AL. ALY. SHT, QQ-A-250/4, 1/8 THICK



DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	LCD 5430 PR #=1

REASON FOR EO: NEW INCONEL DUAL BURST DISC ASS'Y IS REQ'D FOR SHE TANK ON LTA-5

DESCRIPTION OF EO: E.O. A, INITIAL DWG. RELEASE. PARTS MADE PER E.O.

GAEC EO RELEASE

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UN T NO.
LM		LTA-5R (15)	

DRAWING CHANGE REQ'D: ✓ REVISE DWG | RECORD EO
DISPOSITION OF PARTS: ✓ REWORK | SCRAP
APPROVED BY / DATE: PROP | SUPPORT | RELIAB. GROUP | GROUP LEADER | STRESS GROUP | LIAISON ENGRG | PROJ ENGRG

PRIORITY: C
DRAWING TITLE: SHE TANK ASS'Y. DESCENT-PROPULSION
DRAWING NO.: LDW270-25311
EO NO.: A1

ISSUED BY G. CUDONE x1661 11/30/70 SECTION PROPULSION GROUP NO. 270 PL 25

TO
NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AEROSPACE CORPORATION
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-25311 | EO NO. A2
CONTROL INFO NO. LM 5-22239

REF E.O. A1 (INITIAL DWG)
ADD I & T REQUIREMENT " S " FOR -1
" FINAL FINISH FOR -11 DETAIL, #88 PER LSP14-9030

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	X LCD 5430 (5)

REASON FOR EO: TO ADD REQ'D INFO TO DWG (RTL-05-131-646)

DESCRIPTION OF EO: ADDED I&T REQMT " S " FOR -1 & FINISH #88 FOR -11 DETAIL

GAEC E.O. RELEASE: [illegible] 2/4/70; JK 2/4/70

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY: DATE	SUPPORT	RELIAB. GROUP
LM		LTA-5R (157)		✓		✓		2/4/70		

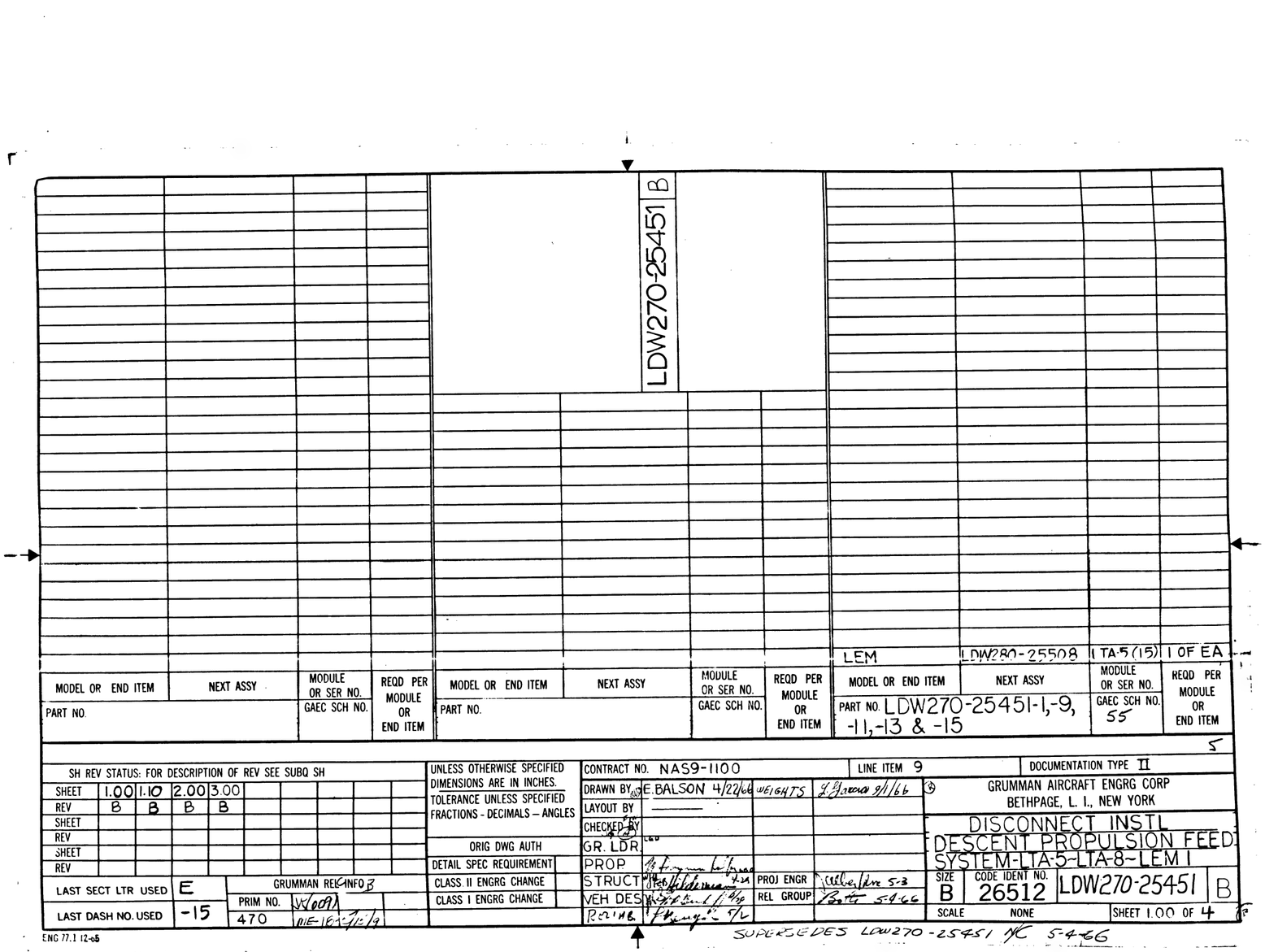
GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
JR 2/9/70	KC 2/5/70	CR 2-6-70	[illegible] 2/6/70

PRIORITY: C
DRAWING TITLE: SME TANK ASSY DESCENT - PROPULSION
DRAWING NO.: LDW270-25311
EO NO.: A2

ISSUED BY: LIAISON J. PAULSEN X86753 SECTION: PROPULSION GROUP NO.: 270 PL: 25

Q1

NAS 9-1100



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		LEM	LDW270-25508	LTA-5(15)	1 OF EA
								PART NO. LDW270-25451-1,-9, -11,-13 & -15		GAEC SCH NO. 55	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00	1.10	2.00	3.00						
REV	B	B	B	B						
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED	E
LAST DASH NO. USED	-15

GRUMMAN REL INFO B
PRIM NO. W0091
470 NIE-161-7/2/9

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS9-1100 LINE ITEM 9 DOCUMENTATION TYPE II

DRAWN BY	E. BALSON 4/22/66	WEIGHTS	L Garcia 9/1/66	
LAYOUT BY				
CHECKED BY				
GR. LDR				
PROP				
STRUCT		PROJ ENGR		5-3
VEH DES		REL GROUP		5-9-66
REL'D B				

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

DISCONNECT INSTL
DESCENT PROPULSION FEED SYSTEM-LTA-5-LTA-8-LEM 1

SIZE	CODE IDENT NO.	
B	26512	LDW270-25451 B

SCALE NONE SHEET 1.00 OF 4

ENG 77.1 12-65

SUPERSEDES LDW270-25451 NC 5-4-66

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	~~MFG~~ APPD
									RETRACED N/C LAST REV N/C ADDED SHEET 1.10 SHEET 1.00 OF 4 WAS 1.00 OF 3.	E. BALSON N. GRAUL	N	8-19-66			
A	1	1.00						A1	ON -1, -3, -5, -7, -9, -11 & -13 REVISED NEXT ASSY & DELETED EFFECTIVITY OF LTA-8 (18) & LEM-1 (31)	LTA-5 LTA-8 LEM-1		✓		X	X
	2	3.00	6-A 7-B 8-A						IN M/B, B/M & F/D REMOVED -3, -5 & -7 INSTLS. ADDED -15 INSTL. LSC270-813-31 (4) WAS LSC270-813-21 (3)	LTA-5	✓	-3-5 -7	E. BALSON U. GRAUL 8-18-66		
	3	1.00						(4)	N/A FOR -1, -9, -11, -13 = LDW280-25508 WAS LDW280-23680 FOR-1, LDW280-23624 FOR-9, LDW280-25694 FOR-11, LDW280-23587 FOR-13			✓			
B	1	2.00 3.00	3B4A 7B, A 5C10A						INC EO-B1	LTA-5			K. EISELE 4-29-69	LD	
	2	2.00, 3.00	3B						INC EO-B2						
	3	3.00	4A5A 6/C						INC EO-B3						
	4	3.00	5C6B						INC EO-B4						
	5	3.00	5C6C						INC EO-B5						
	6	2.00, 3.00	6A9A 8B, 11C						INC EO-B6						
	7	2.00, 3.00	3C4A 7B 9A1D						INC EO-B7						
	8	3.00	4A5B 5C11A						INC EO-B8				N.D.	J.B. HSOALDE 4-29-69 ECG	
	9	3.00						(9)	INC EO-B9				H.B. J.V.	KRANT 4-30-69	

FOR CONTINUATION OF REVISIONS SEE SHEET _____

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-25451	B
SCALE NONE		SHEET 1.10	

ENG 77.3 5-65

01

NAS 9-1100

CL	-15	-13	-11	-9	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
C	AS REQD	AS REQD		AS REQD	AS REQD		AN960C10	E	WASHER	STD PART	SEE NOTE 2					
C	AS REQD	AS REQD		AS REQD	AS REQD		AN960C10L	E	WASHER	STD PART	SEE NOTE 2					
C			AS REQD				AN960C8L	E	WASHER	STD PART	SEE NOTE 2					
C	30			8			MS21043-3	E	NUT	STD PART						
C	3	3		9	3		NAS1133V-3	E	SCREW	STD PART						
C	27						NAS1133V-2	E	SCREW	STD PART						
C			9				NAS1132V-1	E	SCREW	STD PART						
L			3	2			LSC270-813-27	S	COUPLING ASSY	SEE NOTE 1						
L	5						LSC270-813-26	↕	↕	↕						
L	4						LSC270-813-31									
J		1					LSC270-805-1									
J					1		LSC270-804-1	S	COUPLING ASSY	SEE NOTE 1						
J																
J																
	AS REQD	AS REQD	AS REQD	AS REQD	AS REQD		GT535B-2-145	E	TAPE, CLEAR	GRUMMAN STD	SEE NOTE 3					
	AS REQD	AS REQD	AS REQD	AS REQD	AS REQD		GT535B-1-145	E	TAPE, SILVER	GRUMMAN STD	SEE NOTE 3					
	1			1			LDW270-25451-19	E	PLATE	AL ALLOY SH	QQ-A-250/4	2024T3	1.00 X 5 X 5	NONE	NONE	4 C
A							LDW270-25451-15	E	DISCONNECT INSTL							
↕							-13	↕	↕							
							-11									
							-9									
A							LDW270-25451-1	E	DISCONNECT INSTL							

CL - CLEANLINESS LEVEL PER LSP14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

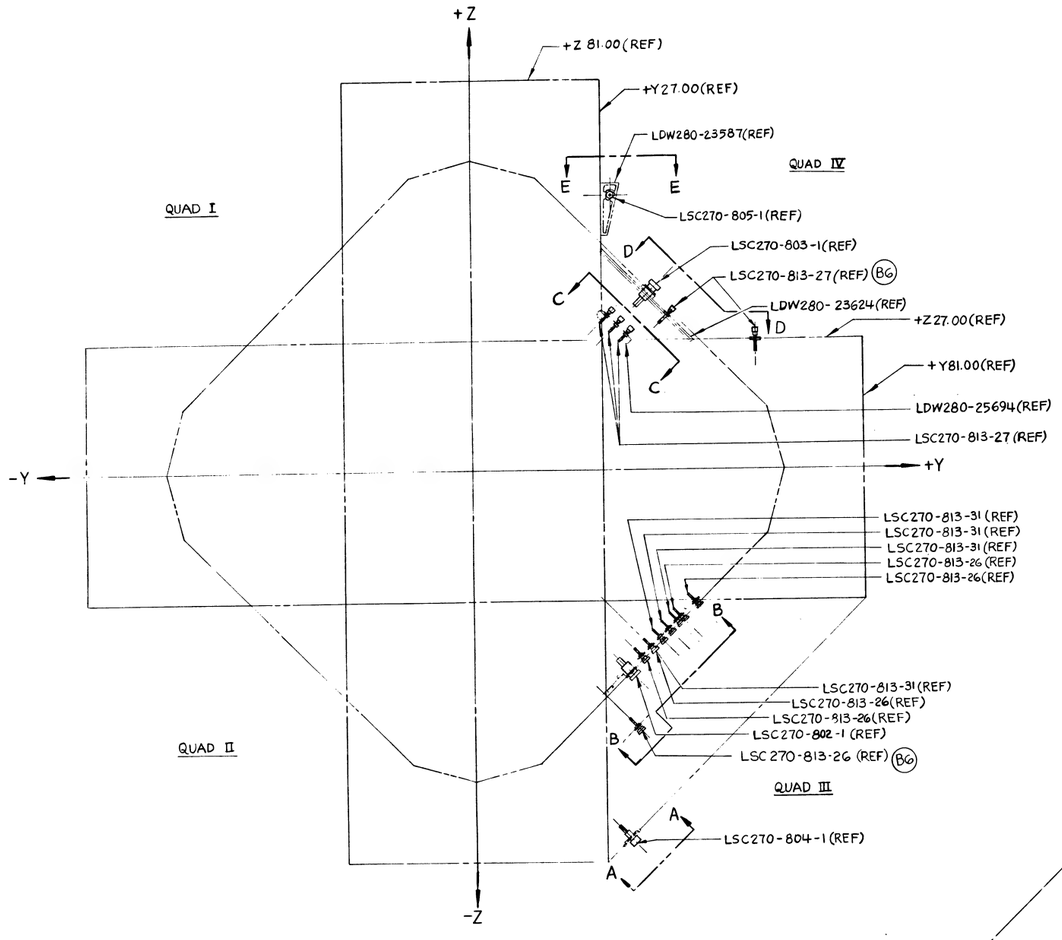
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-25451	B

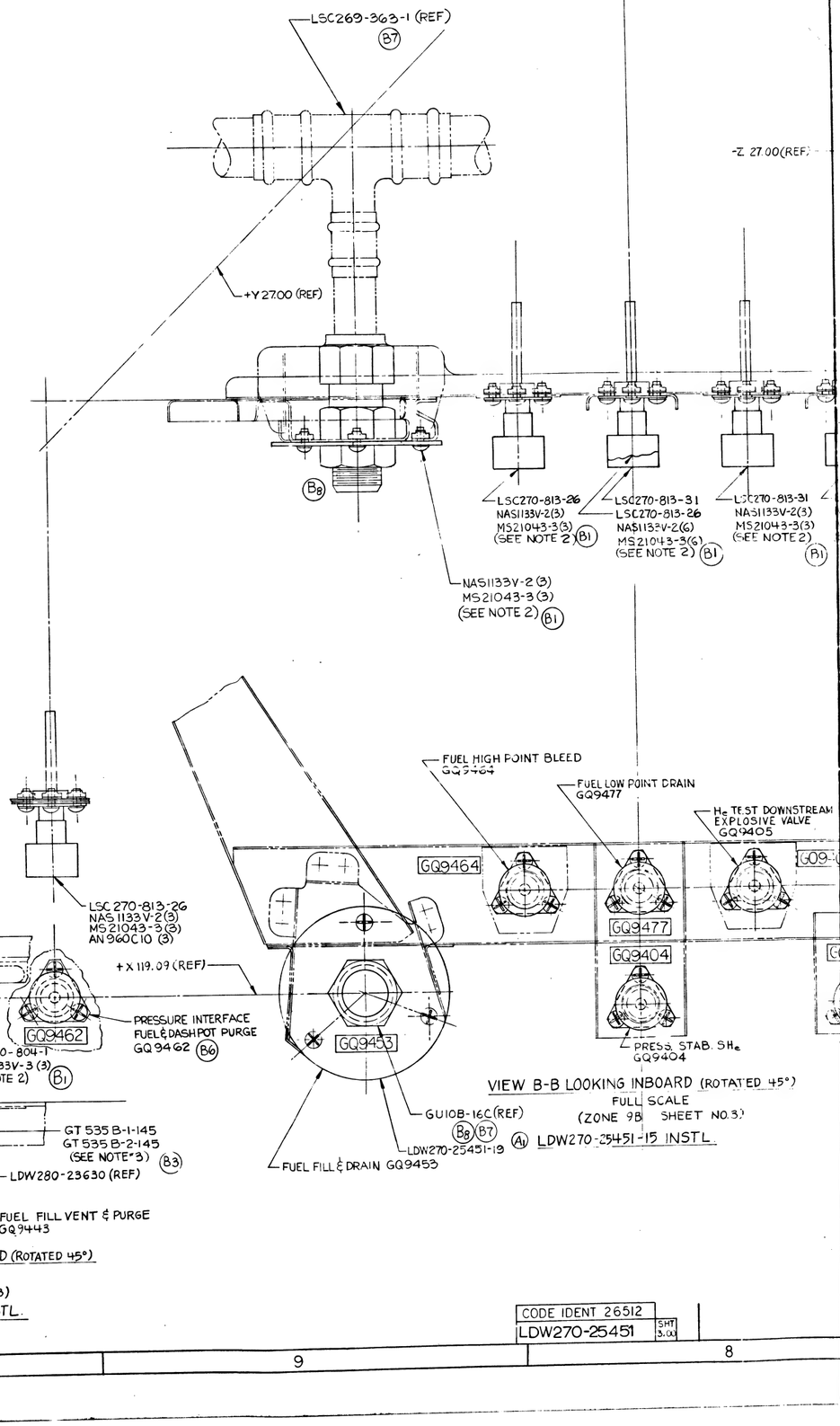
SCALE NONE SHEET 2.00

ENG 77.2 7-65

NAS 9-1100



VIEW LOOKING DOWN AT X196.00
1/10 SCALE
FOR ENGINEERING REFERENCE

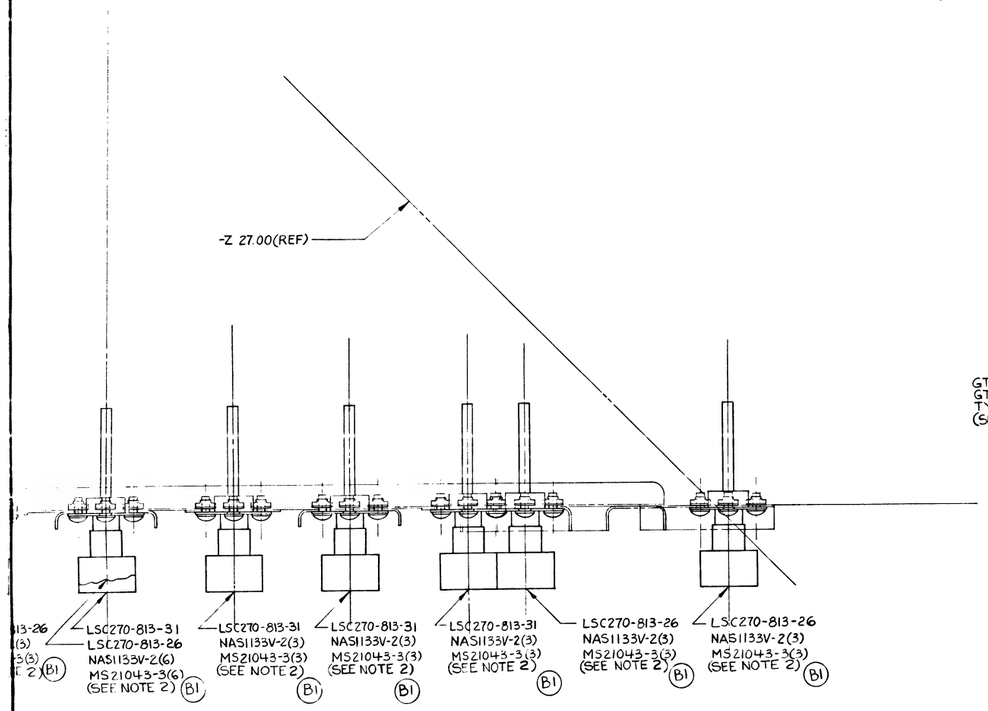


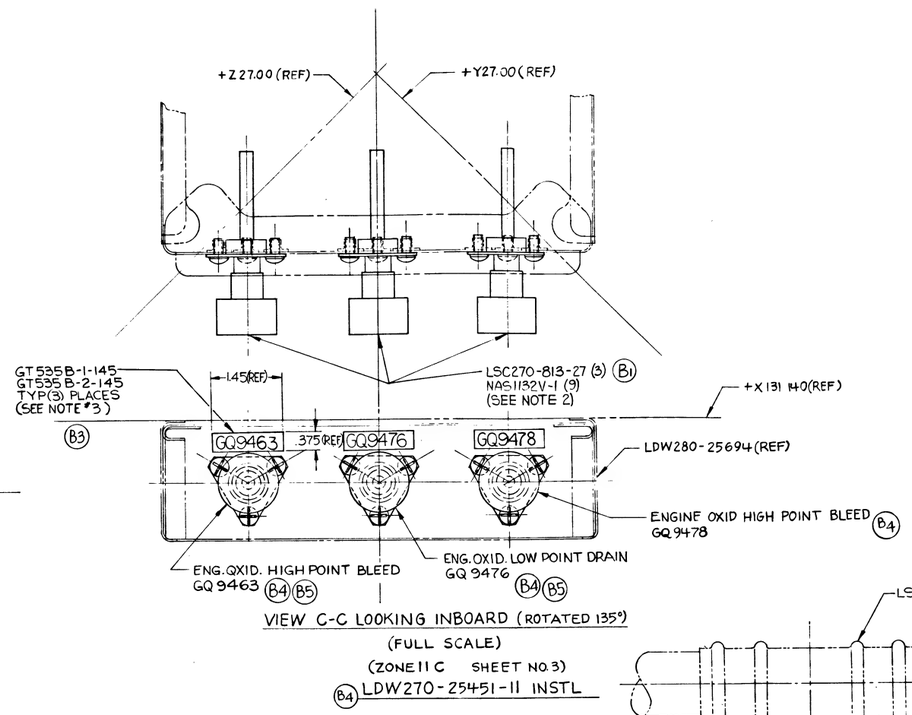
VIEW B-B LOOKING INBOARD (ROTATED 45°)
FULL SCALE
(ZONE 9B SHEET NO.3)

VIEW A-A LOOKING INBOARD (ROTATED 45°)
(FULL SCALE)
(ZONE 9B SHEET NO.3)
LDW270-25451-1 INSTL.

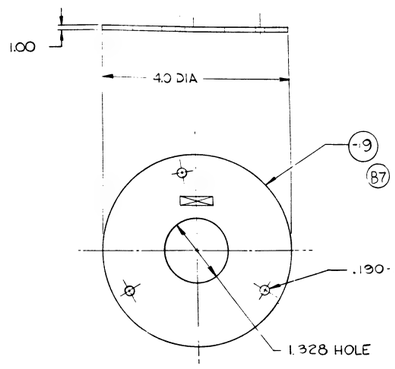
011703 NAS 9-1100

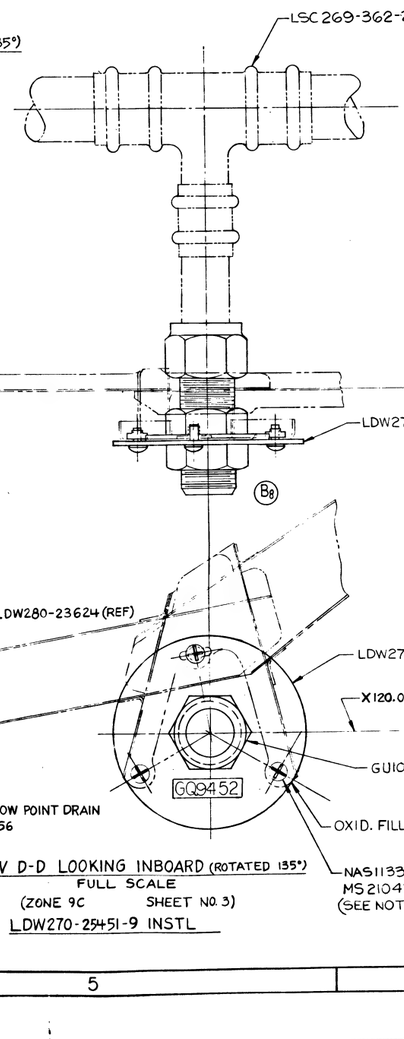
CODE IDENT 26512
LDW270-25451 SHT 3.00



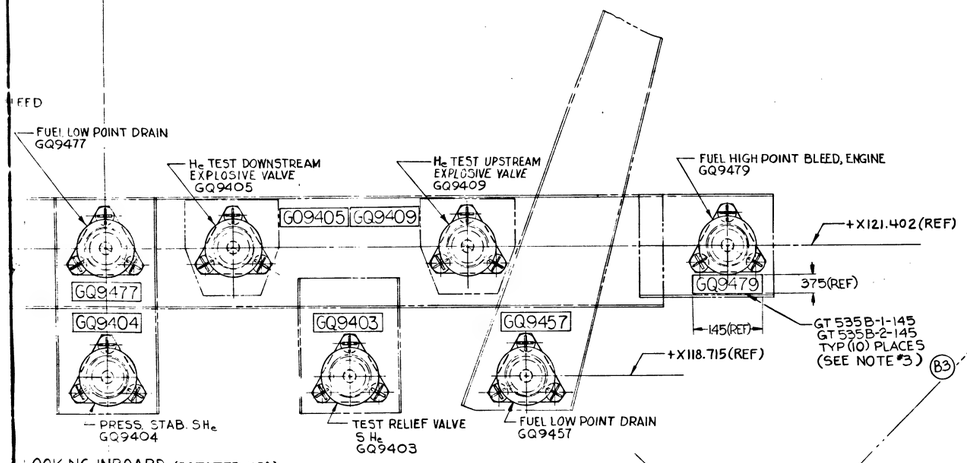


VIEW C-C LOOKING INBOARD (ROTATED 135°)
(FULL SCALE)
(ZONE 11 C SHEET NO. 3)
B4 LDW270-25451-11 INSTL

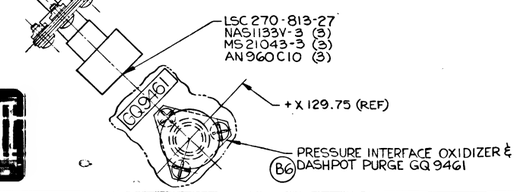


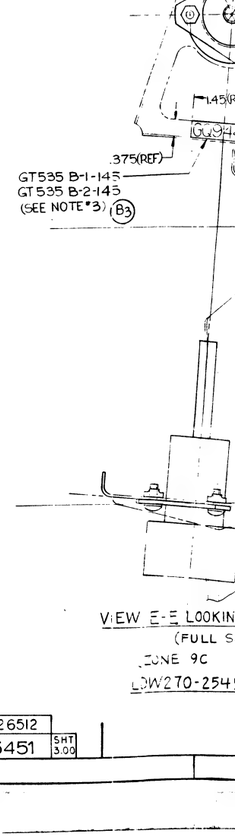


VIEW D-D LOOKING INBOARD (ROTATED 135°)
FULL SCALE
(ZONE 9C SHEET NO. 3)
LDW270-25451-9 INSTL



LOOKING INBOARD (ROTATED 45°)
FULL SCALE
(ZONE 9B SHEET NO.3)
W270-25451-15 INSTL



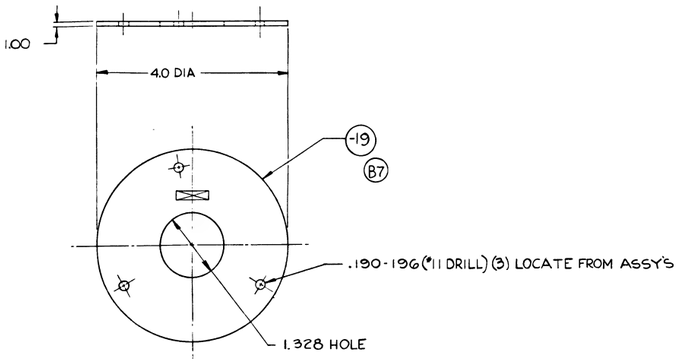


VIEW E-E LOOKIN
(FULL S
ZONE 9C
LDW270-254

02703 NAS 9-1100

CODE IDENT 26512
270-25451 SHT 3.00

CODE IDENT 26512
LDW270-25451 SHT 3.00



-27 (3) (B11)
(2)

+X 131.140(REF)

LDW280-25694(REF)

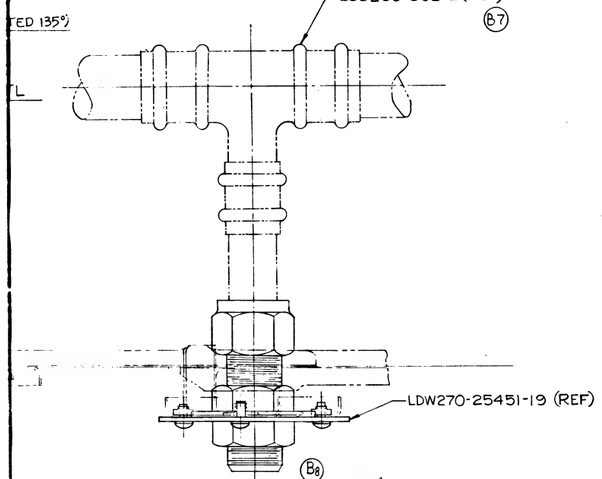
ENGINE OXID HIGH POINT BLEED GQ 9478 (B4)

NT DRAIN:

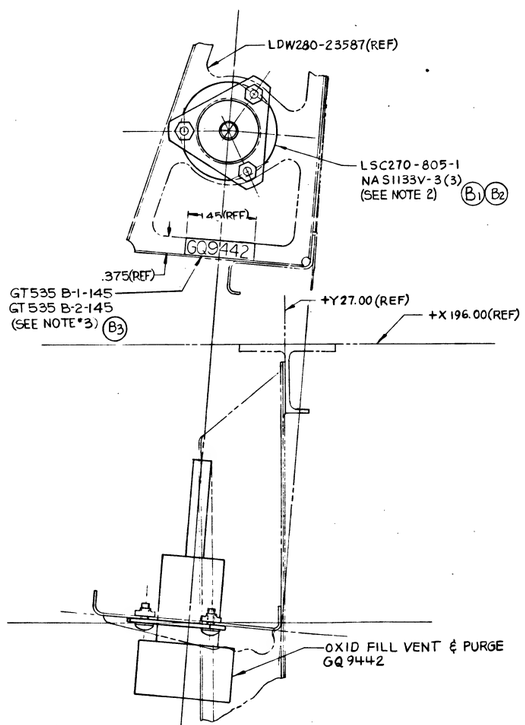
TED 135°

L

LSC 269-362-2 (REF) (B7)



VIEW D-D LOOKING INBOARD (ROTATED 135°)
FULL SCALE
(ZONE 9C SHEET NO. 3)
LDW270-25451-9 INSTL



VIEW E-E LOOKING AFT (ROTATED 180°)
(FULL SCALE)
(ZONE 9C SHEET NO. 3)
LDW270-25451-13 INSTL

NOTES:
1. COMMERCIAL PART - SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING.
2. ADD 1 WASHER PER BOLT WHERE REQ'D - AN960C8L, AN960C10L OR AN960C10.
3. MANUFACTURE AND INSTALL IDENTIFICATION TAPES - MARK IN APPROX AREA AS SHOWN IN ACCORDANCE WITH LSP-14-002, TYPE VII, CL 2, MARK 1/4 HIGH LETTERS. USING GRUMMAN STD TAPE GT 535 B-1-145 SILVER & GT 535 B-2-145 CLEAR.

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY.	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010; .063R TO .250R ± .015; OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ⚡ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, MAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

90 FT. 90 FT.
DWG SIZE 34 X
PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X)
1/2 SIZE SHEET AREA (1/4 OF FULL)
PRINT TRIM LINE

D C B A

LDW270-25451 B
LDW270-25451 B

03/034 NAS 9-1100

LEM	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L I., NEW YORK			
	SIZE J	CODE IDENT NO. 26512	LDW270-25451	B
MODEL OR END ITEM	SCALE NOTED		SHEET 3.00	

CODE IDENT 26512
LDW270-25451 SHT 3.00

3FR

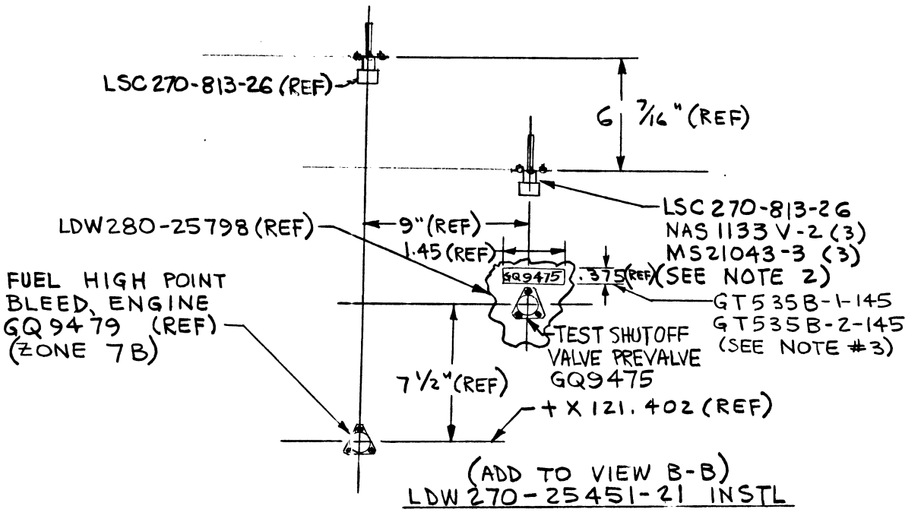
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.2 REV 3-65 **ENGINEERING ORDER**

DWG NO. LDW270-25451		EO NO. C1
CONTROL INFO NO. LM270-1441		

ADD -17 DISCONNECT INSTL N/A LDW280-25508 LTA5R(159) 1EACH REQD.
I&T = E

REVISE VIEW B-B 1/10 SCALE AT ZONE 11B



(ADD TO VIEW B-B)
LDW270-25451-21 INSTL

DESCRIPTION OF E.O.*

ADDED: -21, GQ 9475, LSC 270-813-26
NAS 1133V-2 (3) MS 21043-3 (3)
GT535B-1-145 & GT535B-2-145

NAS 9-1100

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD 5134 B PKG 1 CCA 2385										
REASON FOR EO: ADDED D/ENGINE PREVALVE TEST COUPLING						DESCRIPTION OF EO: SEE ABOVE *										GAEC EO RELEASE
MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY								
				✓		NOT	REQD	DATE	5/1/70	—	—	5/1/70	—	—	5/1/70	5/4/70
LM		LTA5/R(159)							PROP	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
				PRIORITY: C		DRAWING TITLE: DISCONNECT INSTL DESCENT PROPULSION FEED SYST. LTA-5							DRAWING NO.: LDW270-25451			EO NO. C1

5-15-7 ISSUED BY B. ZANG X1472 1 MAY 1970 SECTION PROPULSION DESIGN GROUP NO. 345 PL 39

LDW270-25452 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM590	LDW280-60900	ITA FIDIFOV	1 EA
PART NO. LDW270-25452-1-1 & -3-1		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-25000	LTA 5(3)	1 EA
PART NO. LDW270-25452-1 & -3		GAEC SCH NO. 55	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00	1.10	2.00		3.00		4.00			
REV	B	B	B		B		B			
SHEET		1.11								
REV		B								
SHEET										
REV										

LAST SECT LTR USED	B	GRUMMAN REL INFO	
LAST DASH NO. USED	-3-1	PRIM NO.	482

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS — ANGLES

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO.	NAS 9-1100	LINE ITEM	009
DRAWN BY	B. ZANG 28MAR66	RELIABILITY	
LAYOUT BY	—		
CHECKED BY	J. POYNTON 3-29-66		
PROPULSION			
V.D.I.		PROJ ENGR	4-7-66
		REL GROUP	4-8-66

DOCUMENTATION TYPE II

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SENSING UNIT INSTL- PROPELLANT LEVEL- DESCENT- PROPULSION FEED SYSTEM

SIZE	CODE IDENT NO.	
B	26512	LDW270-25452 B

SCALE NONE SHEET 1.00 OF 6

ENG 77.1 12-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET 1.11

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00, 1.10, 2.00						EO A1	SH 1.00 OF 5 WAS SH 1.00 OF 4 ADDED SH 1.10 IN B/M FOR -1, -3 REVISE QUANTITIES FOR NAS1271H4, AN960C416L (16) WAS (8).	NOT REQD	NOT	REQD	T. FREDA 9-20-66		
	2	1.1.10						EO A2	IN MODEL BLOCK FOR -1 & -3 INSTL: REMOVED LTA-8(18) EFFECTIVITY	LTA-8(18)					
	3	1.10, 2					✓	EO A3 (8)	IN B/M FOR -1 & -3 INSTL, COMPONENTS & HARDWARE ADDED CLEANLINESS PER LSP-14-0011	LTA-5(15)					
B	1	3.00					✓	EO B1	REVISED NOTE #1 (15) LUBRICATE BOLT THREADS WITH DUPONT PR-240AC, INSTALL ALL BOLTS _ ETC _ (WAS) 1. INSTALL ALL BOLTS _ ETC _ (15) (d) REPEAT STEPS & APPLYING 70-75 INCH POUNDS FOR FINAL TORQUE (WAS) (d) REPEAT STEPS & APPLYING 75-80 INCH POUNDS FOR FINAL TORQUE	LTA-5(15)	✓		E. STONHAM 6-12-70		
	2	2.00, 3.00 4.00	D2 C2	LFM-31		✓		EO B2 LCD 1894	IN F/D & B/M, FOR -1 INSTL: LDW270M10071-20 WAS LSC 270-00009-14; FOR -3 INSTL: LDW270M10071-19 WAS LSC 270-00009-13; FOR -1 & -3 INSTL: GS13AK-147 WAS GS13AJ-147; GB511AJ-4H12 WAS NAS1271H4; ADDED TO-1 & -3 INSTL: (2) LDW280M15563-11 RING; (8) AN515C8R4; IN B/M, ADDED: TO-1 INSTL: LED 520-35, TO-3 INSTL: LED 520-34, DELETED NOTE #3, ADDED NOTE 4, 5, 6		✓				
	3	2.00, 4.00		LFM-31		✓		EO B3 LCD 1894	SHT. 2.00: ON-1 INSTL, -14 WAS -20; ON-3 INSTL, -13 WAS -19, SHT. 4.00, DETAIL "A": -14 WAS -20 & -13 WAS -19		✓				
	4	2.00, 4.00	D2	LFM-31		✓		EO B4 LCD 1894	REF EO B2 ON-1 LDW270M10071-14 (WAS) -20; ON-3 LDW270M10071-13 (WAS) -19		✓				
	5	2.00, 4.00	C2				✓	EO B5	ON-1 & -3 GW10K-416C(8) (WAS) AN960C416L(8)		✓				
	6	2.00, 3.00 4.00	D2				✓	EO B6	ON-1 & -3 REMOVED LSC 270-00009-13 & 14 ADDED LSC 270-00009-35-1 & 36-1 & NOTE #7		✓				
	7	2.00 4.00					✓	EO B7	REF EO B6 ON-1 & 3 LSC270-00009-35-1 (WAS) LSC 270-00009-13 & LSC 270-00009-34 & 32 (WAS) LSC 270-00009-36		✓		H. D. J.V.		

CHG APPROVED	LTR	GROUP LDR	PROPULSION	V.D.I.	RELIABILITY
	B				

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW 270-25452	B

SCALE NONE SHEET 1.10 (B)

ENG 77.16 3-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
B	8	2.00 4.00					✓	EOB8	ADDED SH. 1-11 REF EOB7 ON-1 & -3 LSC270-00009-35-1 (WAS) -13 & LSC270-00009-34 S/N 8B & -36-1 S/N 24B (WAS) LSC270-00009-34 S/N 8B & -32 S/N 7A	LTA-5	✓		6-12-70 E. STONHAM		
	9	3.00					✓	EOB9	ON-1 & -3 ADDED NOTE # 9	LTA-5	✓	H.D.			
	10	1.00, 2.00 3.00, 4.00		LFM 590 (2)		✓		EOB10 LCD5568	CREATED -1-1 & -3-1 FOR LFM 590, LTA-5/R	LTA-5/R	✓				

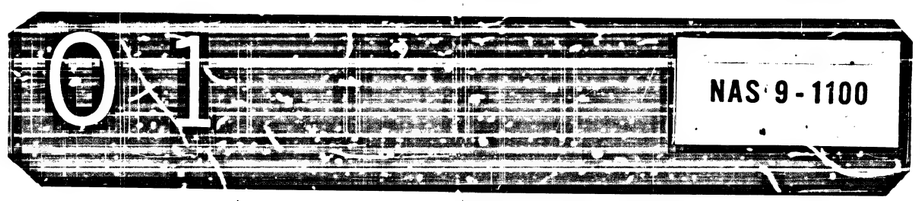
CHG APPROVED	LTR	GROUP LDR	PROPULSION	V.D.I.	RELIABILITY
	B				

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	! DW270-25452	B

SCALE NONE SHEET 1.11 (B)

ENG 77.10 3-66



CL	QTY PER ASSEMBLY						CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
					AR	AR		LED520-35	E	SEALANT							
			AR	AR				LED520-34	E	SEALANT							
C			AR	AR	AR	AR		MS20995C32	E	SAFETY WIRE	GOVT STD						
			8	8	8	8		AN515C8R4	E	SCREW	GOVT STD						
C			8	8	8	8		GW10K-416C	E	WASHER	GRUMMAN STD						
J			2	2	2	2		GS13AK-147	E	SEAL	GRUMMAN STD						
C			8	8	8	8		GB511AJ-4H12	E	BOLT	GRUMMAN STD						
J						1		LSC270-00009-36-1	S	SENSING UNIT	FUEL S/N 24B	TANK 2	SEE NOTE 3				
J				2				LSC270-00009-35-1	S	SENSING UNIT	OXIDIZER	SEE NOTE 3					
J						1		LSC270-00009-34	S	SENSING UNIT	FUEL S/N 8B	TANK # 1	SEE NOTE 3				
			2	2	2	2		LDW280M15563-11	E	RING	SEE DWG	SEE NOTE 4					
J					1			LDW270M10071-14-3	S	SENSING UNIT	SEE DWG						
J			2					LDW270M10071-13-4	S	SENSING UNIT	SEE DWG						
G								LDW270-25452-3-1	E	SENSING UNIT INSTL	(OXIDIZER)	SEE NOTE 6 & 9			NONE	NONE	
G								-3	E	SENSING UNIT INSTL	(OXIDIZER)						
G								-1-1	E	SENSING UNIT INSTL	(FUEL)						
G								LDW270-25452-1	E	SENSING UNIT INSTL	(FUEL)	SEE NOTE 6 & 9			NONE	NONE	
			-3-1	-3	-1-1	1											

CLEANLINESS LEVEL PER LSP14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : LPC-19-2 (GAC), LPC-19-3 (VENDOR)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-25452	B

SCALE NONE SHEET 2.00

ENG 77.2 7-65

NAS 9-1100

NOTES:

1. LUBRICATE BOLT THREADS WITH DUPONT PR-240 AC. INSTALL ALL BOLTS FINGER TIGHT AND TORQUE IN SEQUENCE AS FOLLOWS:
(a) PHYSICAL LOCATION FOR START OF SEQUENCE (BOLT #1) IS OPTIONAL.
(b) TORQUE ALL BOLTS PER SEQU NCE TO 15 INCH-LBS. AND REPEAT THE SEQUENCE UNTIL BOLTS DO NOT TURN WHEN 15 INCH-LBS IS APPLIED.
(c) REPEAT STEP (b) APPLYING 30 INCH-LBS.
(d) REPEAT STEP (b) APPLYING 70-75 INCH-LBS. FOR FINAL TORQUE.

2. SAFETY WIRE PER MS 33540.

3. COMMERCIAL PART SEE SPECIFICATION CONTROL DWG BEFORE ORDERING.

4. O-RING MINOR DIAMETER FOR EACH SENSOR TO BE ESTABLISHED IN ACCORDANCE WITH LPC 280-42.

5. TORQUE TO HIGH LIMIT TO ASSURE METAL TO METAL CONTACT BETWEEN SENSOR AND TANK COVER.

6. ON -1 AND -1-1, APPLY SEALANT LED520-35 (VISTANEX) AND ON -3 AND -3-1 APPLY SEALANT LED 520-34 (NITROSO) IN ACCORDANCE WITH LPC 280-46.

7. IF LSC 270-00009-36-1 IS NOT AVAILABLE LSC 270-00009-36 MAY BE USED.

8. THIS DWG AFFECTED BY THE FOLLOWING LFM. SEE LFM FOR EFFECTIVITY AND MODIFICATION: LFM 31.

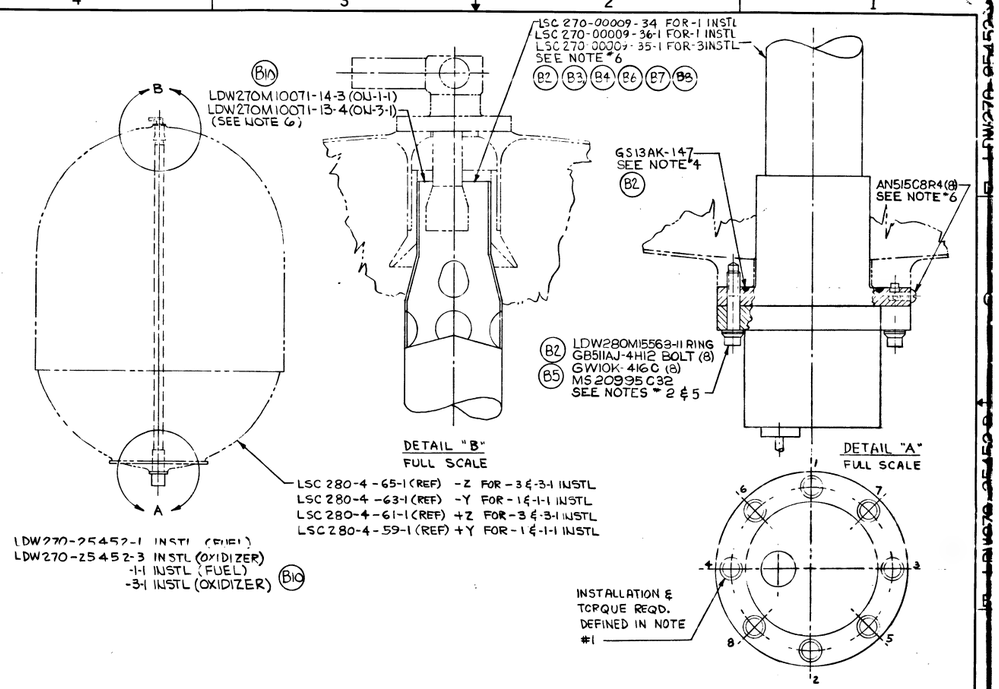
9. ON-1,-1-1,-3 AND -3-1 INSTALLATIONS IT IS PERMISSIBLE TO OMIT THE SEALING REQUIREMENTS OF LPC280-46 WHEN INJECTION PORTS ARE NON-EXISTANT IN SENSING UNITS.

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE	CODE IDENT NO.		
B	26512	LDW270-25452	B
SCALE		SHEET 3.00	

ENG 72.1 6-64

01

NAS 9-1100



LEM	GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
	SIZE	CODE IDENT NO.		
	C	26512	LDW270-25452	B
MODEL OR END ITEM	SCALE 1/10 & 1/1		SHEET 4.00	

ENG 752 6-64

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW270-25452 | EO NO. B10

CONTROL INFO NO. LM270-1937

CREATE -1-1 INSTL FOR LFM #590 LTA5/R SAME AS -1 EXCEPT SENSING UNIT LSC270-00009-34 (FUEL TANK #1) AND LSC270-00009-36-1 (FUEL TANK #2) TO BE REPLACED BY LDW270M10071-14-3 N/A LDW280-60900.

CREATE -3-1 INSTL FOR LFM #590 LTA5/R SAME AS -3 EXCEPT SENSING UNIT LSC270-00009-35-1 TO BE REPLACED BY LDW270M10071-13-4 N/A LDW280-60900.

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD 5568 PKG #1

REASON FOR EO: 1) ELIMINATE WIRE BUNDLE INTERFERENCE 2) REDUCE TANK SLOSH READING

DESCRIPTION OF EO: CREATED -1-1 & -3-1 FOR LFM #590 LTA5/R

GAEC EO RELEASE: 6/4/70 6/4/70 6/4/70 6/4/70

MODEL	EFFECTIVITY			DRAWING CHANGE REQD		DISPOSITION OF PARTS			APPROVED BY								
	PROD/ACCEPTANCE E.I.	GAEC UNIT NO.	SUB CONTR UNIT NO.	REVISE DWG ✓	RECORD EO	-1 REWORK	-3 SCRAP		DATE	6.9.70			6/8/70			6/9/70	6/10/70
LM	LFM #590	LTA5/R1159								PROP	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	EO NO.
				PRIORITY C	DRAWING TITLE: SENSING UNIT INSTL-PROPELLANT LEVEL-DESCENT-PROPULSION FEED SYSTEM				DRAWING NO. LDW270-25452								B10

ISSUED BY J. PAVLICA x1472 SECTION LM PROPULSION GROUP NO. 270 PL 39

01

NAS 9-1100

ENG 32.1 REV 3-68

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-25452 | EO NO. C1
CONTROL INFO NO. LM-5-23038

ADD NOTE *

THIS DRAWING IS EFFECTIVE BY LFM590 FOR LTA-5/R(159) SEE LDW200-55553

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD 556B 'B' CHG

REASON FOR EO: TO INSURE AGAINST PRGS SEAL LEAK.

DESCRIPTION OF EO: ADDED NOTE *

GAEC EO RELEASE: 08/8

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY				SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	EO NO.
								DATE						7/24/70	7/23/70	7/23/70	7/22/70	7/23/70
LM	LFM590	LTA-5/R(159)		✓		✓		7-23-70										C1

PRIORITY: C

DRAWING TITLE: SENSING UNIT INSTL ~ PROP LEVEL D/S PROP FEED SYSTEM

DRAWING NO.: LDW270-25452

EO NO.: C1

ISSUED BY LIAISON S. GRECO X86755 SECTION V.D.I. GROUP NO. 335 PL 25

0-1

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LDW270-25453 | EO NO. C1
CONTROL INFO NO. LEM 270-624

IN MODEL BLOCK FOR -1 INSTL:

REMOVE LTA-8(18) EFFECTIVITY

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG

REASON FOR EO: REQUIREMENT DELETED BY CCA 304

DESCRIPTION OF EO: IN MODEL BLOCK FOR -1 INSTL: REMOVED LTA-8(18) EFFECTIVITY

GAEC EO RELEASE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP	APPROVED BY: DATE	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	EO/T
LEM		LTA-8(18)		✓			✓	8/16/66				8-17	

PRIORITY: C
DRAWING TITLE: GAGING SYST. CONTROL BOX INSTL DESCENT STAGE -PROPELLANT TANK
DRAWING NO.: LDW270-25453
EO NO.: C1

ISSUED BY J. REBHOLZ 8-16-66 SECTION PROPULSION X1471 GROUP NO. 270 PL 35

278

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG. NO. LDW270-25453 | EO NO. C 2
CONTROL INFO NO. LM270-1130

SHEET 2.00

FOR -1 INSTL, LSC270-00009-43 (WAS) LSC270-00009-21

LFM

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓	LCR 2019 CCA 667

REASON FOR EO: USE PRODUCTION IN LIEU OF PRE-PRODUCTION HARDWARE

DESCRIPTION OF EO: SHT 2.00: FOR -1 INSTL, LSC270-00009-43 (WAS) LSC270-00009-21

GAEC EO RELEASE: JK 12/1/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY							
DATE								-11/67			12/1/67			12/11/67	12-12-67
LM	LFM-31	LTA-5 (15)		✓			✓	PROP	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ. ENGRG	GOVT
PRIORITY	DRAWING TITLE							DRAWING NO.						EO NO.	
C	GAGING SYST CONTROL BOX INSTL-DESC STAGE-PRPLNT TANK							LDW270-25453						C 2	

ISSUED BY S. NEWMAN X1611 SECTION PROPULSION GROUP NO. 270 PL 25

01 A

NAS 9-1100

1

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG. NO. LDW270-25453 | EO NO. C3
CONTROL INFO NO. LDW82-3526

IN -1

LSC270-00009-43 (WAS) LSC270-00009-21

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓		

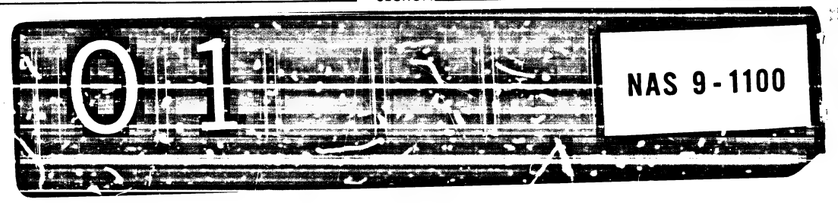
(82)

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
UPDATE TO LATEST CONFIGURATION	ON -1 LSC270-00009-43 (WAS) LSC270-00009-21	C 1/5/68

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP	APPROVED BY	DATE	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
LM		LTA-5 (1S)		✓		✓		RB PRG	1/3/68						

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	GAGING SYS. CONTROL BOX INSTL. DESCENT STAGE PROPELLANT TANK	LDW270-25453	C3

ISSUED BY Richard Heindell, XS214, MSC/MSTF SECTION Development Engr. GROUP NO. 862 PL 82



GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG NO.	EO NO.
LDW270-25453	C4
CONTROL INFO NO. LDW87-3554	

CANCEL C3 E.O.

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	DESCRIPTION OF EO	GAEC EO RELEASE
		✓	CANCELLED E.O C3	C

REASON FOR EO: C2 E.O. INCORPORATES CHANGE

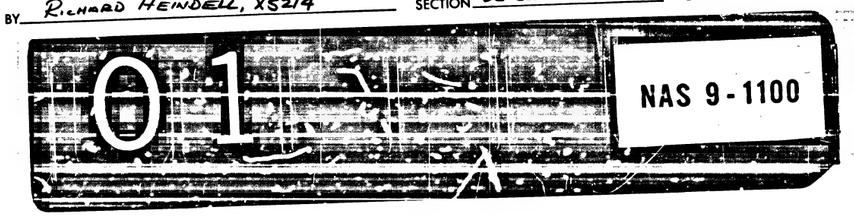
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LM		LTA-5 (1S)		✓		✓		KB	2/5/68			Reiman 1-24-68			1/29/68	C4

PRIORITY: C

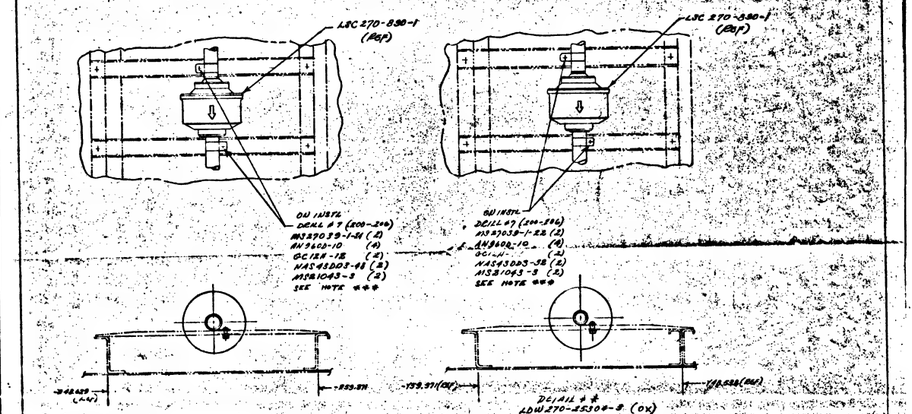
DRAWING TITLE: GAGING SYS. CONTROL BOX INSTALLATION DESCENT STAGE PROPELLANT TANK

DRAWING NO.: LDW270-25453

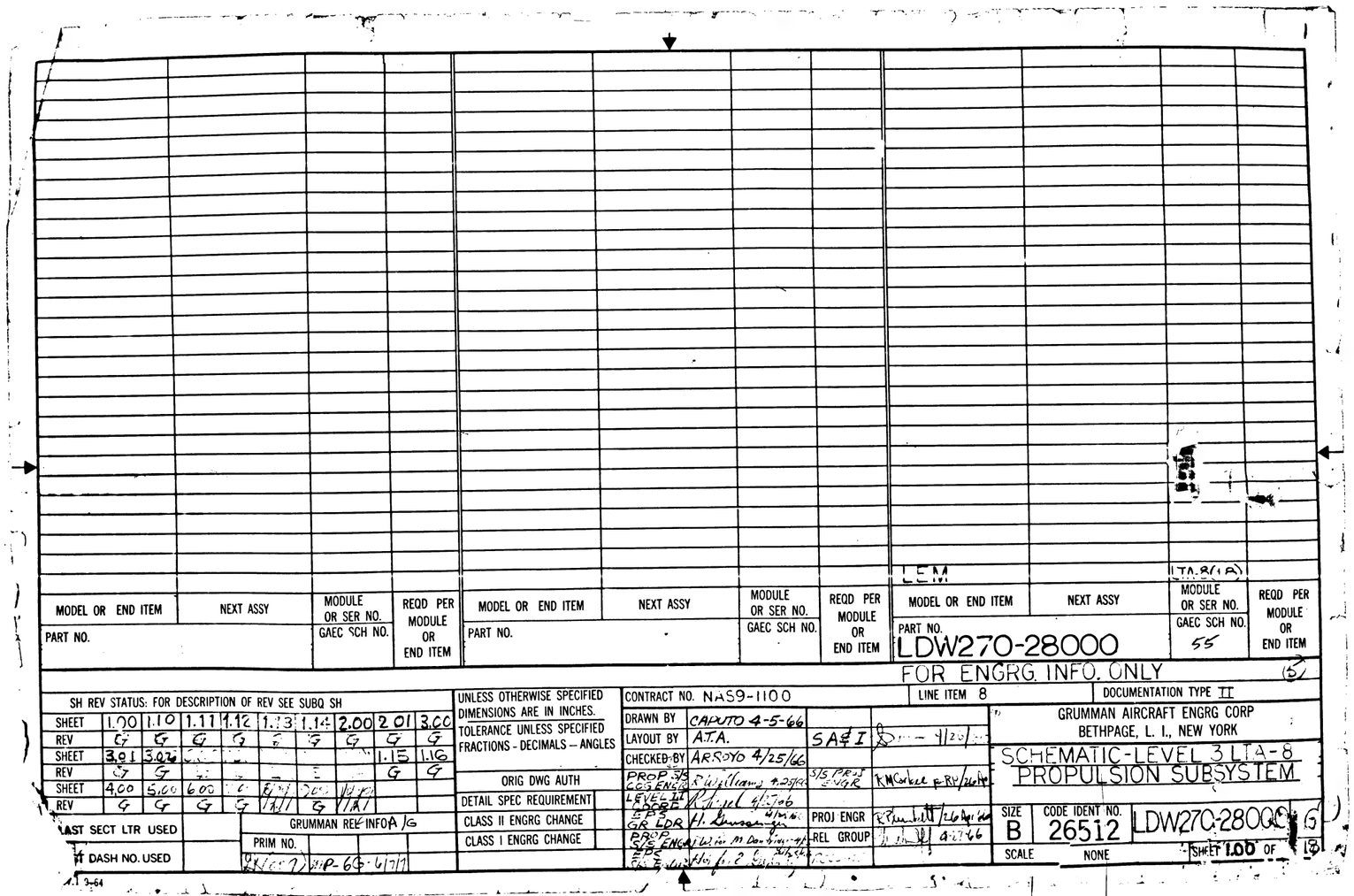
ISSUED BY: RICHARD HEINDELL, X5214 SECTION: DEVELOPEMENT ENGR. GROUP NO. 862 PL 82



LDW270-26304 ✓ 65



| | | |



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		LEM PART NO. LDW270-28000		LTA-8(1A) GAEC SCH NO. 55	

FOR ENGRG. INFO. ONLY

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	1.10	1.11	1.12	1.13	1.14	2.00	2.01	3.00
REV	G	G	G	G	G	G	G	G	G
SHEET	3.01	3.02						1.15	1.16
REV	G	G						G	G
SHEET	4.00	5.00	6.00						
REV	G	G	G	G		G			

LAST SECT LTR USED

DASH NO. USED

GRUMMAN REL INFO A/G

PRIM NO. MP-65-6/7/1

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS -- ANGLES

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100 LINE ITEM 8 DOCUMENTATION TYPE II

DRAWN BY	CAPUTO 4-5-66		
LAYOUT BY	A.T.A.	SA&I	4/20/66
CHECKED BY	ARROYO 4/25/66		
PROP SYS COG ENGR	S. Williams 4-25-66	SYS PROJ ENGR	R.M. Corbett 4-26-66
LEVEL III ENGRG	R. Riegel 4/26/66		
EPS GR LDR	H. Grossman 4/26/66	PROJ ENGR	R. Rubbell 4/26/66
PROP SYS ENGR	W. M. Davis 4/27/66	REL GROUP	4-27-66
EPS ENGR	H. J. Gross 4/27/66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SCHEMATIC-LEVEL 3 LTA-8
PROPULSION SUBSYSTEM

SIZE	CODE IDENT NO.	
B	26512	LDW270-28000 G

SCALE NONE SHEET 1.00 OF 16

A.I. 9-64

401

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00 1.10 4.00	8A 8D					E.O. A1	ADDED 2 EXPL. VALVES, LSC 270-819-9, IN PARALLEL, IN EACH PRESS. MODULE, BETWEEN THE CHECK VALVES & THE RELIEF VALVES.	NOTED	NOT	REQ'D	J SAUER 6-15-66		
	2	2.01 5.00 8.00	19C 50C					LEO 270 E.O. A2	④ LINE WAS BETWEEN GQ3616P AND #1 FUEL TANK. GQ3666P WAS GQ3616P & FUEL TANK #2 WAS FUEL TANK #1.						
	3	4.00 5.00	6ABC 6B 23A 23D 19D 10A 8ABC					E.O. A3	LDW 270-28454-3 WAS LSC 270-809-12. LSC 270-28454-1 WAS LSC 270-809-10. LSC 270-00822-3 WAS -5. LSC 270-817-1 WAS-3. LSC 270-817-2 WAS-4. LSC 270-820-9 WAS-3. DELETED "CAP": PLUG" & "VENT HOLE."						
	4	4.00	6A 7C					E.O. A4	ADDED C/O LSC 270-813-6 DISCONNECT TO RCS FUEL BLEED LINE. ADDED C/O LSC 270-813-7 DISCONNECT TO RCS OXIDIZER BLEED LINE.						
	5	4.00	7ABA 8BD					E.O. A5	LSC 270-717-1 WAS LSC 270-717-3 & LSC 270-717-2 WAS LSC 270-717-4.						
	6	4.00	4AEC 5AEC 9AE 11AEC 9A 11AEC 4ABEC 5B						DELETED OVERBOARD DRAIN. REROUTED LINE -4 DELETED PRESSURE TRANSDUCER LSC 360-601-101 (2) & LSC 360-601-107. ADDED 1/4 OPEN PORT 3 PLACES ADDED LINES (-6) & (-10)	NOTED	NOT	REQD	EJR		
	7	5.00	19A 25A 25B 25C 26A 26B 26C						LSC 270-809-8 (3) WAS (4). ADDED LSC 270-809-7 DELETED LSC 270-821-31, LSC 270-821-41, LSC 270-821-51, LSC 300-605-407, LSC 270-821-23 & GSE RELIEF VALVE. REROUTED (-6) & (-8) ADDED (-4)						

FOR CONTINUATION OF REVISIONS SEE SHEET 1.11

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28000	G (G)
SCALE NONE			SHEET 1.10

01 NAS 9-1100

3

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	QUAL APPD
	8	2.01 & 6.00 T	30B						DELETED PRESSURE REG OUT MANIFOLD, 10MT42 LSC360-601-107 & ASSOCIATED WIRES ADDED JUMPER WIRE FROM 'E' POINTS CONNECTING WIRES D46 & D47, JOINING LDW360-21007 TO LDW360-28507. CAPPED WIRES, K32 & K33				J.H. CORBETT 6-22-66		
			32B						DELETED PRESSURE HE SUPPLY TANK #1. 10MT35 LSC360-601-101 & ASSOCIATED WIRES DELETED PRESSURE HE SUPPLY TANK #2, 10MT36 LSC360-601-101 & ASSOCIATED WIRES CAPPED WIRES, D12, D13, D17, D18, K14, K15, K22 & K23	NOTED	NOT	REQ'D			
A	9	NOTED							SH 1.00 OF 16 WAS 1.00 OF 12 ADDED SH 1.10, 1.11, 1.12 & 3.02						
	10	10.00	78A 76B						ADDED LMP WIRING ON J173 PINS 221 & 239 WERE 62 & 63 RESPECTIVELY						
	11	3.01							REVISED NOTE 37; WAS SURFACE HEATER BY SYSTEM TEST DELETED NOTES 31 & 35.						
	12	3.02							ADDED NOTES 40 AND 41 AND 42.						
	13	4.00	5C						ADDED PLUG CALLOUT ON ENGINE INTERFACE.						
	14		10A						ADDED "SEE NOTE 24" TO GP1116P AND GP0019P.	NOTED	NOT	REQ'D	O. ULMAN 7-12-66		
	15		12C						ON He TANK NO 1 AND 2 ADDED ¼ DIA HOLES TO PREVENT PRESSURIZATION OF TANK.						
	16	5.00	19D 19G 19J 24D						ADDED "SEE NOTE 24" TO GQ3611P; GQ4111P; GQ4116P; GQ3666P GQ3009P AND GQ3010P.						
	17		19D					REF E0, A3	THERMAL SIMULATOR LDW270-28352 WAS HEAT EXCHANGER LSC270-820-9; REVISED CONFIGURATION AND DELETED (4) PLUGS.						

FOR CONTINUATION OF REVISIONS SEE SHEET 1.12

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28000	G

SCALE NONE — SHEET 1.11

01 NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	QUAL APPD
A	18	5.00	20D						ADDED PLUG TO LSC 280-4-63 FUEL TANK.	NOTED	NOT	REQ	QULMAN 7-12-66	ATA PRO # 6-1-66	
	19		25C						REVISED CONFIGURATION OF TANK ADDED GQ3435P, GQ3436P AND SEE NOTE 40 (7 PLACES).						
	20		25D						REMOVED PLUG TO EXPLOSIVE VALVE LSC270-714-5.						
	21		25C						REMOVED PLUG (2) PLACES.						
	22		25B						TEST POINT LSC270-813-23 WAS DISCONNECT BULK HEAD FITTING AN TYPE.						
									RETRACED SHEETS 6.00 & 7.00 NO CHANGE, LAST REVISION "A", CANCELLED SHEETS 8.00 & 10.00 (PER B3 REV. BELOW) NOW PART OF SHEETS 6.00 & 7.00 SHEETS 1.00 OF 14 WAS 1.00 OF 16	NOTED	NOT	REQ'D	R LILLIA 11/13/66		
B	1	9.00	64A					EO B1	ADDED P173 & J173 CONN INFO TO WIRES K48 THRU K51						
	2	2.01 6.00	37A					EO B2	P500 WAS P3030, P501 WAS P3028 & P502 WAS P3029 ADDED REF DESIGNATIONS 10W1, 10W2 & 10W3 PART NO'S. GC875BA-1-2 & 3						
	3	1.00							SHEETS 10 OF 14 WAS 10 OF 16, CANCELLED SHTS 8.00 & 10.00						
	4	2.00 2.01							COMPLETELY REVISED SHEET & ZONE COLUMNS						
C	1	5.00 6.00 3.02 2.00 2.01	22A 22B 24A 24B 29B 31A					EO C1	DELETED TRANSDUCERS 10MT11, 10MT12, 10MT17, 10MT18 10MT20, 10MT21, 10MT22 & 10MT23 ADDED NOTE 43						

R CONTINUATION OF REVISIONS SEE SHEET 1.13

3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28000	G
SCALE NONE			SHEET 1.12

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
C	2	2.00 2.01 7.00	47 A,B,C 49A, 49C					EO C2	DELETED 10A3 & 10MT52 THRU 10MT55 & REVISED AFFECTED WIRING	NOTED	NOT	REQD	R. LILJA 12-13-66		
	3	6.00	32B					(EO C3) LE0270-17	REVISED WIRING FOR 10MT47 (GQ3476T) 10MT47 HAD 3 WIRES						
	4	7.00	48B					(EO C4) LE0270-18	ADDED WIRES TO PIN "B" OF P55A, P55B FOR SHIELD RETURN						
	5	7.00	53C					EO C5	10M1 TERMINAL 6 WAS 7 & 7 WAS 6 ON PANEL I						
	6							EO C6 LE0270-20	SUPERSEDED BY EO D7						
	7	5.00	23A					EO C7	LSC270-816-11-100 WAS LSC270-816-11-1						
D	1	6.00 2.01	34C					LE0270-23 (EO D1)	10MT65 WAS 10MT33 (GP7606T-ENG INTERFACE FUEL) 10MT66 WAS 10MT34 (GP7608T-ENG INTERFACE OXID)						
	2	6.00	29B 31A					EO D2	REMOVED JUMPER PLUG FROM P117, P118, P119, P129 THRU P132 & P135						
	3	5.00	20A 20C					EO D3	DELETED GQ3456 & GQ3457, LSC270-813-27 & LSC270-813-26						
	4	4.00	8A 8C					EO D4	CHANGED F/D TO AGREE WITH LINES INSTALLED ON VEHICLE.						
	5	500	20B 21A 21B 21C					EO D5	DELETED LSC270-00009-13(2), -14(2) & -21. DELETED GQ3603Q, GQ3604Q, GQ3605Q, GQ4103Q, GQ4104Q GQ4105Q & GQ4455X						

FOR CONTINUATION OF REVISIONS SEE SHEET 1.14

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28000	G

SCALE NONE SHEET 1.13

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
D	6	4.00	6A 6C					E0 D6	RELOCATED BELLOWS, RELOCATED GP7615T & GP7625T TEMPERATURE TRANSDUCERS, ADDED FLANGES AT ENGINE INTERFACE ELBOWS	NOTED	NOT	REQD	R. LILLY 12-14-66		
	7							E0 D7	THIS E0 D7 SUPERSEDES & CANCELS E0 C6						
	8	5.00 6.00 2.01	19C 25B 25C 26C 28A					E0 D8	ADDED END CAPS TO K18 & K19 - DELETED GQ3435P, GQ3451T, GQ3455T, GQ3459T, GQ3463T TRANSDUCERS, DELETED 10MT45 & 10MT48 THRU 10MT51						
	9	4.00	5A 5C 6A 6C					E0 D9	DELETED LSC270-809-14 & 16, LDW270-28454-5 & 7 (WAS) -1E-3, ADDED FLEX LINE SYMBOLS (3), LDW270-28456-1E-3, (4) -6 LINES. RELOCATED JP9481 & JP9483						
	10	4.00	5C 6C					E0 D10	DELETED LSC270-807-1 & 808-1, MOTOR (THROTTLE ACTUATOR) RELOCATED LINES. ADDED FLEX LINE SYMBOL (2)						
	11	3.02						E0 D11	ADDED NOTE 44						
	12	4.00 5.00	5C 7B 7C 18C 21A 41B 21C 24B 26C					E0 D12	TOF/DADDED PTO GQ3436P LDW340-64606 HEATER CALLOUTS: LDW938-28008, LDW938-28009 LDW938-10301, LDW938-10302, LDW938-10307, LDW938-10308, LDW938-10309 & LDW938-10310 & NOTE 44						
	13	6.00	40C					E0 D13 LE0270-30	ON 4CB53, 5A WAS 3A SHEETS 1.00 OF 16 WAS 1.00 OF 14						

FOR CONTINUATION OF REVISIONS SEE SHEET 1.15

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28000	G
SCALE NONE		SHEET 1.14	

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REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	[illegible] APPD
E	1	1.15 1.16 5.00	23A,C 26B,C					E.O. E1	SHEET 1.00 OF 17 WAS 1.00 OF 16 ADDED SHEETS 1.15 ADDED GQ 9402 & GQ 9406, LSC 270-817-5 WAS LSC270-817-1 LSC270-817-6 WAS LSC270-817-2	LTA-8(18)	NOT	REQD	H.C. REUEL 1-3-67		
	2	4.00	4B					E.O. E2	DELETED GP2801D, GP2802D & GP2803D FROM ENGINE CALLOUT						
	3	2.00 7.00	45A 45B					E.O. E3	DELETED ASSYS 10A8, 10A9 & 10A10 WITH ASSOC. WIRING & CALLOUTS						
F	1	1.00 6.00 9.00	35A 56 B 57B					E.O. F1	DELETED MEAS. GP2701T, GP2702T, GP2703T, GP2704T, GP2706T, GQ7206T, GQ7211T, GQ7212T, GQ7213T, GQ72147 AND ASSOCIATED LEADS.	LTA-8(1[illegible])	NOT	REQD	DE MASTERS J 2-9-67		
	2	1.00 4.00 5.00	3C 14C					E.O. F2	DELETED FOLLOWING MEASUREMENTS: GP2701T, GP2702T, GP2703T, GP2704T & GP2706T, GQ7206T, GQ7211T, GQ7212T, GQ7213T & GQ7214T						
	3	4.00 5.00	5A,B,C 14B,C 17A,B						CHANGED BELLOWS TO FLEXIBLE TUBING.						
	4	4.00	9A,C 11A,C						REMOVED 1/4 OPEN PORT & ADDED -4 LINE.						
	5	4.00	5B						ADDED FOUR (4) -6 LINES & REMOVED SYMBOL FOR OVERBOARD SEAL DRAIN.						
	6	4.00	6C						-12 LINE WAS -10						
	7	5.00	20A, B,C						CHANGED VIEW OF SURFACE HEATERS & ADDED +Y, -Z ON #1 FUEL & OXIDIZER, -Y, +Z ON #2 FUEL & OXIDIZER TANKS. REROUTED -24 LINE.						
	8	5.00	19B						-4 LINE WAS SOLID.						
	9	5.00	18C						ON DESCENT ENGINE LSC 270-00600-8 ADDED "SEE NOTE 44."						
	10	5.00	24C 25C						REROUTED -8 LINE						
	11	2.00						B,C,D,E,F (A)	10M5 WAS LSC350-00401-03-1; 10MT4 WAS LSC350-80179-12; 10FL1, 10FL2 & 10FL3 WERE LSC350-80401-03; 10FL4 WAS LSC350-80402-03	LTA-8(18)	NDT	REQD	C/R 1-14-67		

FOR CONTINUATION OF REVISIONS SEE SHEET 1.10

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28000	G

SCALE NONE | SHEET 1.15

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
F	12	1.00 1.16 1.10 1.11 1.12 1.13 1.14 2.01 3.00 3.01 3.02							SHEET 1.00 OF 18 WAS SHEET 1.00 OF 17 ADDED SHEET 1.16 ADDED REV LETTER "F" TO SHEETS 1.10, 1.11, 1.12, 1.13, 1.14, 2.01, 3.00, 3.01 & 3.02 FOR DISTRIBUTION & PROCESSING PURPOSE ONLY	NOTED	NOT	REQ'D			
G	1	3.01 4.00 6.00	 12A 12C 33B 34B					EO G1	REVISED NOTE 24 (WAS) PRESSURE READOUTS NOT REQUIRED ADDED "SEE NOTE 24" TO GP0201T, GP0202T 10MT37, 10MT38.	LTA 8(18)	NOT	REQD			
	2	5.00 7.00	23C 42A					EO G2	ADDED "SEE NOTE 24" TO GQ3309, GQ3310X.						
	3	5.00 6.00	18B 32B					EO G3	ADDED "SEE NOTE 24" BY GQ4311T & GQ3476T						
	4	4.00 6.00 9.00	5C 5D 36B 60B					EO G4	ADDED "SEE NOTE 24" BY MEAS. GP1501P, GP1503P, GQ3611P, GQ4111P, GQ6501P, GP2001P, GP2010P.						
	5	6.00	39C					EO G5	J55-G WAS J55-G.						
	6	1.10, 1.11 1.12, 1.13 1.14, 1.15 2.00, 2.01 3.02, 301						(F)	ADDED REV LETTER "G" TO SHEETS 1.10, 1.11, 1.12, 1.13, 1.14 1.15, 2.00, 2.01, 3.00 & 3.02 FOR DISTRIBUTION & PROCESSING PURPOSE ONLY. (G)	NOTED					

CAPUTS 6-1-67

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28000	G
SCALE NONE		SHEET 1.16	

FOR CONTINUATION OF REVISIONS SEE SHEET _____

ENG 77.3 5-65

01

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~~10MT18~~	~~NTN5U74J-201~~	~~XDUCER-PRESS-FUEL TANK VENT RELIEF VALVE INLET~~	~~8~~	~~51B~~	GQ3505P
~~10MT17~~	~~NTN5U77J-211~~	~~XDUCER-PRESS-ULLAGE FUEL TANK #1~~	~~8~~	~~51B~~	GQ3501P
10MT16	LSC360-601-107	TRANSDUCER-PRESS ABSOLUTE	6	30A	GQ4111P
10MT13	LSC360-605-301	XDUCER-TEMP-ENGINE INTERFACE INLET OX	6	32A	GQ4311T
~~10MT12~~	~~NTN5U77J-203~~	~~XDUCER-PRESS HE SEC REG UPSTREAM INLET~~	~~8~~	~~51B~~	GQ3510P
~~10MT11~~	~~NTN5U79J-203~~	~~XDUCER-PRESS HE PRIM REG UPSTREAM INLET~~	~~8~~	~~51B~~	GQ3009P
10MT10	LSC360-605303	TRANSDUCER-TEMP	6	29B	GQ4219T
10MT9	↕	↕	6	30B	GQ4218T
10MT8	↕	↕	6	28B	GQ3719T
10MT7	LSC360-605-303	TRANSDUCER-TEMP	6	29B	GQ3718T
10MT1	LSC360-605-301	XDUCER-TEMP-ENGINE INTERFACE INLET FUEL	6	32A	GQ3811T
10M5	LSC350-00401-03-2	PROPELLANT QTY INDICATOR	7	49B	
10M4	LSC350-80179-13	DUAL VERT METER TEMP	7	53A	
10M3	LSC350-80125-12	DUAL VERT METER-PRESS	7	53A	
10M1	LSC350-20100-02	He TEMP/PRESS READOUT	7	52C	
10L6	LSC270-00822-5	SOLENOID VALVE OSCILLATOR ISOLATION	6	32A	
10FL4	LSC350-80402-04	DESCENT STATUS REG FLAG NO.2	7	44B	
10FL3	LSC350-80401-04	DESCENT STATUS REG FLAG NO.1	7	44C	
10FL2	LSC350-80401-04	ASCENT STATUS REG FLAG NO.2	6	39B	
10FL1	LSC350-80401-04	ASCENT STATUS REG FLAG NO.1	6	39C	
10A7L1	LSC270-713-6	LATCHING He SOLENOID VALVE NO.2	7	42A	
10A6L1	LSC270-713-5	LATCHING He SOLENOID VALVE NO.1	7	42B	
10A5L1	LSC270-713-13	LATCHING He SOLENOID VALVE NO.2	6	38A	
10A4L1	LSC270-713-13	LATCHING He SOLENOID VALVE NO.1	6	38C	
REF DESIGNATION	PART NUMBER	DESCRIPTION	SHEET	ZONE	

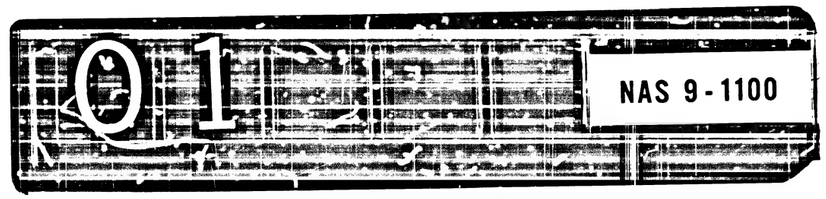
10A7A1CR2	UZ 5940	DIODE	7	42B	
10A7A1CR1	UZ 5940	DIODE	7	42B	
10A6A1CR2	UZ 5840	DIODE	7	42C	
10A6A1CR1	UZ 5840	DIODE	7	42C	
10A5A1CR2	UZ 5840	DIODE	6	38A	
10A5A1CR1	UZ 5840	DIODE	6	38A	
10A4A1CR2	UZ 5840	DIODE	6	38C	
10A4A1CR1	UZ 5840	DIODE	6	38C	
~~10A10~~	~~TBA~~	~~VIBRATION SIG AMPL~~	~~6~~	~~36A~~	~~SPECIFIED~~
~~10A9~~	~~TBA~~	~~VIBRATION SIG AMPL~~	~~6~~	~~37A~~	~~SPECIFIED~~
~~10A3~~	~~TBA~~	~~VIBRATION SIG AMPL~~	~~6~~	~~37A~~	~~SPECIFIED~~
10A1	LDW390-28070-3	VALVE ASSY	7	42A	
10A6	LDW390-28070-1	↕	7	42B	
10A5	LDW390-28070-5		6	38B	
10A4	LDW390-28070-5	VALVE ASSY.	6	38C	
~~10A3~~	~~LSC270-00009-21~~	~~GAGING CONT UNIT PROPELLANT QUANTITY~~	~~7~~	~~47F~~	
10A2	LSC270-00500-7	ASCENT ENG (BELL)	6	33A	
10A1	LSC270-00600-8	DESCENT ENGINE S.T.L	9	-	
REF DESIGNATION	PART NUMBER	DESCRIPTION	SHEET	ZONE	

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28000	G

SCALE NONE SHEET 2.00

NG 77.10 7-64



						10MT47	NTN510124-001	TRANSDUCER-TEMP	6	32A	GQ3476T
						~~10MT45~~	~~LSC270-821-29~~	~~TRANSDUCER-PRESS ABSOLUTE~~	6	29A	GQ3435P
						10MT43	LSC270-801-6	TRANSDUCER-OX TANK LEVEL LOW	6	32B	GP1408X
						10MT42	LSC360-601-107	TRANSDUCER-PRESS ABSOLUTE			GP0025P
						10MT41	LSC270-901-5	TRANSDUCER-FUEL TANK LEVEL LOW	6	32B	GP0908X
						10MT40	LSC360-605-303	TRANSDUCER-TEMP	6	33B	GP1218T
						10MT39	LSC360-605-303	↕	6	33B	GP0718T
						10MT38	LSC360-605-405	↕	6	33B	GP0202T
						10MT37	LSC360-605-405	TRANSDUCER-TEMP	6	34B	GP0201T
						10MT36	LSC360-601-101	TRANSDUCER-PRESS ABSOLUTE			GP0002P
						10MT35	LSC360-601-101	TRANSDUCER-PRESS ABSOLUTE			GP0001P
10W3	GC875BA-3	CABLE		37A		10MT66	LSC360-605-301	XDUCER-OXID TANK OUTLET TEMP	6	34B	GP7625T
10W2	GC875BA-2	CABLE		37A		10MT65	LSC360-605-301	XDUCER-FUEL TANK OUTLET TEMP	6	34B	GP7615T
10W1	GC875BA-1	CABLE		37A		10MT32	NTN510981-201	XDUCER-PRESS-DROP OX TANK INTERFACE	6	35B	GP1116P
						10MT31	NTN510790-201	XDUCER-PRESS-OX TANK VENT RELIEF VALVE INLET	6	35B	GP1004P
10S8	LSC350-83-10211	PROPELLANT QTY MONITOR SEL SWITCH	7	49B		10MT30	NTN510790-201	XDUCER-PRESS OX TANK ULLAGE	6	35B	GP1001P
10S7	LSC350-81-05311	DESCENT REGULATOR NO. 2 SWITCH	7	44B		10MT29	NTN510981-201	XDUCER-PRESS-DROP FUEL TANK INTERFACE	6	36B	GP0616P
10S6	LSC350-80305-11	He TEMP/PRESS MONITOR SWITCH	7	52B		10MT28	NTN510790-201	XDUCER-PRESS-FUEL TANK VENT RELIEF VALVE INLET	6	36B	GP0504P
10S5	LSC350-81-05311	DESCENT REGULATOR NO. 1 SWITCH	7	44C		10MT27	NTN510790-201	XDUCER-PRESS-FUEL TANK ULLAGE	6	36B	GP0501P
10S4	LSC350-81-05311	ASCENT REGULATOR NO. 2 SWITCH	6	39B		10MT26	NTN510790-202	XDUCER-PRESS He SEC REG UPSTREAM INLET	6	37B	GP0020P
10S3	LSC350-81-05311	ASCENT REGULATOR NO. 1 SWITCH	6	39C		10MT25	NTN510790-202	XDUCER-PRESS-He PRIM REG UPSTREAM INLET	6	37B	GP0019P
10S1	LSC350-84-02011	TEMP/PRESS MONITOR SWITCH	7	52A		10MT24	LSC360-601-107	TRANSDUCER-PRESS ABSOLUTE	6	29A	GQ3611P
						~~10MT23~~	~~NTN510981-201~~	~~XDUCER-PRESS OX TK TO ENGINE INTERFACE~~			GQ4116P
						~~10MT22~~	~~NTN510790-201~~	~~XDUCER-PRESS OX TANK VENT RELIEF VALVE INLET~~			GQ4005P
						~~10MT21~~	~~NTN510790-201~~	~~XDUCER-PRESS OX TANK ULLAGE~~			GQ4001P
						~~10MT20~~	~~NTN510981-201~~	~~XDUCER-PRESS-FUEL TANK TO ENGINE INTERFACE~~			GQ3666P
						10MT19	LSC360-601-107	TRANSDUCER-PRESS ABSOLUTE	6	29A	GQ3018P
~~10MT55~~	~~LSC270-00009-13~~	~~SENSING UNIT OXIDIZER QUANTITY~~	7	49A							
~~10MT54~~	~~LSC270-00009-13~~	~~SENSING UNIT OXIDIZER QUANTITY~~	7	49A							
~~10MT53~~	~~LSC270-00009-14~~	~~SENSING UNIT FUEL QUANTITY~~	7	49C							
~~10MT52~~	~~LSC270-00009-14~~	~~SENSING UNIT FUEL QUANTITY~~	7	49C							
~~10MT51~~	~~LSC360-605-407~~	~~TRANSDUCER, TEMP~~	6	30A	GQ3463T						
~~10MT50~~	~~LSC360-605-407~~	↕	6	31A	GQ3459T						
~~10MT49~~	~~LSC360-605-407~~	↕	6	31A	GQ3455T						
~~10MT48~~	~~LSC360-605-407~~	~~TRANSDUCER, TEMP~~	6	31A	GQ3451T						
REF DESIGNATION	PART NUMBER	DESCRIPTION	SHEET	ZONE		REF DESIGNATION	PART NUMBER	DESCRIPTION	SHEET	ZONE	

ENG 77.10 7-64

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28000	G
SCALE NONE		SHEET 2.01	

01

NAS 9-1100

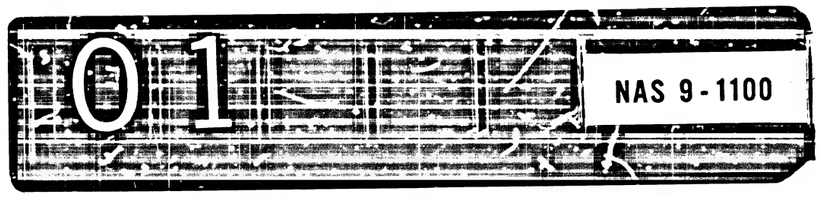
NOTES CHECKED ✓ APPLY TO THIS DRAWING

	1. SOLDERING OF ELECTRICAL CONNECTIONS TO BE IN ACCORDANCE WITH	✓	18. SYMBOLS ARE IN ACCORDANCE WITH MSFC-STD-162A DATED FEB 14, 1964.
	2. BOND PER LSP-390-001.		
	3. WIRING INSTALLATION PER LSP-390-002.	✓	19. SCHEMATIC LINE KEY:
✓	4. WIRES ARE TO BE TWISTED IN ACCORDANCE WITH LSP-530-001, TABLE III.		HELIUM ——•——•——•——
	5. QUANTITIES OF END CAPS, SPLICES AND TERMINALS ARE NOT SPECIFIED IN THE BILL OF MATERIALS. USAGE: AS REQ'D.		OXIDIZER ——X——X——X——
	6. FOR SCHEMATIC WIRING DIAGRAM SEE DRAWING NO.		FUEL ——||——||——
	7. ALL WIRES TO BE HOT STAMPED EVERY INCHES WITH WIRE NUMBER.		OUTSIDE DIAMETERS: (-2)=1/8 (-4)=1/4 (-6)=3/8 (-8)=1/2 (-10)=5/8 (-12)=3/4 (-20)=1 1/4 (-24)=1 1/2 (-28)=1 3/4 (-32)=2
	8. WIRE BUNDLING AND ROUTING: WIRES OF THE SAME CLASSIFICATION MAY BE BUNDLED TOGETHER WHEN A CLASSIFICATION LETTER IS PRECEEDED BY A NUMBER, SUCH SUBCLASSIFICATION SHALL BE SEPARATED BY A MINIMUM OF ONE-INCH. (EXAMPLE: 1D, 2D SEPARATED ONE-INCH MINIMUM) A MINIMUM OF ONE-INCH SEPARATION REQUIRED BETWEEN CLASSIFICATION GROUPS A, B, C, D, & E. A MINIMUM OF ONE-INCH SEPARATION REQUIRED BETWEEN CLASSIFICATION GROUPS F, G, & H. ANYONE OF THE CLASSIFICATION GROUPS A, B, C, D, OR E SHALL BE SEPARATED BY A MINIMUM OF FOUR-INCHES FROM ANYONE OF THE CLASSIFICATION GROUPS F, G, & H. WIRE BUNDLES TO BE ROUTED IN CONSOLE AS SHOWN.		OVERBOARD DRAIN OBD
			DIFFERENTIAL PRESS TRANSDUCER.
	9. WIRE LENGTHS SHOWN ARE APPROXIMATE. EXACT LENGTHS TO BE DETERMINED ON FIRST MANUFACTURED UNIT AND ENGINEERING DEPARTMENT NOTIFIED.	✓	20. THRUST NEUTRALIZER UNDER STUDY, TO BE INCORPORATED AT A LATER DATE.
	10. STENCIL OR MARK CHARACTERS PER MS33558, ( ) HIGH UNLESS OTHERWISE SPECIFIED USING BLACK LACQUER PER TT-L-595, #1775 (GRUMMAN FINISH #69). COVER WITH CLEAR FLAT LACQUER PER TT-L-58 TYPE I (GRUMMAN FINISH #133).	✓	21. ELECTRICAL DWG SYMBOLS SHOWN ON THIS DWG ARE IN ACCORDANCE WITH SECTION 15 OF THE MSFC DRAFTING MANUAL. MIL-STD-15-1A AND GS 22B.
	11. ENGRAVE CHARACTERS ( ) HIGH x 0.005 MINIMUM DEPTH PER MS33558 (EXCEPT AS NOTED). FILL WITH BLACK LACQUER PER TT-C-595, #1775 (GRUMMAN FINISH #69).	✓	22. REFER TO LDW 320-28000 FOR SYSTEM SCHEMATIC LEVEL 3 FOR ELECTRO EXPLOSIVE DEVICES ASSOCIATED WITH PROPULSION SUBSYSTEM.
	12. ENGRAVE ALL INDEX DIVISIONS APART 3/16 LONG, ROTATING OUTWARD FROM RADIUS.		
	13. CENTRALIZE ALL CHARACTERS.		
	14. BREAK ALL SHARP EDGES.		
	15. BEND RELIEF TO BE MINIMUM RADII.		
	16. ALL BEND RADII TO BE MINIMUM RADIUS.		
	17. FINISH: APPLY EPOXY POLYAMIDE PRIMER MIL-P-23377 OR G.M.S. #1012. APPLY COATS OF MIL-L- LACQUER COLOR # ( ) PER FEDERAL STANDARD #595.		

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28000	G
SCALE NONE		SHEET 3.00	

LNG 77.13 8-64



8

NOTES (CON'T) (NOTES CHECKED ✓ APPLY TO THIS DWG)

✓ 23. TRIM ORIFICES SHALL BE EQUAL TO LINE SIZE.

1' 24. THESE MEASUREMENTS NOT REQUIRED OR MADE ON LTA-8. FOR DETAILS REFER TO APPLICABLE MEAS. LIST AND MCR'S AS NOTED ELSEWHERE ON THIS DWG.

✓ 26. RELIEF VALVE MUST BE CONNECTED TO A LINE GOING OUT OF THE CHAMBER DURING T/V TEST.

✓ 27. DESCENT ENGINE ELECTRICAL CIRCUITS AND INTERFACES ARE NOT DOCUMENTED BY LSC DWGS. ENGINE WIRING DIAGRAMS SHOWN IN THIS LEVEL 3 REPRESENT BEST INFORMATION AVAILABLE.

✓ 28. GROUND DESIGNATIONS: N1 = AC GROUND; N2 = DC GROUND; N3 = SIGNAL GROUND; N4 = STRUCTURE GROUND.

✓ 29. FOR DETAIL MEASUREMENT STATUS REFER TO:
(a) LTA-8 MEASUREMENT LIST LED 360-208 REV A, DATED JAN 14, 1966.
(b) SECTION III OF THE CURRENT LEM MEASUREMENT STATUS REPORT.
(c) PROJECT APPROVED MCR'S: 305, 305A, 321, 341, 348 AND 364.

✓ 30. STUB BACK THESE WIRES ANTICIPATE UTILIZATION ON LATER VEHICLE.

✓ 31. ~~FRONT PANEL PRESENTLY SHOWS DESCENT TEMP 142. HOWEVER, THESE MEASUREMENTS WILL NOT BE OPERATIVE DUE TO DELETION OF THE AMBIENT HELIUM PRESSURIZATION SECTION.~~

✓ 32. ALTHOUGH REQUIRED FOR THE LEM-1 CONFIGURATION, MEASUREMENTS GP7551X & GP7552X CANNOT BE IMPLEMENTED ON LTA-8. ACTUATOR ISOLATION VALVES FOR THIS VEHICLE ARE NOT SUPPLIED WITH POSITION SENSING LIMIT SWITCHES.

✓ 33. NOTED FLAGS WILL SHOW A STRIPE INDICATION WHEN SIGNAL POWER IS APPLIED TO PIN "1" (NORMALLY GRAY).

✓ 34. NOTED FLAG WILL SHOW GRAY INDICATION WHEN SIGNAL POWER IS APPLIED TO PIN "1" (NORMALLY STRIPED).

✓ 35. ~~NOTED WIRES ARE TO BE CAPPED & STOWED PENDING RESOLUTION OF THE VALVE POSITION SWITCH WIRING.~~

✓ 36. MEASUREMENTS GP1801X, GP1802X, GP1805X, GP1806X, GP1811X, GP1812X, GP1813X, GP1814X CANNOT BE IMPLEMENTED. EXISTING VALVE POSITION SENSING SWITCHES DO NOT PROVIDE REQUESTED CONTACT CLOSURES.

✓ 37. SURFACE HEATERS TO BE PROVIDED BY SYSTEM TEST.

✓ 38. WIRES K346-26(A), K347-26(A) AND K7-26(A) ARE CONNECTED AS SHOWN FOR UNMANNED FLIGHTS ONLY. FOR MANNED FLIGHTS, DISCONNECT ABOVE WIRES AT TERMINAL STRIP, CAP AND STOW, AND REPLACE WITH NOTED WIRES.

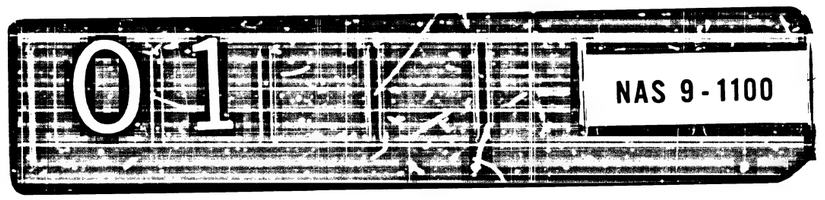
✓ 39. DUE TO THE ELECTRICAL CONFIGURATION OF THE LTA-8 ASCENT ENGINE, THESE WIRES CANNOT BE IMPLEMENTED. CAP & STOW.

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28000	G

SCALE NONE SHEET 3.01

ENG 73.1 6-64

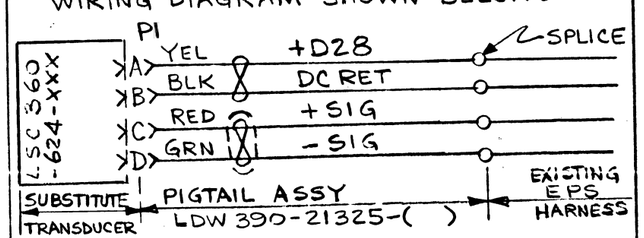


NOTES (CONT)

40. LINES ARE OPEN ENDED AND STRAPPED TO THERMAL SIMULATOR.

41. ALL DISCONTINUOUS LINES SHALL BE MADE CONTINUOUS BY THERMAL STRAPS AS PER LAV 257-25.

42. PRESSURE TRANSDUCER LSC360-624-XXX MAY BE SUBSTITUTED FOR ANY PRESSURE TRANSDUCER LSC360-601-XXX SHOWN ON THIS LEVEL 3 (PER LAV-262-34 DATED 6-23-66). IN THIS EVENT, THE RESPECTIVE LSC360-601 WIRING DIAGRAM IS SUPERSEDED BY THE SUBSTITUTE TRANSDUCER WIRING DIAGRAM SHOWN BELOW:-



43. THESE TRANSDUCERS WILL NOT BE INSTALLED ON LTA-8 PER MCR 604. MATING PLUGS WITH SINGLE SHORTING JUMPERS WILL BE INSTALLED IN PLACE OF THE TRANSDUCERS AS SHOWN

44. LTA-8 PROP SURFACE HEATERS GSE/VEH ELECTRICAL INTERFACE IDENTIFICATION

HEATER LOCATION	HEATER DWG.NO.	ELEC. INTERFACE POINTS
DESCENT ENGINE	LDW938-28008	16 HEATERS GB6821 THRU GB6836
DESCENT FUEL TANK	-10309	GB6895
DESCENT FUEL TANK	-10307	GB6893
DESCENT OXID TANK	-10310	GB6896
DESCENT OXID TANK	-10308	GB6894
ASCENT ENGINE	-28009	7 HEATERS GB6910 THRU GB6916
ASCENT FUEL TANK	-10301	GB6897
ASCENT OXID TANK	LDW938-10302	GB6898

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28000	G
SCALE NONE		SHEET 3.02	

ENG 73.1 6-64

NAS 9-1100

LDW270-28000

CODE IDENT 26512

LSC 270-817-1
CHECK VALVE

LSC270-715-1
PRESSURE
REDUCER
CLASS II

GP0019 P
PRESSURE
TRANSDUCER
R&D GFE
SEE NOTE 24

GP0318X
(LSC270-713-13 REF)
SOLENOID
LATCHING VALVE
NORMALLY OPEN
LDW390-28070-5

LSC 270-712-1
FILTER

LSC 270-813-1
HELIUM TEST
POINT
DISCONNECT
GP9406

LSC 270-714-5
EXPLOSIVE
VALVE

LSC 270-813-1
HELIUM FILL &
DISCONNECT
GP9402

GP0201T
LSC 360-605-405
TEMPERATURE
TRANSDUCER
(SEE NOTE 24)

VACUUM REFERENCE
PORTS (ALSO USED
FOR TEST & CHECKOUT)
JP9411
JP9410

VENT HOLE

HELIUM NO. 1

TO PREVENT PRESSURIZATION OF TANK
TWO HOLES

STORAGE TANK

LSC 270-711-100
HELIUM

HELIUM NO. 2

VACUUM REFERENCE
PORTS (ALSO USED
FOR TEST & CHECKOUT)
JP9412
JP9413

VENT HOLE

LSC 270-817-2
CHECK VALVE

LSC 270-813-3
HELIUM TEST
POINT
DISCONNECT
GP9425

LSC 270-715-3
PRESSURE
REDUCER
CLASS I

GP0020P
PRESSURE
TRANSDUCER
R&D GFE
SEE NOTE 24

GP0320X
(LSC 270-713-13 REF)
SOLENOID
LATCHING VALVE
NORMALLY OPEN
LDW390-28070-5

LSC 270-712-1
FILTER

LSC 270-714-5
EXPLOSIVE
VALVE

LSC 270-813-1
HELIUM FILL &
DISCONNECT
GP9401

GP0202T
LSC 360-605-405
TEMPERATURE
TRANSDUCER
(SEE NOTE 24)

NAS 9-1100

A B C

9 10 11 12 13

9 | 8 | 7 | 6 | 5

LSC 270-813-3 ... UM TEST ... NT ... ONNECT ... 25

LSC 270-817-2 CHECK VALVE

LSC 270-819-9 EXPLOSIVE VALVE

GP0504P PRESSURE TRANSDUCER R&D GFE

LSC 270-717-2 PRESSURE RELIEF VALVE

LSC 270-804-2 FUEL FILL-VENT COUPLING GP9443

GP0501P PRESSURE TRANSDUCER R&D GFE

GP0908X LSC 270-801-5 LOW LEVEL SENSOR

LSC270-701-1 FUEL FILL COUPLING (ALSO USED FOR OVER-BOARD DRAIN) GP9453

GP0616P DIFFERENTIAL PRESSURE TRANSDUCER R&D GFE 510981-201 SEE NOTE 24

GP7615T LSC 360-605-301 TEMPERATURE TRANSDUCER

ISOLATION VALVE POSITION SENSING SWITCH - SEE NOTE 36

LSC270-00500-7 ASCENT ENGINE LDW938-28009 (REF)

GP0718T LSC 360-605-303 TEMPERATURE TRANSDUCER

LDW938-10301 SURFACE HEATER SEE NOTE 37&44

LDW270-28454-5 (LSC270-809-10) FLEX METAL TUBE

(LDW270-28456-1) LSC270-809-10 FLEX METAL TUBE

LSC270-813-6 FUEL HIGH POINT BLEED GP9464

LOW POINT

TRIM ORIFICE SEE NOTE 23 LDW270-M10000(REF) LDW270-M10001(REF) LDW270-M10002(REF)

OPEN LINE

CAPPED LINE

GP9433

LOW PRESSURE RELIEF VALVE VIA GSE

PLUG

PORT JP9482

ENGINE FILTER

JP9483 ENGINE INTERFACE

GP9451

GP9462

GP1501P (SEE NOTE 24)

TO REACTION CONTROL SUB-SYSTEM (SEE DWG. LDW 310-28000)

¼ PLUGGED PORT (2)

RCS(REF)

GP7551X GP7552X

LSC270-00822-3 ACTUATOR ISOLATION VALVE 10L6

LSC270-813-6 FUEL TEST POINT GP9455

LSC270-813-6 FUEL TEST POINT(RCS) GP9459

GP9432

LSC 270-813-4 (3) HELIUM TEST POINT DISCONNECT

GP9445

LSC 280-7-51 FUEL STORAGE TANK

GP9447

THRUST NEUTRALIZER SEE NOTE 20

GP9446

Q23/04 NAS 9-1100

OVERBOARD ENGINE VALVE SEAL DRAIN GP9476

ENGINE INTERFACE

DRAINS ENGINE SOLENOID VALVES (4)

GP9477 OVERBOARD ENGINE VALVE SEAL DRAIN

LSC 270-813-5 (3) HELIUM TEST POINT DISCONNECT

GP9444

LSC 280-7-52 OXIDIZER STORAGE TANK

SURFACE HEATER SEE NOTE 37&44 LDW938-10302

GP9431

GP9450

¼ PLUGGED PORT (2)

GP9461

GP1503P (SEE NOTE 24)

PLUG

JP9480

⅜ PORT ENGINE FILTER

GP9430

OPEN LINE

CAPPED LINE

LOW PRESSURE RELIEF VALVE VIA GSE GP9442

LSC270-805-2 OXIDIZER FILL-VENT COUPLING

TRIM ORIFICE SEE NOTE 27

RCS(REF)

LDW270-28454-6 (LSC270-809-12) FLEX METAL TUBE

LSC270-813-7 OXID TEST POINT (RCS) GP9458

LOW POINT

LDW270-28456-3 (LSC270-809-12) FLEX METAL TUBE

GP7625 T LSC 360-605-301 TEMPERATURE TRANSDUCER

GP1218T LSC 360-605-303 TEMPERATURE TRANSDUCER

GP1408X LSC 270-801-6 LOW LEVEL SENSOR

LSC 270-717-1 PRESSURE RELIEF VALVE

LSC 270-702-1 OXIDIZER FILL COUPLING (ALSO USED FOR OVERBOARD DRAIN) GP9452

TO REACTION CONTROL SUB-SYSTEM (SEE DWG LDW 310-28000)

GP1116P DIFFERENTIAL PRESSURE TRANSDUCER R&D GFE 510981-201 SEE NOTE 24

LSC 270-813-7 OXIDIZER HIGH POINT BLEED GP9463

FOR REFERENCE ONLY

JP9411 JP9410 REFERENCE LSC USED T & CHECKOUT)

LSC 270-817-1 CHECK VALVE

LSC 270-819-9 EXPLOSIVE VALVE

GP1004P PRESSURE TRANSDUCER R&D GFE

GP1001P PRESSURE TRANSDUCER R&D GFE

IDENT 26512 270-28000 SHEET 4.00

CODE IDENT NO. 26512 LDW270-28000 SHEET 4.00

9 | 8 | 7 | 6 | 5

-301

ISOLATION VALVE POSITION SENSING SWITCH - SEE NOTE 36

ISOLATION VALVE 'B'

BIPROPELLANT VALVE POSITION SENSING SWITCH SEE NOTE 36

LSC270-00500-7
ASCENT ENGINE
LDW938-28009 (REF)

LSC270-813-6
FUEL HIGH POINT BLEED
GP9464

ENGINE FILTER

3/8 PORT
JP9482

JP9483

ENGINE INTERFACE

462

BIPROPELLANT VALVE CONTROL

BIPROPELLANT VALVE 'B'

GP2006P

GP1501P
(SEE NOTE 24)

PLUG

GP7551X
GP7552X

ENGINE FILTER

-813-6
ST POINT

OVERBOARD ENGINE VALVE SEAL DRAIN
GP9476

FACE

DRAINS ENGINE SOLENOID VALVES (4)

GP9477
OVERBOARD ENGINE VALVE SEAL DRAIN

GP2001P
(SEE NOTE 24)

GP1503P
(SEE NOTE 24)

CHAMBER PRESSURE GP2010P
(SEE NOTE 24)

T (2)

PLUG

PLUG

ISOLATION VALVE 'A'

PROPELLANT VALVE 'A'

JP9480

3/8 PORT
ENGINE FILTER

LSC270-813-7
OXID TEST POINT (RCS) GP9458

P7645 T
C0760-605301
EMPERATURE
RANSDUCER

LSC270-813-7
OXIDIZER HIGH POINT BLEED
GP9463

FOR REFERENCE ONLY

BIPROPELLANT VALVE POSITION SENSING SWITCH SEE NOTE 36

ISOLATION VALVE POSITION SENSING SWITCH SEE NOTE 36

CODE IDENT NO. 26512	
LDW270-28000	SHEET 4.00

MANUFACTURING OP
UNLESS OTHERWISE
NOTES CHECKED √ APPL

PART NUM
AND ALL OTHER MARKING
IN REGION MARKED
USE BOTH SIDES IF NEC

FILLET AND INSIDE CORNE
RADII TOLERANCES
.016R TO .062R ± .010
.063R TO .250R ± .015
OVER .250R ± .030

DEPTH SHOWN FOR TAPPE
HOLES IS FULL THDS. 2.3
BEYOND PERMISSIBLE.

EXTERNAL THREAD LENGTH
SHOWN INCLUDES
2 IMPERFECT THREADS MA

DO NOT CADMIUM PLATE
HOLES OR SURFACES MARK
WITH DOUBLE ASTERISK.

MISMATCH STEP OF ± .00
PERMISSIBLE DUE TO CHA
OF CUTTERS AT INSIDE
INTERSECTING SURFACES.

DIAMETERS MARKED
MUST BE CONCENTRIC WI
FULL IN
READING

HOLES MUST BE KEPT FRE
CHROME PLATING SOLUTIO

ALL DIMENSIONS SHOWN
AFTER CADMIUM PLATING.
THICKNESS OF PLATE .000
TO .0005 MAX MIN THICK
BE .0002 ON THREADED AR
NO ALLOWANCE FOR PLAT
HOLES

125 SURFACE ROUGHNE
INCLUDING REAMED
PER MIL-STD-10

200 FOR ALL DRILLED

REMOVE ALL BURRS.
BREAK ALL EDGES .015-.03

INSPECTION INFORMATIO
MINIMUM PERMISSIBLE
AVERAGE EDGE DISTANCE
MARKED IS

SYMBOL ∮ DENOTES SU
TO BE MACHINED

UNLESS OTHERWISE SPEC
TOLERANCE ON FLANGES

LENGTHS OF AN, NAS & M
RIVETS SHORTER THAN 1
NOT SPECIFIED.

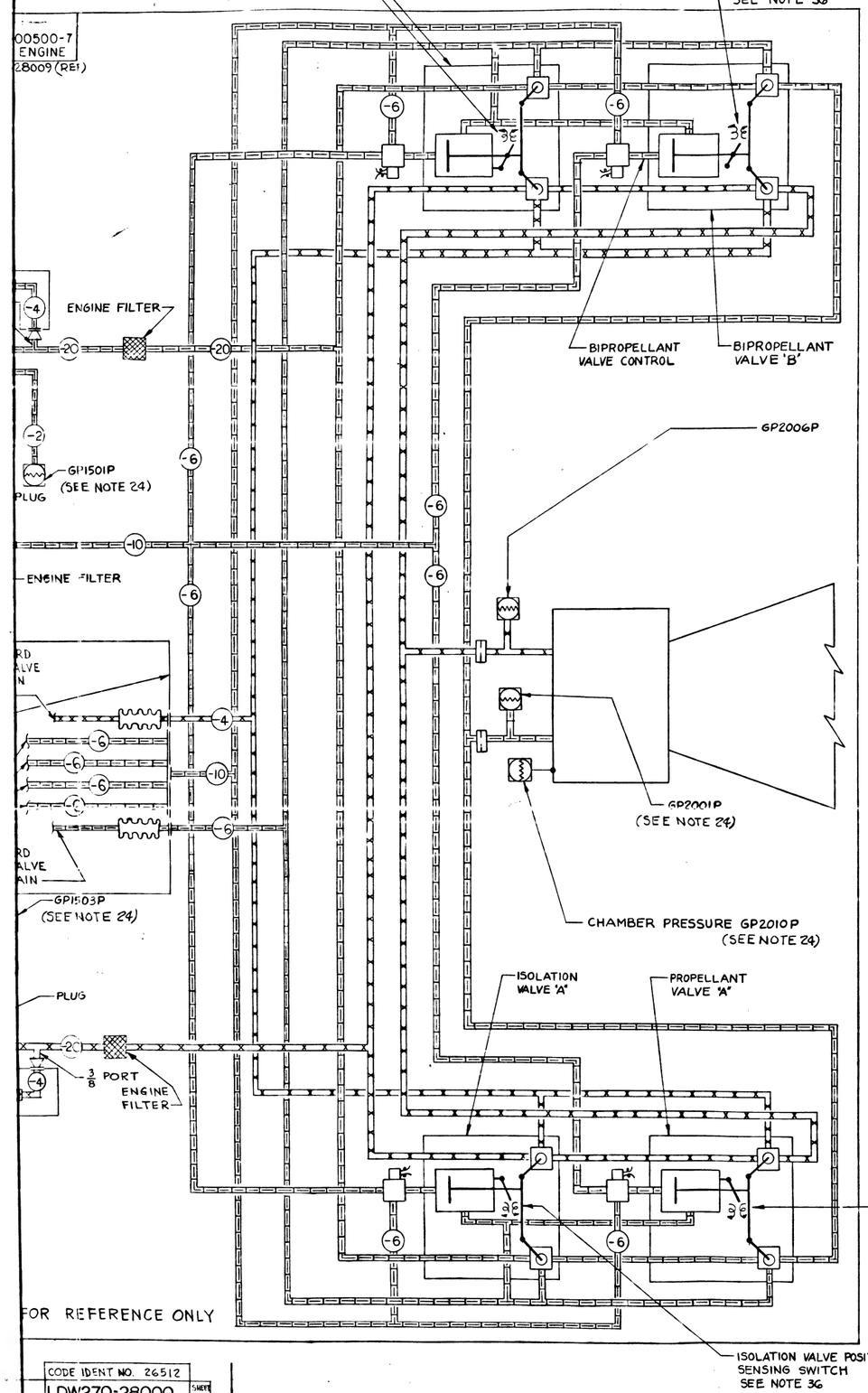
TOLERANCE ON LOFTED
DELINEATIONS IS

103704 NAS 9-1100

ASCENT FLUID LINES - BASIC
FOR ELECTRICAL SEE SHEET 2

FOR ENGRG. INFO. ONL
FOR NOTES SEE SH 3.

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE,			
	SIZE J	CODE IDENT. NO. 26512	LDW270-28
LM MODEL OR END ITEM	SCALE NONE		SH



MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
250 FOR ALL DRILLED HOLES
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
SYMBOL ∫ DENOTES SURFACE TO BE MACHINED
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES ± 1/32
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
TOLERANCE ON LOFTED DELINEATIONS IS

DWG SIZE 34 X 129

PRINTING INFO ONLY
FULL SIZE SHEET AREA OR X130= 39.0 SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL)= 9.75 SQ. FT.

PRINT TRIM LINE

0404 NAS 9-1100

ASCENT FLUID LINES - BASIC
FOR ELECTRICAL SEE SHEET 6.00

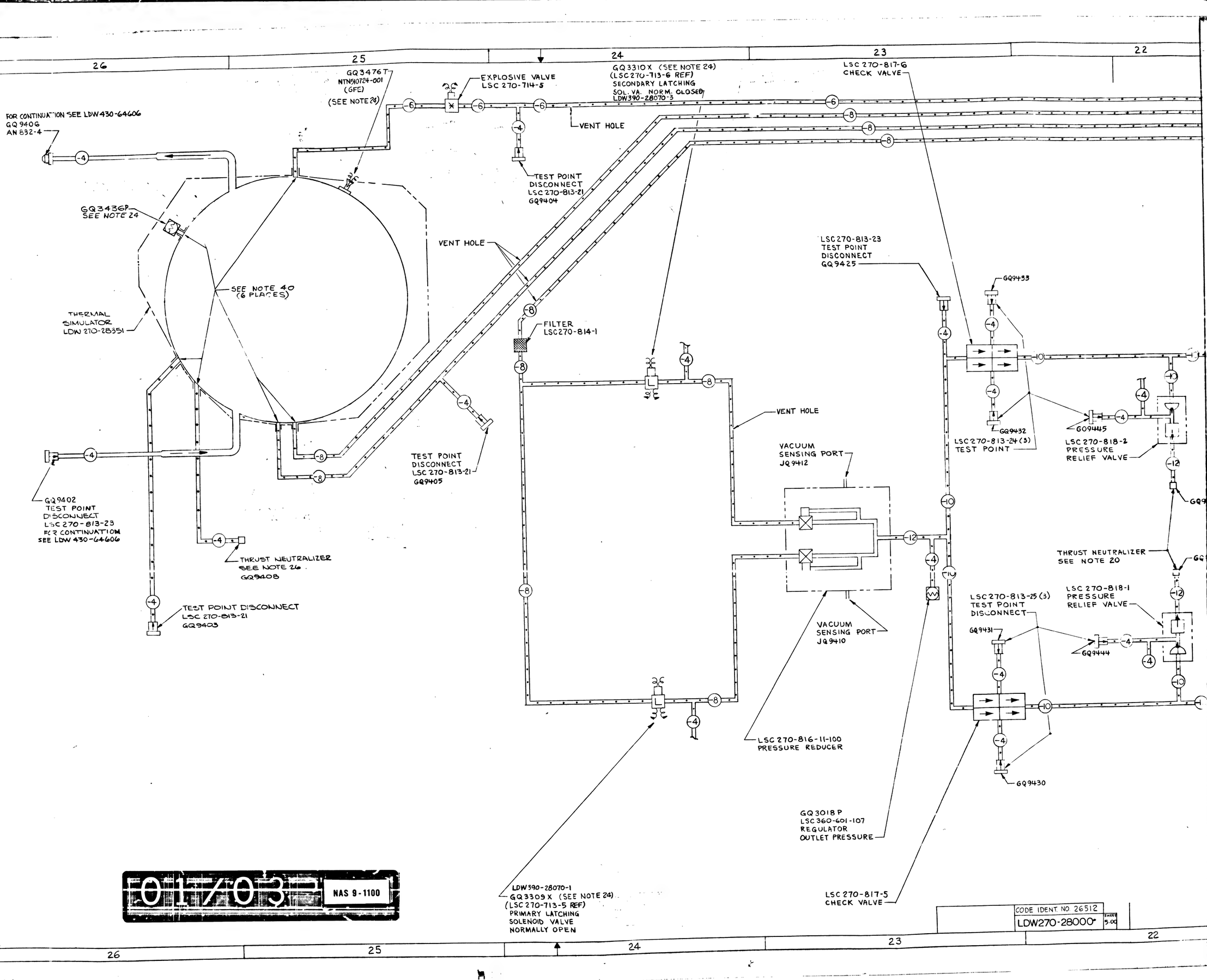
FOR ENGRG. INFO. ONLY
FOR NOTES SEE SH 3.00

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L.I., NEW YORK		
LM	SIZE J	CODE IDENT NO. 26512	LDW270-28000 G
MODEL OR END ITEM	SCALE NONE		SHEET 4.00

CODE IDENT NO. 26512
LDW270-28000 SHEET 4.00

LDW270-28000 G A LDW270-28000 G B

3FR


26
25
24
23
22
FOR CONTINUATION SEE LDW430-64606
GQ9406
AN832-4
GQ3476T
NTN5I0724-001
(GFE)
(SEE NOTE 24)
EXPLOSIVE VALVE
LSC 270-714-5
GQ3310X (SEE NOTE 24)
(LSC270-713-6 REF)
SECONDARY LATCHING
SOL. VA. NORM. CLOSED
LDW390-28070-3
LSC 270-817-6
CHECK VALVE
VENT HOLE
TEST POINT
DISCONNECT
LSC 270-813-21
GQ9404
GQ3436P
SEE NOTE 24
VENT HOLE
SEE NOTE 40
(6 PLACES)
THERMAL
SIMULATOR
LDW 270-28351
FILTER
LSC270-814-1
LSC270-813-23
TEST POINT
DISCONNECT
GQ9425
GQ9433
GQ9432
LSC270-813-24(3)
TEST POINT
GQ9445
LSC 270-818-2
PRESSURE
RELIEF VALVE
TEST POINT
DISCONNECT
LSC 270-813-21
GQ9405
VENT HOLE
VACUUM
SENSING PORT
JQ9412
GQ9402
TEST POINT
DISCONNECT
LSC 270-813-23
FOR CONTINUATION
SEE LDW 430-64606
THRUST NEUTRALIZER
SEE NOTE 26
GQ9408
THRUST NEUTRALIZER
SEE NOTE 20
LSC270-813-25(3)
TEST POINT
DISCONNECT
GQ9431
LSC 270-818-1
PRESSURE
RELIEF VALVE
GQ9444
TEST POINT DISCONNECT
LSC 270-813-21
GQ9403
VACUUM
SENSING PORT
JQ9410
LSC 270-816-11-100
PRESSURE REDUCER
GQ9430
GQ3018P
LSC360-601-107
REGULATOR
OUTLET PRESSURE
LSC 270-817-5
CHECK VALVE
LDW390-28070-1
GQ3309X (SEE NOTE 24)
(LSC270-713-5 REF)
PRIMARY LATCHING
SOLENOID VALVE
NORMALLY OPEN
CODE IDENT NO. 26512
LDW270-28000
SHEET 5.00
01703
NAS 9-1100

GQ3719T
LSC360-605-303
BULK TEMPERATURE

LSC270-802-1
FUEL FILL & DRAIN
GQ9453

THERMAL SIMULATOR
HEAT EXCHANGER
LDW270-28352

GQ6806H
THROTTLE
VALVE
ACTUATOR

LSC300-170 (RE
GIMBAL DRIVE
ACTUATOR (2)

GQ6510P
CHAMBER PRESSURE
SEE NOTE 24

GQ6501P FUEL
INJECTOR PRESSURE
SEE NOTE 24

GQ6506P OXIDIZER
INJECTOR PRESSURE
SEE NOTE 24

LSC270-813-26
FUEL HIGH POINT BLEED
FEED SYSTEM
GQ9464

LSC270-813-26
FUEL LOW POINT DRAIN
ENGINE
GQ9477

GQ3611P LSC360-601-107
ENGINE INTERFACE FUEL PRESS
SEE NOTE 24

GQ3811T
LSC360-605-301

LSC270-00600-8 DESCENT ENGINE
LDW938-28008(REF)
SEE NOTE 44

LSC280-4-63
FUEL TANK

SURFACE HEATER
LDW938-10309
& NOTE 44

PLUG

#2 FUEL (-Y)

#1 FUEL (+Y)

LSC270-809-2 (4)
FLEXIBLE METAL TUBES

LSC270-804-1
FUEL FILL VENT
PURGE PORT & DRAIN
RELIEF VALVE VIA GSE
GQ9443

LSC270-809-6 (4)
FLEXIBLE METAL TUBES

TRIM ORIFICE
SEE NOTE 23

VENT HOLE

GQ9462
¼ PORTS (2)
FOR G.S.E.

GQ9451

JQ9482

ENGINE INTERFACE

PLUG (4)

JQ9480

5/16 PORT

GQ4311T
LSC360-605-301
(SEE NOTE 24)

GQ4111P
LSC360-601-107
ENGINE INTERFACE
OXIDIZER PRESSURE
SEE NOTE 24

VARIABLE
INJECTOR

MCT MCT MCT

609445

LSC270-818-2
PRESSURE
RELIEF VALVE

GQ9447

THRUST NEUTRALIZER
SEE NOTE 20

GQ9446

LSC270-818-1
PRESSURE
RELIEF VALVE

GQ9444

VENT HOLE

LSC280-4-59
FUEL TANK

SURFACE HEATER
LDW938-10307
SEE NOTE 44

FUEL TANK
QTY SELECTED 1 OR 2

GQ3718T
LSC360-605-303

SURFACE HEATER
LDW938-10310 & NOTE 44

LSC280-4-61
OXIDIZER TANK

#1 OXIDIZER (-Z)

GQ9461

± PORTS (2)
FOR G.S.E.

GQ9450

GQ4218T
LSC360-605-303
BULK TEMPERATURE

TRIM ORIFICE
SEE NOTE 23

LSC270-805-1
OXIDIZER FILL VENT,
PURGE PORT & DRAIN
RELIEF VALVE VIA GSE.
GQ9442

LSC270-809-7
FLEXIBLE METAL TUBE

LSC270-809-8 (3)
FLEXIBLE
METAL TUBE

LSC270-809-4 (4)
FLEXIBLE
METAL TUBES

#2 OXIDIZER (+Z)

LSC280-4-65
OXIDIZER TANK

SURFACE HEATER
LDW938-10308
SEE NOTE 44

GQ4219T
LSC360-605-303
BULK TEMPERATURE

LSC270-803-1
OXIDIZER FILL & DRAIN
GQ9452

SOLENOID
VALVE "B"

SOLENOID
VALVE "A"

LSC270-813-27
OX LOW POINT DRAIN
ENGINE
GQ9476

LSC270-813-27
OX HIGH POINT BLEED
FEED SYSTEM
GQ9463

PROPELLANT SHUTOFF
VALVE "A"
GQ6306X
GQ6307X

PROPELLANT SHUTOFF
VALVE "B"
GQ6308X
GQ6309X

GQ9433

GQ9430

02703 NAS 9-1100

CODE IDENT. NO. 26512
LDW270-28000
SHEET 5.00

GQ6806H THROTTLE VALVE ACTUATOR

LSC300-170 (REF) GIMBAL DRIVE ACTUATOR (2)

VIB GQ7301D X-X
VIB GQ7302D Y-Y
VIB GQ7303D Z-Z
} VIBRATION THRUST CHAMBER

VIB GQ7304D
VIB GQ7305D
VIB GQ7306D
} NO REQT TO IMPLEMENT

GQ6510P CHAMBER PRESSURE SEE NOTE 24

GQ6501P FUEL INJECTOR PRESSURE SEE NOTE 24

GQ6506P OXIDIZER INJECTOR PRESSURE SEE NOTE 24

T ENGINE
08(REF)
4

VARIABLE INJECTOR

GQ7201T
GQ7202T
GQ7203T
GQ7204T
} THRUST CHAMBER EXTERNAL WALL TEMP NO REQT TO IMPLEMENT

LSC 270-813-27
OX HIGH POINT BLEED
ENGINE
GQ9478

LSC 270-813-26
FUEL HIGH POINT BLEED
ENGINE
GQ9479

SOLENOID VALVE "C"

SOLENOID VALVE "D"

GQ9473(REF)
GQ9474(REF)
GQ9471(REF)
GQ9472(REF)

ROPELLANT SHUTOFF ALVE "A" Q6306X Q6307X

PROPELLANT SHUTOFF VALVE "B" GQ6308X GQ6309X

PROPELLANT SHUTOFF VALVE "D" GQ6316X GQ6317X

PROPELLANT SHUTOFF VALVE "C" GQ6314X GQ6315X

CODE IDENT. NO. 26512
LDW270-28000
SHEET 5.00

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2.3 IMP THDS. BEYOND PERMISSIBLE.
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
250 FOR ALL DRILLED HOLES
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
SYMBOL √ DENOTES SURFACE TO BE MACHINED
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
TOLERANCE ON LOFTED DELINEATIONS IS

DWG SIZE 34 X 129 C

PRINTING INFO ONLY
FULL SIZE SHEET AREA OR 39.0 X 129 = 9.75 SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL) = SQ. FT.

PRINT TRIM LINE

B

LDW270-28000 G

LDW270-28000 G

Q3/03 NAS 9-1100

DESCENT FLUID LINES - BASIC
FOR ELECTRICAL LINES SEE SHEETS 6.00 & 7.00

FOR NOTES SEE SHEET 3.00
FOR ENGRG. INFO. ONLY.

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LM	SIZE J	CODE IDENT NO. 26512	LDW270-28000 G
MODEL OR END ITEM	SCALE NONE		SHEET 5.00

ASC He REGULATOR
4CB53 5A
K1-22(A)
+D28
-D
K6-22(A)
K10-22(A)
TEMP PRESS
DISP 4CB10338
K7-22(A)
+D28
LDW390-28114
SYSTEMS ENGR
CIRCUIT BREAKER
PANEL XVI REF
P38 J38 J56 P56
F 106
G 105
D 108
E 107
1OS3
ASC. He REG
SWITCH 1
3 OPEN
CLOSED
K1-22(A) 2
K2-22(A)
K3-22(A)
K6-22(A)
0-75V
400~
SEE SH. 7.00
ASC REG NO.1
STATUS FLAG
(SEE NOTE 33)
1OFL1
K10-22(A)
K7-22(A)
SEE SH 7.00
1OS4
ASC. He REG.
SWITCH 2
3 OPEN
CLOSED
K1-22(A) 2
K6-22(A)
TO INTERNAL LIGHTING
LDW340-21000
0-75V, 400~
1OFL2
ASC REG NO.2
STATUS FLAG
(SEE NOTE 33)
1OFL2
MAIN PROPULSION
PANEL NO. 1
LDW390-51101
P55A J55 P55B
FF
W
GG
L
G
HH
EE
BB
X
Y
K2-22(A)(BLK)
K3-22(A)(RED)
K6-22(A)(NAT)
K8-22(A)
K7-22(A)
GP0318X
FROM INST
LDW360-
21007
K4-22(A)(BLK)
K5-22(A)(RED)
K6-22(A)(NAT)
K9-22(A)
K7-22(A)
GP0320X
FROM INST
LDW360-
21007
CR1
CR2
A1
RED
GRN
WHT
BLK
VALVE
CLOSED
CLOSE COIL
LATCHING He SOL
VALVE NO.1 (PR1)
LSC270-713-13L1
LDW390-28070-5
1OA4
OPEN COIL
CLOSE COIL
LATCHING He SOL
VALVE NO.2 (SEC)
LSC270-713-13 L1
LDW390-28070-5
1OA5
GY D50-26(E)
BRN D51-26(E)
GY D52-26(E)
BRN D53-26(E)
GP0138X
TO INST.
LDW360-21007
GP0320X
GP0019P
GP0020P
GP0501P
GP0504P
D367-26(H)
D368-26(H)
D370-26(C)
D369-26(C)
D372-26(H)
D373-26(H)
D374-26(C)
D375-26(C)
D377-26(H)
D378-26(H)
D379-26(C)
D380-26(C)
D382-26(H)
D383-26(H)
D384-26(C)
D385-26(C)
N4
P133 C D A B
P134 C D A B
P138 C D A B
P128 C D A B
J1
GP0019P
PRESS, He PRIMARY
UPSTREAM REG
INLET
NTN510790-202
GP0020P
PRESS. He SECONDARY
UPSTREAM REG
INLET
NTN510790-202
GP0501P
PRESS, FUEL TANK
ULLAGE
NTN510790-201
GP0504P
PRESS, FUEL TANK
VENT RELIEF VALVE
INLET
NTN510790-201
1OMT25
1OMT26
1OMT27
1OMT28
Z ACCELEROMETER GP2803D
Y ACCELEROMETER GP2802D
X ACCELEROMETER GP2801D
J3030
J3029
J3028
J3000
P3000
PRESSURE
CX ISOLATION
VALVE INLET
GP1503P (SEE NOTE 24)
PRESSURE
THRUST CHAMBER
GP2010P (SEE NOTE 24)
YEL +28V
BLK 28V RET
GRN SIG RET
RED SIG. +
K37-26(C)
K36-26(C)
D69-26(H)
D68-26(H)
K41-26(C)
K40-26(C)
D58-26(H)
D59-26(H)
P512 A F C D
P510 A F C D
P511 A F C D
D1222-26(C)
D1223-26(C)
D1224-26(H)
D1225-26(H)
D1232-26(C)
D1233-26(C)
D1234-26(H)
D1235-26(H)
D1228-26(C)
D1227-26(C)
D1229-26(H)
D1230-26(H)
SEE INSTRUMENTATION
LDW360-28507
SEE EPS
LDW390-28000
SEE INSTRUMENTATION
LDW360-28507
SEE EPS
LDW390-28000
SEE INSTRUMENTATION
LDW360-28507
LDW360-21007
(SEE NOTE 24)
(SEE NOTE 24)

Q1-40-4 NAS 9-1100

CODE IDENT NO. 26512
LDW270-28000 SHEET 6.00

LDW360-28507

GP0501P — D377-26(H), D378-26(H), D379-26(C), D380-26(C) — P138 C+ D- A+ B- — J1 GP0501P PRESS, FUEL TANK ULLAGE NTN510790-201 — 10MT27

GP0504P — D382-26(H), D383-26(H), D384-26(C), D385-26(C) — P128 C+ D- A+ B- — J1 GP0504P PRESS, FUEL TANK VENT RELIEF VALVE INLET NTN510790-201 — 10MT28

GP0616P — D388-26(H), D387-26(H), D389-26(C), D390-26(C) — P124 C+ D- A+ B- — J1 GP0616P DEL PRESS FUEL TANK BOTTOM TO INTERFACE NTN510981-201 — 10MT29

GP1001P — D392-26(H), D393-26(H), D394-26(C), D395-26(C) — P127 C+ D- A+ B- — J1 GP1001P PRESS, OX TANK ULLAGE NTN510790-201 — 10MT30

GP1004P — D397-26(H), D398-26(H), D399-26(C), D400-26(C) — P125 C+ D- A+ B- — J1 GP1004P PRESS, OX TANK VENT RELIEF VALVE INLET NTN510790-201 — 10MT31

GP1116P — D403-26(H), D402-26(H), D404-26(C), D405-26(C) — P126 C- D+ A- B+ — J1 GP1116P DEL PRESS, OX TANK BOTTOM TO INTEEFACE NTN510981-201 — 10MT32

GP7606T — D408-26(H), D407-26(H), D409-26(H) — GRN RED YEL — GP7615T TEMP, FUEL TANK OUTLET LSC360-605-301 — 10MT65

GP7608T — D411-26(H), D412-26(H), D413-26(H) — GRN RED YEL — GP7625T TEMP OXID TANK OUTLET LSC360-605-301 — 10MT66

LDW360-21007

GP0201T — D24-26(H), D23-26(H), D22-26(H) — GRN RED YEL — GP0201T TEMP HE SUPPLY TANK #1 LSC360-605-405 — 10MT37 (SEE NOTE 24)

GP0202T — D26-26(H), D27-26(H), D28-26(H) — GRN RED YEL — GP0202T TEMP. HE SUPPLY TANK #2 LSC360-605-405 — 10MT38 (SEE NOTE 24)

GP0718T — D30-26(H), D31-26(H), D32-26(H) — GRN RED YEL — GP0718T TEMP. FUEL TANK FUEL BULK LSC360-605-303 — 10MT39

GP1218T — D34-26(H), D35-26(H), D36-26(H) — GRN RED YEL — GP1218T TEMP. OX TANK OX BULK LSC360-605-303 — 10MT40

GP0809X — D37-26(E), D38-26(E), K24-26(C), K25-26(C) — LDW390-28000 — CAP & STOW — 3-YEL, 4-BLK, 1-YEL, 2-BLK, 5-YEL, 6-BLK, 7-RED, 8-GRN — GP0908X FUEL TANK LOW LEVEL LSC270-801-5 — 10MT41

GP1408X — D41-26(E), D42-26(E), K34-26(C), K35-26(C) — LDW390-[illegible] — CAP & STOW — 3-YEL, 4-BLK, 1-YEL, 2-BLK, 5-YEL, 6-BLK, 7-RED, 8-N — GP1408X OX TANK LOW LEVEL LSC270-801-6 — 10MT4[illegible]

P4000 — J4000 S T A B C U V D E F W G H J B

X ACCELEROMETER GP2301D — J3026 — J3000 P3000

PRESSURE OX ISOLATION VALVE INLET (P1503P (SEE NOTE 24)) — YEL +28V, BLK 28V RET, GRN SIG RET, RED SIG + — D377-26(C), K37-26(C), D378-26(C), K36-26(C), D379-26(C), D69-26(H), D380-26(C), D63-26(H) — SEE EPS LDW390-28000, SEE INSTRUMENTATION LDW360-29507 & LDW360-21007

PRESSURE THRUST CHAMBER (P2010P (SEE NOTE 24)) — YEL +28V, BLK 28V RET, GRN SIG RET, RED SIG + — D388-26(C), K41-26(C), D387-26(C), K40-26(C), D389-26(C), D58-26(H), D390-26(C), D59-26(H) — SEE EPS LDW390-28000, SEE INSTRUMENTATION LDW360-29507 & LDW360-21007

PRESSURE FUEL ISOLATION VALVE INLET (P1501P (SEE NOTE 24)) — YEL +28V, BLK 28V RET, GRN SIG RET, RED SIG + — D403-26(C), K38-26(C), D402-26(H), K39-26(C), D404-26(H), D64-26(H), D405-26(C), D63-26(H) — SEE EPS LDW390-28000, SEE INSTRUMENTATION LDW360-28501 & LDW360-21007

"A" ISOLATION VALVE POSITION INDICATING SWITCH — POLE, OPEN, POLE, OPEN — D416-26(E) -, D414-26(E) + — GP2997U — SEE INSTRUMENTATION LDW360-21007

"B" ISOLATION VALVE POSITION IND CATING SWITCH — POLE, OPEN, POLE, OPEN — D719-26(E) -, D717-26(E) + — GP2998U — SEE INSTRUMENTATION LDW360-21007

"A" PROP VALVE POSITION INDICATING SWITCH — POLE, OPEN, POLE, OPEN

"B" PROP VALVE POSITION INDICATING SWITCH — POLE, OPEN, POLE, OPEN — SEE NOTE 39

PRESSURE OX INJECTOR INLET GP2006P — BLK 28V RET, YEL +28V, RED SIG. +, GRN SIG RET — D443-26(C), D442-26(H), D440-26(H), D441-26(H) — GP2006P

PRESSURE FUEL INJECTOR INLET GP2001P (SEE NOTE 24) — BLK 28V RET, YEL +28V, RED SIG. +, GRN SIG. RET — D456-26(C), D455-26(H), D453-26(H), D454-26(H) — GP2001P

SEE INSTRUMENTATION LDW360-28507

P3000 J3000 — P4000 J4000 — P2000 J2000 D E A K — P1000 J1000 J H E D A

TLM SIGNAL — "B" ISOLATION VALVE — RET, +28V — K76-20(A), K77-20(A), K76-20(A), K77-20(A) — K76-18(A), K77-18(A) — DISCRETE TO OPEN VALVES

TLM SIGNAL — "B" PROP VALVE — RET, +28V — K76-20(A), K77-20(A)

TLM SIGNAL — "A" PROP VALVE — +28V, RET — K73-20(A), K72-20(A), K73-20(A), K72-20(A) — K73-18(A), K72-18(A) — DISCRETE TO OPEN VALVES

TLM SIGNAL — "A" SOLATION VALVE — +28V, RET

ASCENT ENGINE LSC270-00[illegible]-7 (BELL AEROSYSTEMS DWG 8258-475116)

SEE CES LDW300-21000

10A2

K72-20(A) WHT — ARC SUPPR CKT 102639 — A

K73-20(A) BLK — OPEN / CLOSED — SEE NOTE 32

K77-20(A) BLK — ARC SUPPR CKT 102639 — B

K76-20(A) WHT — OPEN / CLOSED — SEE NOTE 32

ACTUATOR ISOLATION VALVE LSC270-00822-5

10L6

(SEE NOTE 24) GQ4311T — D4424-26(H), D4425-26(H), D5055-26(H) — GRN, RED, YEL — GQ4311T TEMP ENGINE INTERFACE OXID LSC360-605-301 — 10MT13

GQ3811T — D4422-26(H), D4421-26(H), D5054-26(H) — GRN, RED, YEL — GQ3811T TEMP ENGINE INTERFACE FUEL LSC360-605-301 — 10MT1

GQ3476T (SEE — D4491-26(H), D4490-26(H), D4492-26(H) — BLK, BLK — GQ3476T TEMP SUPERCRITICAL HE TANK AMBIENT NTN510724-001 — 10MT47

02/04 NAS 9-1100

CODE IDENT NO. 26512 — LDW270-28000 — SHEET 6.00

GP1408X
D41-26(E)
D42-26(E)
K34-26(C)
K35-26(C)
LDW390-28000
3-YEL
4-BLK
1-YEL
2-BLK
CAP & STOW
5-YEL
6-BLK
7-RED
8-GRN
GP1408X
OX TANK LOW LEVEL
LSC270-801-6
10MT43

GP0001P
D12-26(H)
D13-26(H)
K14-26(C)
K15-26(C)
LDW390-28000
CAP & STOW

GP0002P
D17-26(H)
D18-26(H)
K22-26(C)
K22-26(C)
LDW390-28000
CAP & STOW

GP0025P
D47-26(H)
D46-26(H)
K32-26(C)
K33-26(C)
LDW390-28000
LDW360-28507
N4
CAP & STOW

GQ4218T
D289-26(H)
D290-26(H)
D291-26(H)
GRN
RED
YEL
GQ4218T
TEMP OX TANK NO.1 OX BULK
LSC360-605-303
10MT9

GQ4219T
D293-26(H)
D294-26(H)
D295-26(H)
GRN
RED
YEL
GQ4219T
TEMP OX TANK NO.2 OX BULK
LSC360-605-303
10MT10

GQ3718T
D281-26(H)
D282-26(H)
D283-26(H)
GRN
RED
YEL
GQ3718T
TEMP FUEL TANK NO.1 FUEL BULK
LSC360-605-303
10MT7

GQ3719T
D285-26(H)
D286-26(H)
D287-26(H)
GRN
RED
YEL
GQ3719T
TEMP FUEL TANK NO.2 FUEL BULK
LSC360-605-303
10MT8

TO INSTRUMENTATION
LDW360-28507

GQ3811T
D4422-26(H)
D4421-26(H)
D5054-26(H)
GRN
RED
YEL
GQ3811T
TEMP ENGINE INTERFACE FUEL
LSC360-605-301
10MT1

GQ3476T (SEE NOTE 24)
D4491-26(H)
D4490-26(H)
D4492-26(H)
BLK
BLK
GQ3476T
TEMP SUPERCRITICAL HE TANK AMBIENT NO.1
NTN510724-001
10MT47

GQ3009P
D643-26(H)
D644-26(H)
D645-26(C)
D646-26(C)
P129
GQ3009P

GQ3010P
D648-26(H)
D649-26(H)
D650-26(C)
D651-26(C)
P130
GQ3010P

GQ3501P
D653-26(H)
D654-26(H)
D655-26(C)
D656-26(C)
P117
GQ3501P

GQ3505P
D658-26(H)
D659-26(H)
D660-26(C)
D661-26(C)
P131
GQ3505P

GQ3666P
D663-26(H)
D664-26(H)
D665-26(C)
D666-26(C)
P132
GQ3666P

SEE NOTE 43

Q3704 NAS 9-1100

A
B
SEE NOTE 32
SEE NOTE 32
ACTUATOR ISOLATION VALVE
LSC270-00822-5
10L6

TO INSTRUMENTATION
LDW360-28507

GQ4001P
D668-26(H)
D669-26(H)
D670-26(C)
D671-26(C)
P118
GQ4001P

GQ4005P
D673-26(H)
D674-26(H)
D675-26(C)
D676-26(C)
P135
GQ4005P

GQ4116F
D678-26(H)
D679-26(H)
D680-26(C)
D681-26(C)
P119
GQ4116F

SEE NOTE 43

TO EPS LDW390-28000
J174
P174
182 167
183 168
194 195
196 197
K18-26(C)
K19-26(C)

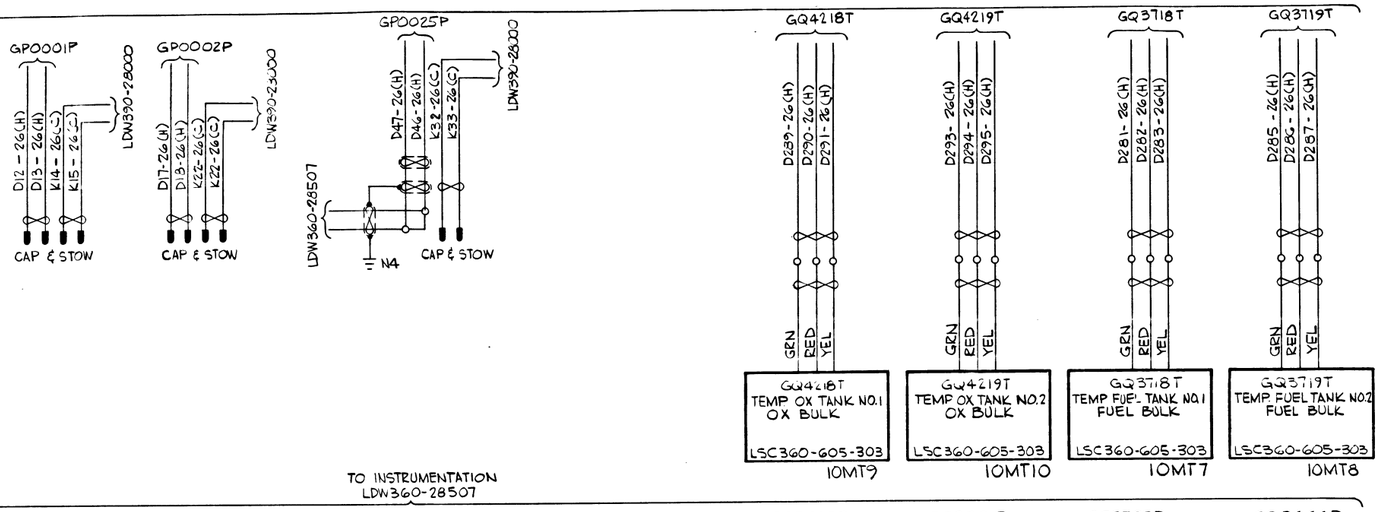
TO INST. LDW360-21007 LDW360-28507
D1313-26(H)
D1314-26(H)
K30-26(C)
K31-26(C)
RED
GRN
YEL
BLK
GQ4111P
PRESS ENGINE INTERFACE OX
LSC360-601-107
10MT16
(SEE NOTE 24)

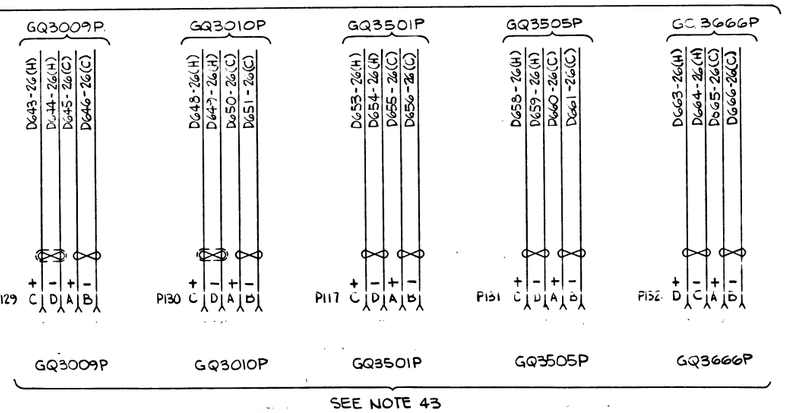
TO INST LDW360-21007 LDW360-28507
D1318-26(H)
D1319-26(H)
K46-26(C)
K47-26(C)
GQ3611P
PRESS ENGINE INTERFACE FUEL
LSC360-601-107
10MT24
(SEE NOTE 24)

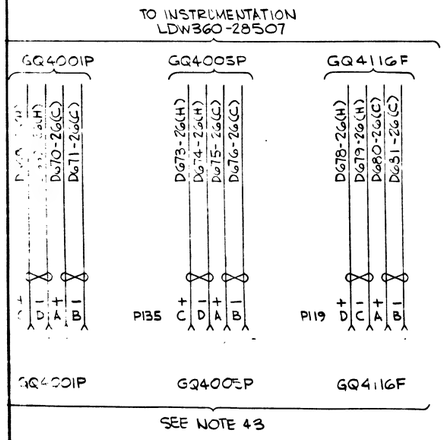
TO INST LDW360-21007 LDW360-28507
D1314-26(H)
D1313-26(H)
K55-26(C)
K56-26(C)
GQ3018F
PRESS HE REG. OUT MANIFOLD
LSC360-601-107
10MT19

IDENT NO. 26512
270-28000
SHEET 600

SUPERSEDES LDW270-28D D NC LAST REV







MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.

- PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED — USE BOTH SIDES IF NECESSARY.
- FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010; .063R TO .250R ± .015; OVER .250R ± .030
- DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.
- EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
- DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
- MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
- DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
- HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
- ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THRFADED AREAS. NO ALLOWANCE √ PLATING IN HOLES
- 125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
- 200 FOR ALL DRILLED HOLES
- REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
- INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
- SYMBOL ∜ DENOTES SURFACE TO BE MACHINED
- UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
- LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
- TOLERANCE ON LOFTED DELINEATIONS IS

DWG SIZE 34 X 139

PRINTING INFO ONLY — FULL SIZE SHEET AREA (36 X 140)= 42.0 SQ FT. — 1/2 SIZE SHEET AREA (1/4 OF FULL)= 10.5 SQ FT.

PRINT TRIM LINE

C B A

LDW270-23000 G

LDW270-28000 G

Q4 / Q4 NAS 9-1100

FOR NOTES SEE SHEET 3.00

FOR ENGINEERING INFO ONLY

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE J	CODE IDENT NO. 26512	LDW270-28000	G
LM MODEL OR END ITEM	SCALE NONE	SHEET 6.20	

115 VAC BUS
HE TEMP/PRESS 4CB169
3A K602-22(B)
N1 AC RET BUS
K603-22(B)
REF
CDR'S CIRCUIT BREAKER PNL XI LDW390-28110
P60 J60 J56 P56
U W 148 149
K602-22(B) K603-22(B)

INTEGRAL LIGHTING LDW340-28000
15-115V 400CPS
10 11 12 13

LSC350-20100-02
HELIUM TEMPERATURE /PRESSURE INDICATOR
14 K604 N4
-8 K317(H) 16
+9 K318(H) 31
2 5 7 4 3 6 1
10M1

DESCENT SUPCRIT PRESS
ASCENT PRESS 1
TEMP 1 3
TEMP2 10
PRESS 1 23
PRESS2 30
2 9 16
4 6 14 19 27
8 5 31

K45-26(E) 7
K336-26(E) 12
K43-26(E) 20
K42-26(E) 24
K44-26(E) 11
K335-26(E) 28
K54-26(E) 15

HE TEMP/PRESS MON. SW
10S6

FROM INST LDW360-21007
GQ3435P GP0001P GP0002P GP020IT GP0202T

P55A J55 P55B
D321-26(H) E V321
D331-26(H) Z D331-26(H)
D333-26(H) C D333-26(H)
D323-26(H) V D323-26(H)
D325-26(H) R D325-26(H)
D322-26(H) K D322-26(H)
D332-26(H) A D332-26(H)
D334-26(H) Y D334-26(H)
D324-26(H) F D324-26(H)
D326-26(H) J D326-26(H)
D8000-26 R
D8000-26 A
D8000-26 E
N4

SEE NOTE 30
H G L R

LSC350-80125-12
FUEL PRESSURE METER
8 10 5 4 11 12 3 6
K338-26(H)
K340-26(H)
OXIDIZER PRESSURE METER
10M3

SEE SH. 6.00
5 RET K10-22(A)
1 +D28 K7-22(A)
INTEGRAL LIGHTING LDW340-28000
3 0-75 400~
6
2 1 7 9

FUEL TEMPERATURE METER
7 9 2 4
K342-26(H)
LSC350-80179-12
OXIDIZER TEMPERATURE METER
1 10 11 3 6
K344-26(H)
8 12
10M4

PROPELLANT TEMP/PRESS. MON. SW
3 4 2 1 7 6 8 5 11 12 9 10 14 15 16 13
1051

D365-26(H) M D365-26(H)GP1501P
D131926(H) P D131926(H)GQ3611P
D1121-26(H) T D1121-26(H)RET
D361-26(H) N D361-26(H)GP1503P
D1314-26(H) Q D1314-26(H)GQ4111P
D8000-26 W N4
D357-26(H) S D357-26(H)GP0719T
D355-26(H) K D355-26(H)GQ3719T
D353-26(H) L D353-26(H)GQ3719T
D1123-26(H) N D1123-26(H)RET
15 ASCENT D351-26(H) T D351-26(H)GP1218T
16 DESCENT 1 D349-26(H) H D349-26(H)GQ4218T
13 DESCENT 2 D347-26(H) M D347-26(H)GQ4219T

TO INST LDW360-21007

MAIN PROPULSION PANEL I LDW390-51101

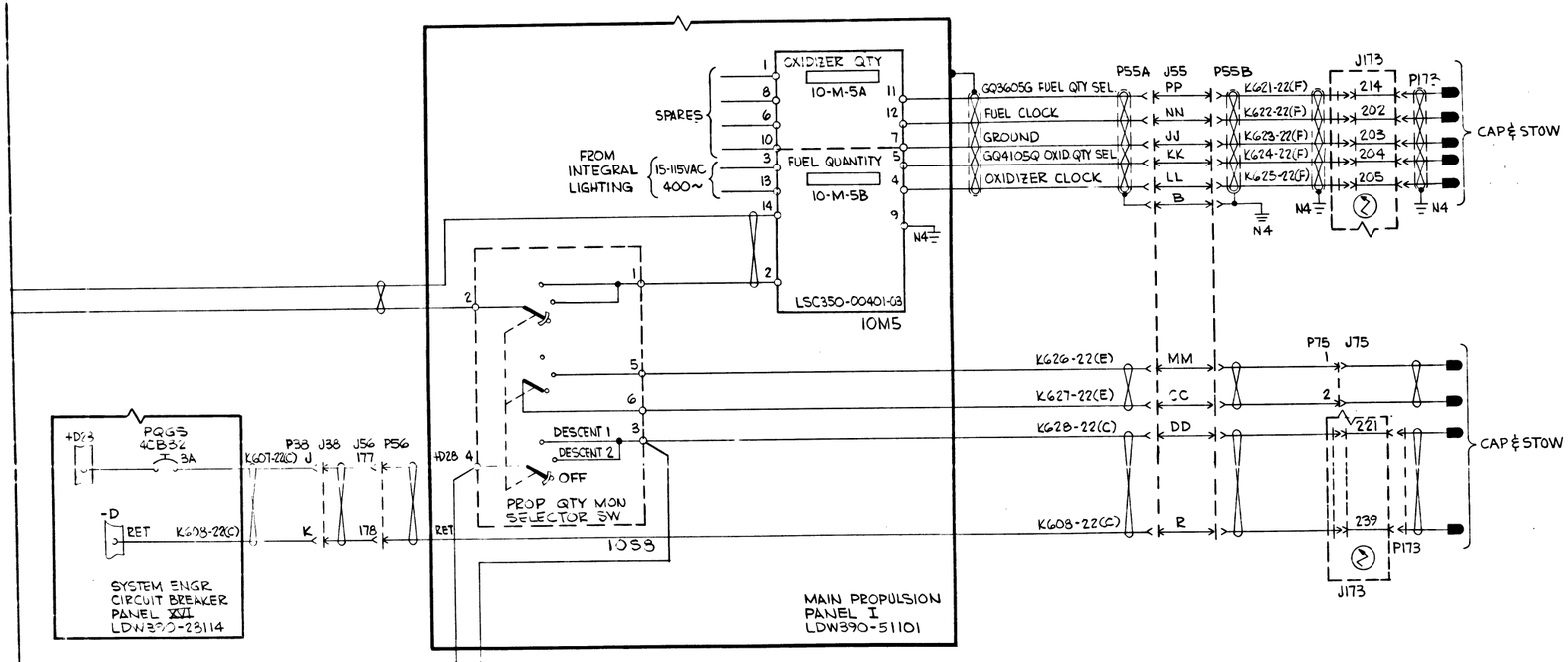
+D28 PQG5 4CB32 3A
-D RET K608-28(C)
P38 J38 K607-22(C) J K

SYSTEM ENGR CIRCUIT BREAKER PANEL XVI LDW390-28114

JTSB

CODE IDENT NO. DWG NO.
LDW270-28000 7.00

CAP & STOW — D4971-26(E), D4972-26(E) — TO INST LDW360-21007



CAP & STOW — D4973-26(E), D4974-26(E), D4975-26(E), D4976-26(E), D4977-26(E) — TO INST LDW360-21007

02/04 NAS 9-1100

D4971-26(E)
D4972-26(E)
TO INST. LDW360-21007

BUS -D
DESCENT HE REG. 4CB74 3A
+D28
LDW390-21114 COMMANDERS CIRCUIT BREAKER PANEL II

P773 J773 J771 P771
M E
L D
K198-14(A)
K195-19(A)

DESCENT HELIUM REG #1 SWITCH 1055
OPEN 3
CLOSE 1

4 0-75V 3 400~ } SEE SHEET 6.00

DESCENT HE REG #1 STATUS FLAG 10FL3
K10-22(A)
K7-22(A)
K346-22(A)
SEE NOTE 38
-D 2
+D28 1
SEE SH GOOD
K195-14(A)

DESCENT HE REG-2 SWITCH 1057
OPEN 3
CLOSE 1
DESCENT REG #2 STATUS FLAG 12FL4
K10-22(A)

MAIN PROPULSION PANEL I
LDW390-51101

P771 J771 P772A J772 J772B P774 J774
K198-14(A) K L L JQ9709 L K198-14(A)(WHT)
K196-14(A) L M M JQ9710 M K196-14(A)(BLK)
K197-14(A) M K197-14(A)(RED)

P155 J155 P173
K195-16(A) Z A
K197-16(A) A C
K196-16(A) K B
K199-16(A) M D
TO CES LDW300-21001(PDA)

LATCHING HELIUM SOLENOID VALVE #1 (PRIMARY) GRN GQ3309X
CR1
CR2
K198-22(A) GRN
K196-22(A) RED OPEN COIL
A1
VALVE CLOSED
GY
BRN K346-26(A)
K198-22(A) WHT
K197-22(A) BLK
CLOSE COIL LSC270-713-5
LDW390-28070-1 L1
10A6

P55A J55 P55B
K346-22(A) Z K346-26(A)
K7-22(A) AA K7-26(A) GQ3309X
K347-22(A) P K347-26(A) GQ3310X
K346 (A) 233
K7 (A) 232
K347 (A) 240
P173
J173

P56 J56
152 K346-26(A)
153 K7-26(A)
188 K346-26(A)
TO DFI LDW360-28507 (SEE NOTE 24)

P771 J771 P772A J772 P772B P774 J774
K198-14(A) A A A K198-14(A)(WHT)
K199-14(A) B B JQ9711 B K199-14(A)(BLK)
K200-14(A) C C JQ9712 C K200-14(A)(RED)

LATCHING HELIUM SOLENOID VALVE #2 (SECONDARY) GQ3310X
CR1
CR2
K198-22(A) GRN
K199-22(A) RED OPEN COIL
A1
VALVE OPEN
PURPLE K7-26(A)
BRN K347-26(A)
K199-22(A) WHT
K200-22(A) BLK
CLOSE COIL LSC270-713-6
LDW390-28070-3 L1
10A7

D4973-26(E)
D4974-26(E)
D4975-26(E)
D4976-26(E)
D4977-26(E)
TO INST LDW360-21007

03404 NAS 9-1100

FOR NO
FOR ENG

70-28000 7.00

SUPERSEDES LDW270-28000

45 | 44 | 43 | 42 | 41

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.

PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY.

FILLET AND INSIDE CORNER RADII TOLERANCES
.016R TO .062R ± .010
.063R TO .250R ± .015
OVER .250R ± .030

DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2.0 IMP THDS. BEYOND PERMISSIBLE.

EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.

DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.

MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.

DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING

HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.

ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES

125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10

250 √ FOR ALL DRILLED HOLES

REMOVE ALL BURRS. BREAK ALL EDGES .015-.031

INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS

SYMBOL ⚡ DENOTES SURFACE TO BE MACHINED

UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32

LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.

TOLERANCE ON LOFTED DELINEATIONS IS

DWG SIZE 34 X 189
PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X 140)= 42.0 SQ FT.
1/2 SIZE SHEET AREA (1/4 OF FULL)=10.5 SQ FT.
PRINT TRIM LINE

P173 J173 J171 P171 K198-14(A) M E L D K195-14(A)

DESCENT HELIUM REG #1 SWITCH 1055
OPEN 3
2 CLOSE 1

4 0-75V
3 400~ } SEE SHEET 6.00

4
DESCENT HE REG #1 STATUS FLAG
5 2 10FL3

-D (2)
+D28 (1) } SEE SH 6.00

K10-22(A)
K7-22(A)
K346-22(A)
SEE NOTE 38
K195-14(A)

P771 J771 P772A J772 J772B P774 J774
K198-14(A) K K K K198-14(A)(WHT)
K196-14(A) L L JQ9709 L K196-14(A)(BLK)
K197-14(A) M M JQ9710 M K197-14(A)(RED)

P155 J155 P173
K195-16(A) Z A
K197-16(A) A C
K196-16(A) K B
K193-16(A) M D
TO CES LDW300-21001(PDA)

LATCHING HELIUM SOLENOID VALVE #1 (PRIMARY) GRN GQ3309X
CR1
CR2
K198-22(A)
K196-22(A) RED OPEN COIL
A1
VALVE CLOSED
GY
BRN K346-26(A)
K198-22(A) WHT
K197-22(A) BLK
CLOSE COIL LSC270-713-5
LDW390-28070-1 L1
10A6

P55A J55 P55B
K346-22(A) Z K346-26(A)
K7-22(A) AA K7-26(A) GQ3309X
K347-22(A) P K347-26(A) GQ3310X

K346 (A) 233
K7 (A) 232
K347 (A) 240
P173
J173

P56 J56
152 K346-26(A)
153 K7-26(A)
168 K346-26(A)
TO DFI LDW360-28507 (SEE NOTE 24)

DESCENT HE REG-2 SWITCH 1057
OPEN 3
2 CLOSE 1

4
DESCENT REG #2 STATUS FLAG
5 2 10FL4
K10-22(A)

P771 J771 P772A J772 P772B P774 J774
K198-14(A) A A A K198-14(A)(WHT)
K199-14(A) B B JQ9711 B K199-14(A)(BLK)
K200-14(A) C C JQ9712 C K200-14(A)(RED)

LATCHING HELIUM SOLENOID VALVE #2 (SECONDARY) GQ3310X
CR1
CR2
K198-22(A) GRN
K199-22(A) RED OPEN COIL
A1
VALVE OPEN
PURPLE K7-26(A)
BRN K347-26(A)
K199-22(A) WHT
K200-22(A) BLK
CLOSE COIL LSC270-713-6
LDW390-28070-3 L1
10A7

MAIN PROPULSION PANEL I LDW390-51101

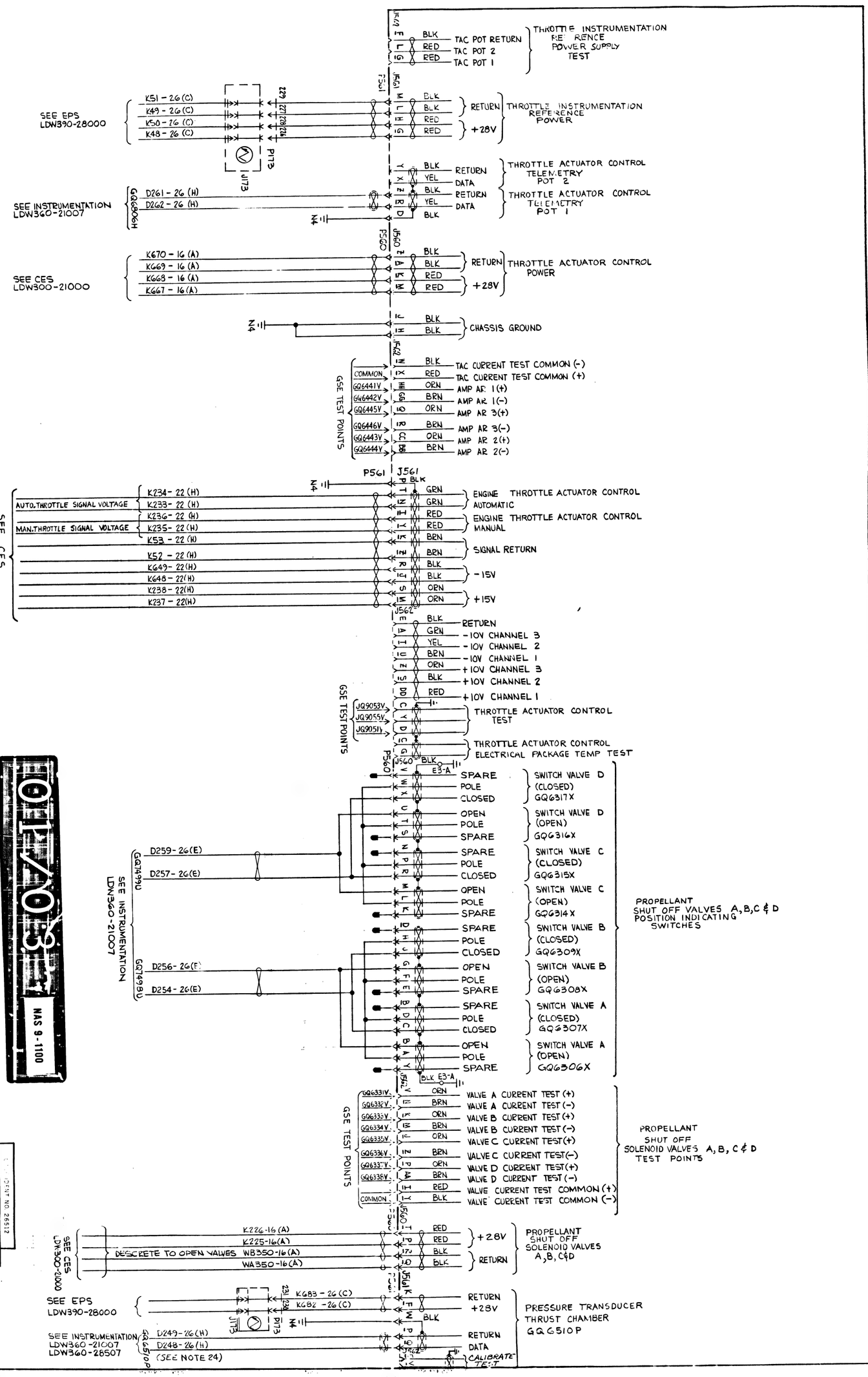
04/04 NAS 9-1100

FOR NOTES SEE SHEET 3.00
FOR ENGINEERING INFO. ONLY

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L.I., NEW YORK		
LM	SIZE J	CODE IDENT NO. 26512	LDW270-28000 G
MODEL OR END ITEM	SCALE NONE		SHEET 7.00

SUPERSEDES LDW270-28000 41 NC LAST REV'D 12-13-66 3FR

LDW270-23000 G
LDW270-28000 G
B
A
C
B



NAS 9-1100

LDW270-28000

SHT NO 28512

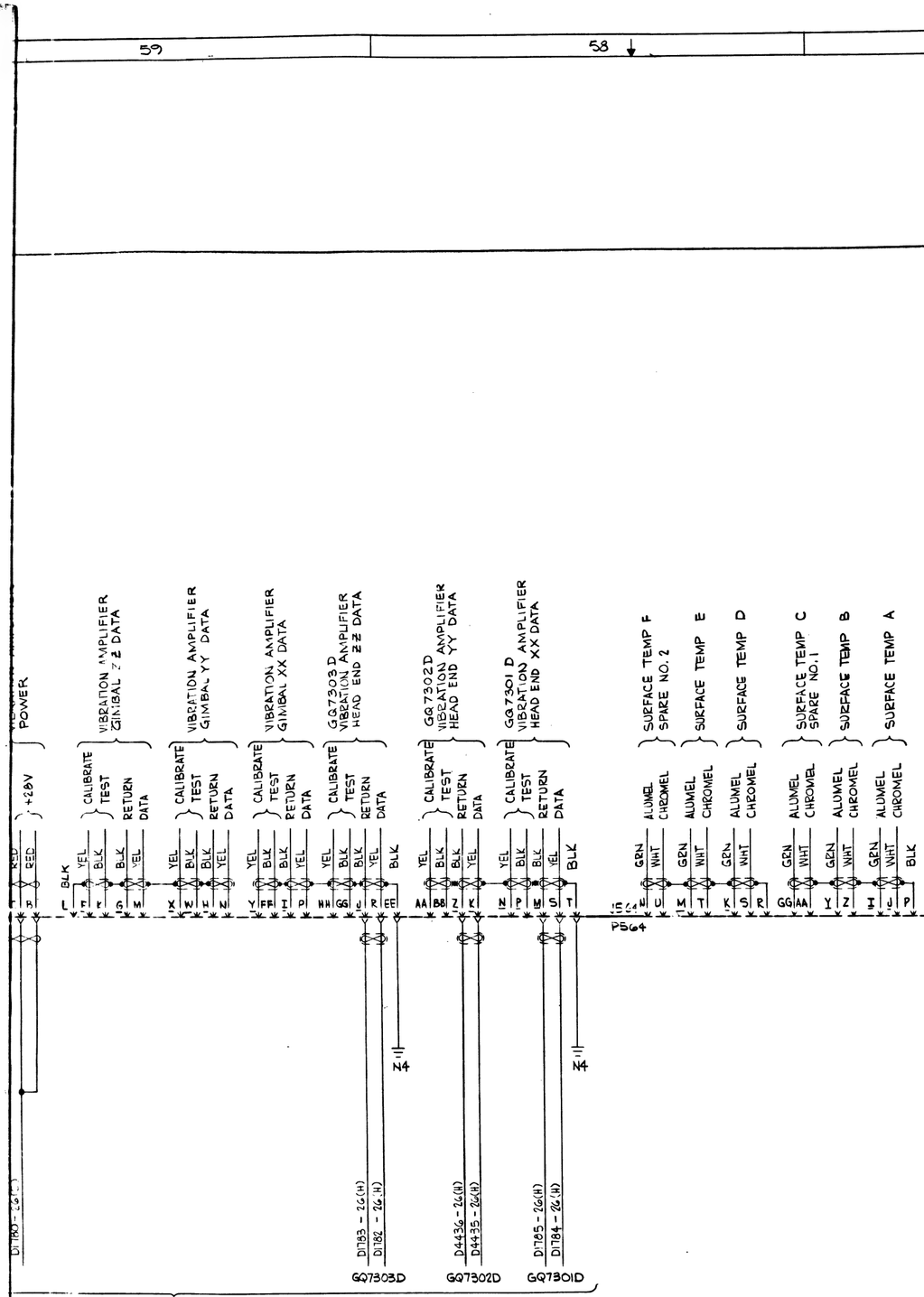
REV

9.00

CODE IDENT NO. 26512
LDW270-28000
REV

10A1

DESCENT ENGINE
LSC 270-00600-8
SEE NOTE 27



SEE INSTRUMENTATION
LDW360-28507

03/03 NAS 9-1100

DESCENT ENGINE
ELECTRICAL SCHEMATIC.
FOR DESCENT FEED SYSTEM
SEE SHEETS 6.00 & 7.00.

FOR NOTES SEE SH 3.00

FOR ENGINEERING INFORMATION ONLY

CODE IDENT NO. 26512		
LDW270-28000	-1T	9.00

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
J	26512	LDW270-28000	G

LEM (MODEL OR END ITEM) | SCALE NONE | SHEET 9.00

LDW270-28000 G

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-28000 | EO NO. H1
CONTROL INFO NO. LDW 267-8141 1

ADD THE WORDS "SEE NOTE 24" IN THE FOLLOWING LOCATIONS

SH 4.00 ZONE 7A BY MEASUREMENT NO. GP1001P
7C " " GP0501P.
8A " " GP1004P
8C " " GP0504P

SH 6.00 ZONES 35, 36 & 37 C

BY TRANSDUCERS 10MT25, 26, 27, 28, 29, 30, 31 & 32

PANELS AFFECTED: NONE JP/TM
CABLES AFFECTED: NONE JP

LEVEL 3 DWG CHANGE ONLY
FOR ENGRG INFO ONLY

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	MCR 604F
		✓	

REASON FOR EO: THESE MEASUREMENTS NOT REQUIRED ON LTA-8

DESCRIPTION OF EO: ADDED WORDS "SEE NOTE 24" BY MEAS. GP1001P, GP0501P GP1004P GP0504P, TRANSDUCERS 10MT25, 26, 27, 28, 29, 30, 31 & 32.

(5)

GAEC EO RELEASE: 6-23-67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		NOT REQD	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: NOT REWORK | REQD SCRAP

APPROVED BY	KS	[illegible]				
DATE	6/23/67	6/23/67				
	6	LTC	PROP			

PROJ ENGRG: 6-23-67

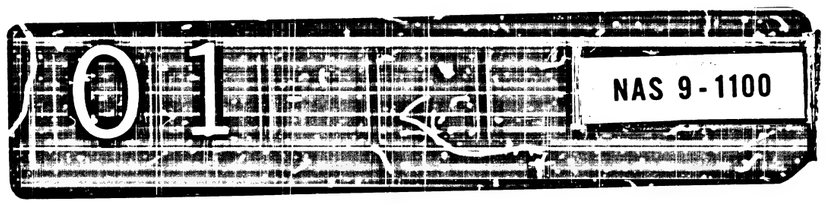
PRIORITY: E

DRAWING TITLE: SCHEMATIC, LEVEL 3, LTA-8 PROPULSION SUBSYSTEM

DRAWING NO.: LDW 270-28000

EO NO.: H1

ISSUED BY E. J. GLUECKLER (X1657) 5-20-67 SECTION LTC GROUP NO. 267 PL 5



ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER *

DWG. NO.	LDW270-28000	EO NO.	H2
CONTROL INFO NO.	LDW267-A-35411		

SH 7.00 ZONE 45C

4CB74 (IS) 5A. (WAS) 3A

CABLES AFFECTED: NONE
PANELS AFFECTED: NONE

LEVEL 3 DWG CHANGE ORDER
FOR ENGRG INFO ONLY

DETAIL SPEC REQ | GL II ENGRG CHG | GL I ENGRG CHG ✓ | MSC

REASON FOR EO: TO CORRECT ERROR MADE DURING REDRAW - PAPER CHANGE

DESCRIPTION OF EO: 4CB74 WAS 3A

EO RELEASE: 11/1 11/4/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		NOT REQ'D	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: NOT REWORK | REQ'D SCRAP

APPROVED BY	JS	E.G.						
DATE	10/26/67	10/26					DMS 10/26/67	Roth 10-30-67
	LTC	PROP	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY: E

DRAWING TITLE: SCHEMATIC, LEVEL 3, LTA-8 PROPULSION SUBSYSTEM

DRAWING NO.: LDW270-28000

EO NO.: H2

ISSUED BY E. GLUECKLER (X1657) SECTION LTC GROUP NO. 262 PL 5



						1		LDW280-16000-513	E	ELBOW (OX)	SEE DWG							
						1		LDW280-16000-512	E	ELBOW (FUEL)	SEE DWG							
						3		LDW270-10011-11	E	WASHER	SEE DWG							
					1			LSC270-00500-7	S	ASCENT ENGINE	(SEE NOTE #8)							
		1						LDW270-28010-25	E	TUBE	CRES TUBE	MIL-T8504	304 ANN	.2500 O.D. x .016W				
			1					-23		TUBE	CRES TUBE	MIL-T8504	304 ANN	.1250 O.D. x .016W	(SEE NOTE #2)			
				1				-21		TUBE	CRES TUBE	MIL-T8504	304 ANN	.1250 O.D. x .016W				
B					1			-15		TUBE ASSY	(SEE NOTE #4)							
B					1			-13		TUBE ASSY	(SEE NOTE #4)							
E					1			-11	E	TUBE ASSY	(SEE NOTE #3)							
A								-3	S	ASCENT ENGINE ASSY								
A								LDW270-28010-1	E	ASCENT ENGINE INSTL								
CL		-15	-13	-11	-3	-1		PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE	
		QTY PER ASSEMBLY					CODE IDENT											

CL = CLEANLINESS LEVEL PER LSP-14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28010	A

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTES:

1. FOR HANDLING OF ENGINE SEE DWGS(LDW420-63200 & LDW420-63300).

2. -21, -23 & -25 TUBE ROUTING TO BE DETERMINED AT INSTL.

3. ~~REMOVE & RETAIN BAC PARTS 8258-475161-1 TUBE ASSY, 8258-472082-4 PACKING & AN919-1D, REPLACE WITH -11 TUBE ASSY., AN783C4, AN919-1C, AN924-4C & R512-4, (REF. BAC DWG. 8258-475210).~~

4. ~~REMOVE & RETAIN BAC PARTS 8258-475084-1 TUBE ASSY, 4G2-4 GASKET & AN919-1S, REPLACE WITH -13 & 15 TUBE ASSY'S, AN834-4S, AN924-4C, AN919-1S & R512-4, (REF. BAC DWG. 8258-475210).~~

5. ~~ON THE OX HI POINT BLEED PORT REMOVE & RETAIN BAC PARTS AN814-4S PLUG & 4G2-4 GASKET, (REF. BAC DWG 8258-475210).~~

6. ~~ON THE FUEL HI-POINT BLEED PORT REMOVE & RETAIN BAC PARTS AN814-4D PLUG & 8258-472082-4 PACKING.~~

7. TORQUE FITTINGS IN ACCORDANCE WITH AND 10064.

8. COMMERCIAL PART - SEE SPECIFICATION CONTROL DRAWING LSC270-00500 BEFORE ORDERING.

9. ON THE MAIN FEED ELBOWS NO SEALS ARE REQD.

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-28010	A
SCALE ——		SHEET 3.00	

ENG 73.1 6-64

01

NAS 9-1100

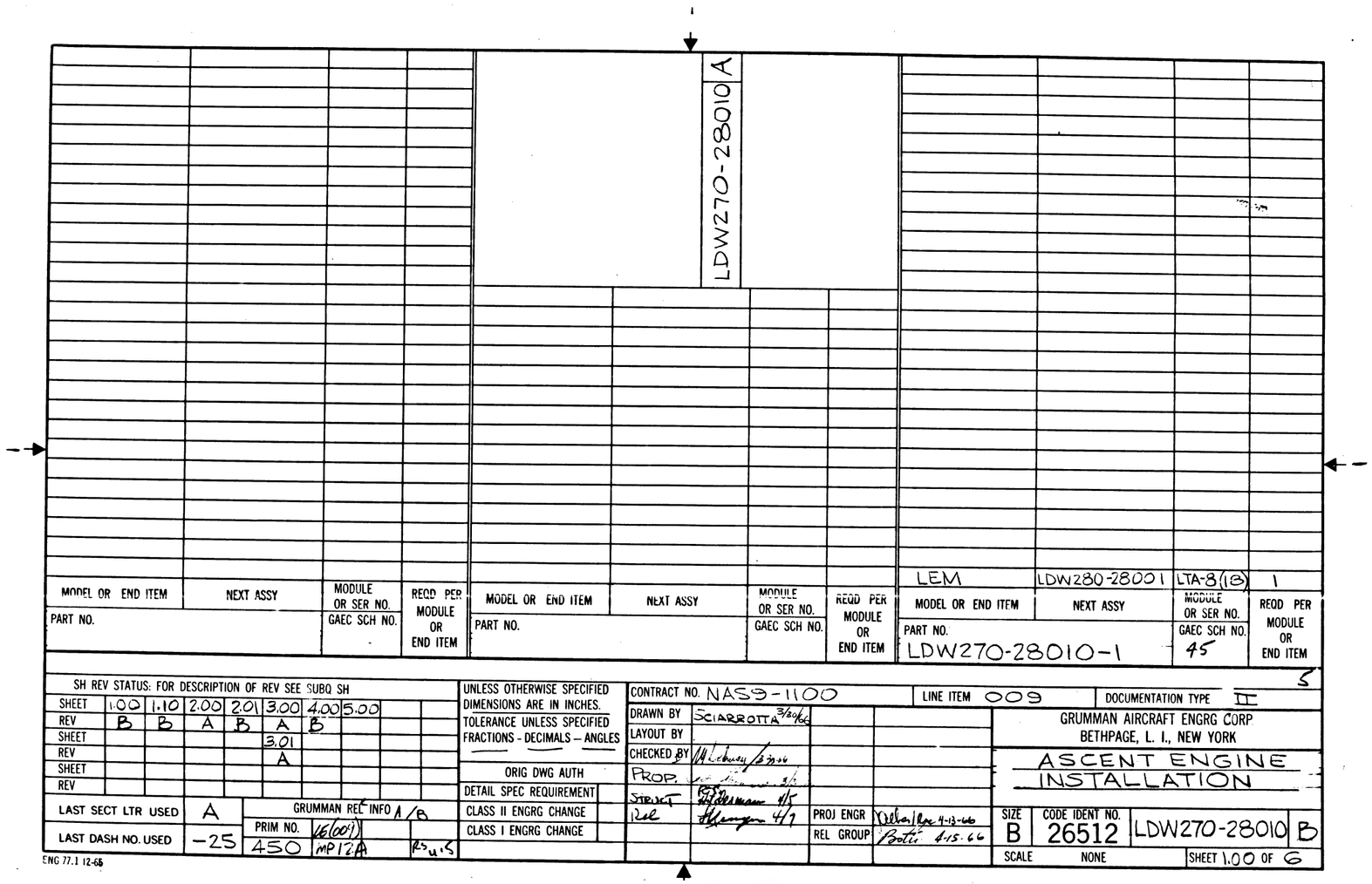
NOTES (CONT.)

10. ON LSC270-00500-7 REMOVE & RETAIN BAC PARTS 8258-475161-1 TUBE ASSY, 8258-472082-4 PACKING & AN919-1D, REPLACE WITH -11 TUBE ASSY, AN783C4, AN919-1C, AN924-4C & R512-4 (REF. BAC DWG 8258-475210).
11. ON LSC270-00500-7 REMOVE & RETAIN BAC PARTS 8258-475084-1 TUBE ASSY, 4G2-4 GASKET & AN919-1S, REPLACE WITH -13 & -15 TUBE ASSYS., AN834-4S, AN924-4C, AN919-1S & R512-4, (REF. BAC DWG. 8258-475210).
12. ON LSC270-00500-7, THE OX HI-POINT BLEED PORT REMOVE & RETAIN BAC PARTS AN814-4S PLUG & 4G2-4 GASKET, (REF. BAC DWG 8258-475210).
13 ON LSC270-00500-7, THE FUEL HI-POINT BLEED PORT REMOVE & RETAIN BAC PARTS AN814-4D PLUG & 8258-472082-4 PACKING (REF. BAC DWG 8258-475210).

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-28010	A
SCALE ——		SHEET 3.01	

ENG 72.1 6-64

NAS 9-1100



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28001	LTA-8(1B)	1
PART NO. LDW270-28010-1		GAEC SCH NO. 45	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	1.10	2.00	2.01	3.00	4.00	5.00		
REV	B	B	A	B	A	B			
SHEET					3.01				
REV					A				
SHEET									
REV									

LAST SECT LTR USED	A	GRUMMAN REC INFO	A / B
LAST DASH NO. USED	-25	PRIM NO.	450
			MP12A

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS9-1100		LINE ITEM 009	DOCUMENTATION TYPE H
DRAWN BY	SCIARROTTA 3/24/66		GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE, L. I., NEW YORK
LAYOUT BY			
CHECKED BY	4/5		ASCENT ENGINE INSTALLATION
PROP.			
STRUCT	4/5		
REL	4/7	PROJ ENGR	4-13-66
		REL GROUP	4-15-66
		SIZE B	CODE IDENT NO. 26512 LDW270-28010 B
		SCALE NONE	SHEET 1.00 OF 6

ENG 77.1 12-65

Copy 1 of 1

NAS 9-1100

REVISIONS

CHANGE LTR.	ITEM NO.	SHEET NO.	ZONE	SH CHG LTR	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	PROJ APPD
A	1	1.00		A						SHEET 1.00 OF 8 (WAS) 1.00 OF 6 ADDED SHEETS 1.10 & 3.01	LTA-8 (18)			S. SCIARROTTA 4-11-66		
	2	1.00								IN TITLE BLOCK "ASCENT ENGINE INSTALLATION" (WAS) "ASCENT ENGINE LTA-8 INSTALLATION" IN DOCUMENTATION BLOCK "II" (WAS) III.						
	3	2.00								ADDED CLEANLINESS LEVEL PER LSP-14-0011, LEVEL "A" FOR -1 & -3, LEVEL "B" FOR -11, -13 & -15.						
	4	3.00 3.01								IN THE NOTES DELETED NOTES 3, 4, 5 & 6, ADDED NOTES 10, 11, 12 & 13.						
B	1	1.00, 1.10 2.01 & 4.00	6D						EOB1	IN THE FLD & B/M DELETED NAS6S3V14 QTY (12) REPLACE WITH NAS6S3V5 QTY (12)	LTA-8(18)	✓				

FOR CONTINUATION OF REVISIONS SEE SHEET

ENG 77.3 5-64

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28010	B

SCALE NONE — SHEET 1.10

01

NAS 9-1100

			2	2				AN818-2C	E	NUT	STD. PART								
		2						AN818-4C		NUT									
					1			AN783C4		TEE									
					1			AN919-1C		REDUCER									
					2			AN924-4C		NUT									
					1			AN834-4S		TEE									
					1			AN919-1S		REDUCER									
						12		AN960C10L		WASHER									
						3		AN960C616		WASHER									
						3		NAS1273-16		BOLT									
						12		NAS6530V5		BOLT									
			2	2				MS20819-2C		SLEEVE									
		2						MS20819-4C		SLEEVE									
						3		MS21043-6		NUT	STD. PART								
					2		07697	R517-4		PACKING	COML PART								
		-15	-13	-11	-3	-1													
		QTY PER ASSEMBLY					CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE		

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

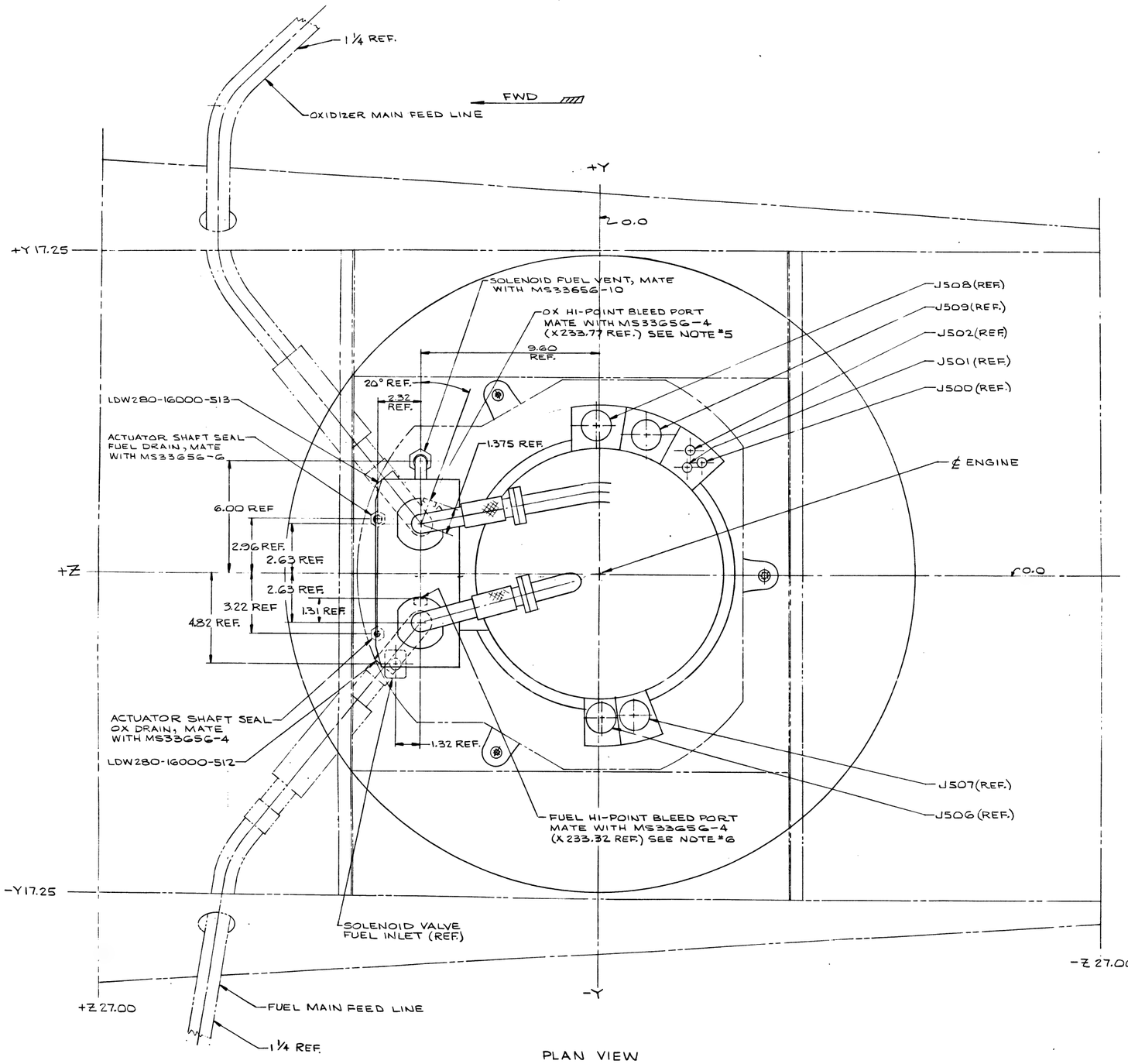
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28010	B

SCALE NONE SHEET 2.01

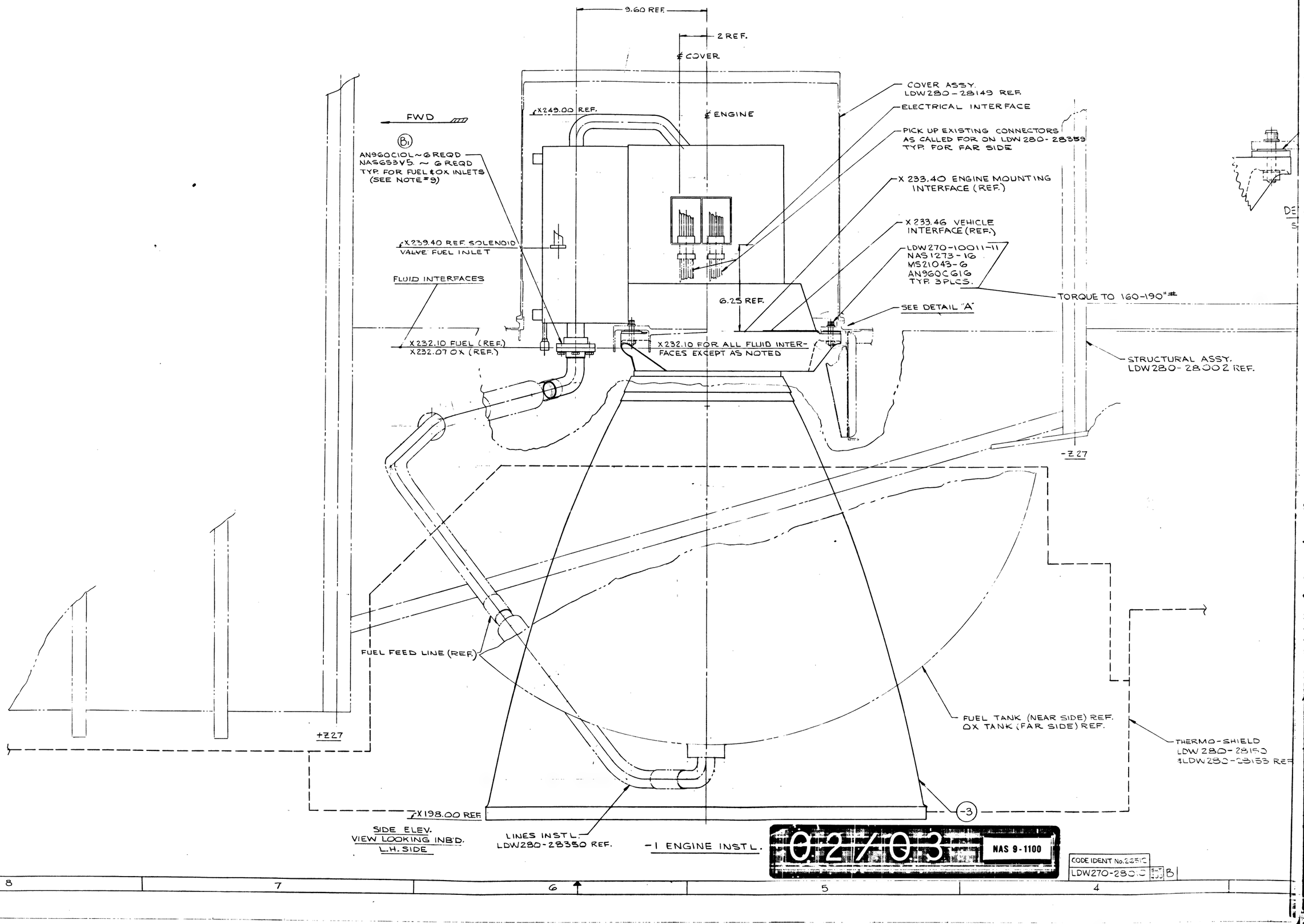
ENG 77.2 7-65



PLAN VIEW

01703 NAS 9-1100

CODE IDENT. No. 26512
LDW270-28010 SHT. 4.00 B

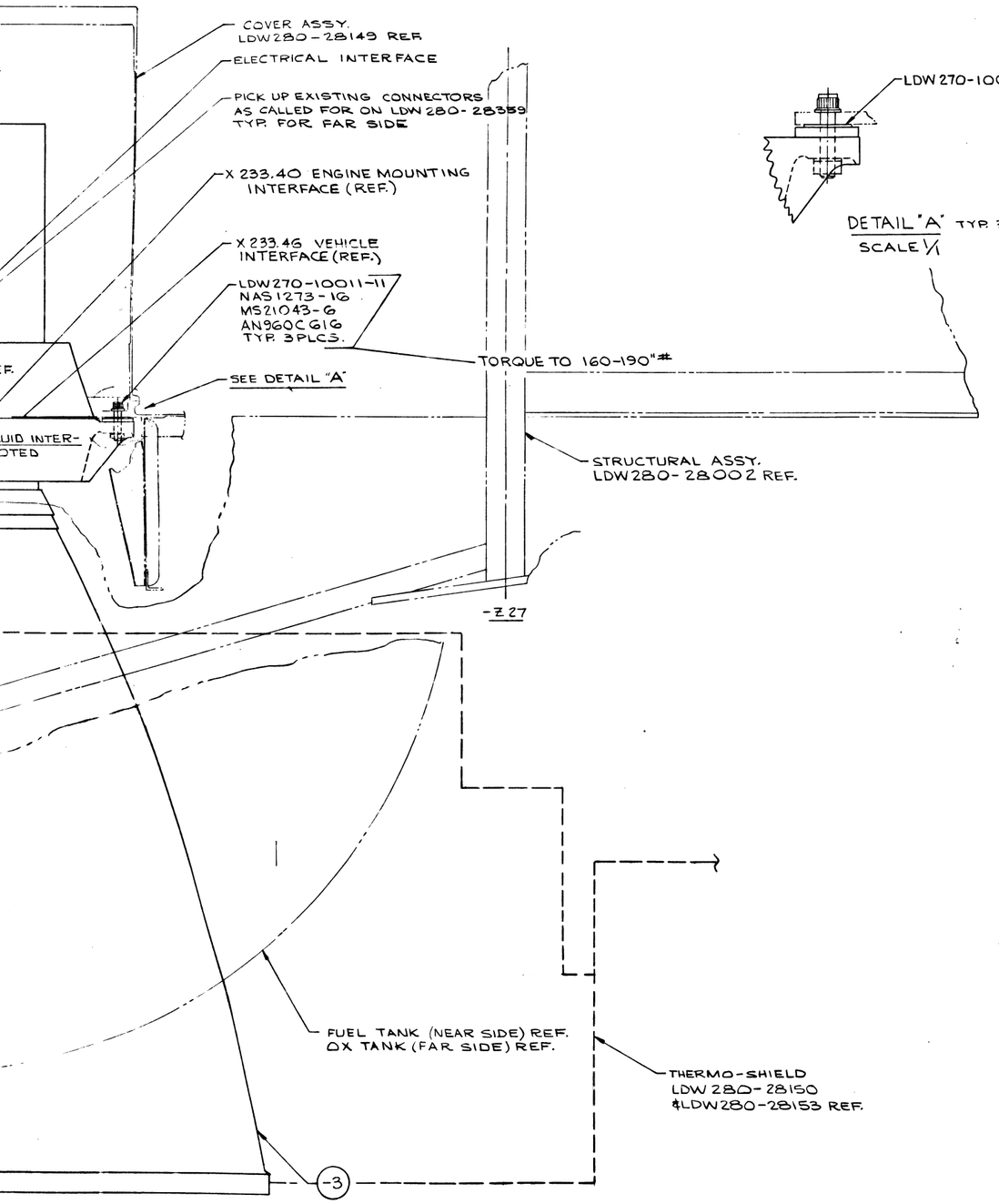


02/03

NAS 9-1100

CODE IDENT. No. 26512 | LDW270-28010 | SHT. 4.00 | B

CODE IDENT No. 26512 | LDW270-280[illegible] | SHT. [illegible] | B



DETAIL "A" TYP. 3PLCS.
SCALE 1/1

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY.
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
250 FOR ALL DRILLED HOLES
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
SYMBOL ⚡ DENOTES SURFACE TO BE MACHINED
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
TOLERANCE ON LOFTED DELINEATIONS IS

DWG SIZE 34 X 120

PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X) = 90. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL) = 90. FT.
PRINT TRIM LINE

D
C
B LDW270-28010B
A LDW270-28010B

037/037 NAS 9-1100

CODE IDENT No. 26512		
LDW270-28010	SHT 400	B

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK				
LTA-8(18)	SIZE J	CODE IDENT NO. 26512	LDW270-28010	B
MODEL OR END ITEM	SCALE 1/2			SHEET 400

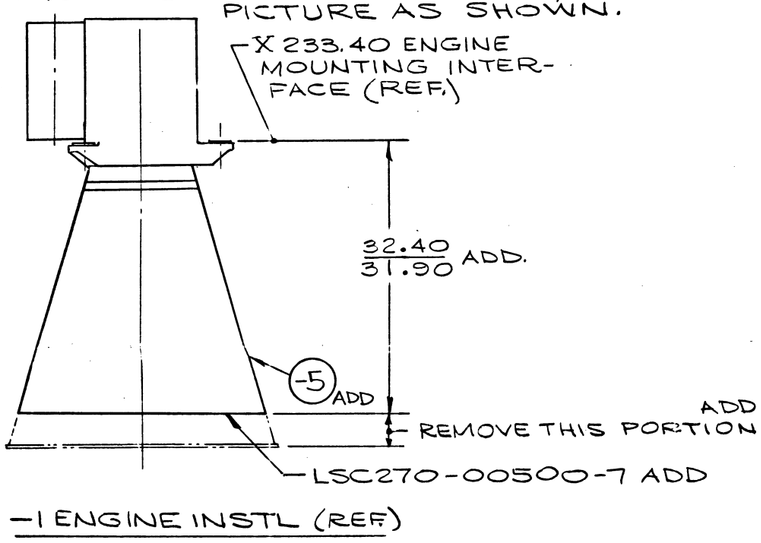
ENG 32.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-28010		EO NO. C1
CONTROL INFO NO. LEM270-621		

*DESCRIPTION OF E.O.

IN THE F/D & B/M DELETE -3 ASCENT ENGINE ASSY THAT CONSISTS OF LSC270-00500-7 ASCENT ENGINE, -11,-13,-15 TUBE ASSYS, AN783C4, AN919-1C, AN924-4C(2), R512-4(3), AN834-4S & AN919-1S. DELETE -11,-13 TUBE ASSYS THAT CONSIST OF -21, -23 TUBES RESPECTIVELY, MS20819-2C SLEEVE (2EA) & AN818-2C NUT (2EA) & DELETE -15 TUBE ASSY THAT CONSISTS OF -25 TUBE, MS20819-4C SLEEVE (2) & AN818-4C NUT (2).
IN THE NOTES SHT 3.00 & 3.01 DELETE NOTES #2, #10, & #11.
IN THE F/D & B/M TO -1 ASCENT ENGINE INSTL ADD: -5 ASCENT ENGINE (MAKE FROM LSC270-00500-7), CLEANLINESS LEVEL "G".
IN F/D TO -5 ENGINE ADD DIM. 32.40/31.90 & ALTER PICTURE AS SHOWN.



-1 ENGINE INSTL (REF.)

(5)

| DETAIL SPEC REQ | | CL II ENGRG CHG | | CL I ENGRG CHG | | |

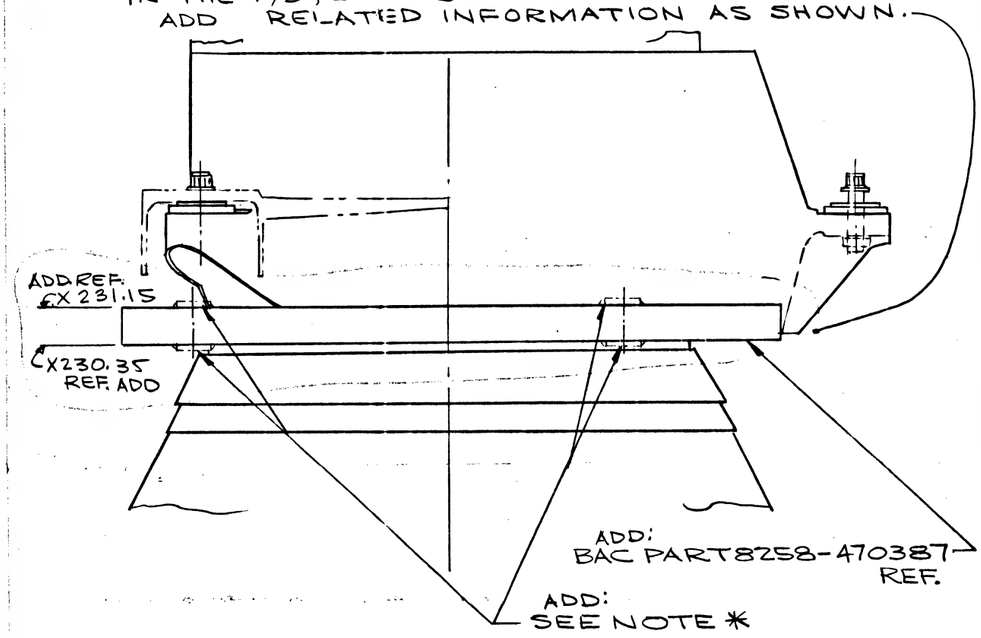
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 22.2 REV 3-66

DWG. NO. LDW270-28010 | EO NO. C2
CONTROL INFO NO. LEM270-644

IN THE NOTES ADD NOTE * (* USE NEXT AVAILABLE NOTE NUMBER)
*ON THE LDW270-28010-5 ASCENT ENGINE REMOVE BAC PART NO. 8258-470564-5 (8PLCS) BY GRINDING. SEE BAC DWG 8258-470387.

IN THE F/D, ZONE 5C CHANGE PICTURE & ADD RELATED INFORMATION AS SHOWN.



NAS 9-1100

5

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	

REASON FOR EO: TO FACILITATE THERMAL LAB WORK

DESCRIPTION OF EO: ADDED NOTE *, IN ZONE 5C ADDED "BAC PART No 8258-470387 REF"

GAEC EO RELEASE: 9-24

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LTA-8 (18)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: REWORK ✓ | SCRAP

	APPROVED BY	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	QUAL
DATE	9-7-66	9-8	9-23-66	9-22-66			

PRIORITY: C
DRAWING TITLE: ASCENT ENGINE INSTL.
DRAWING NO.: LDW270-28010
EO NO.: C2

ISSUED BY: S. SCIARROTTA 9-6-66 X1471 SECTION: PROPULSION GROUP NO. 345 PL. 35

NAS 9-1100

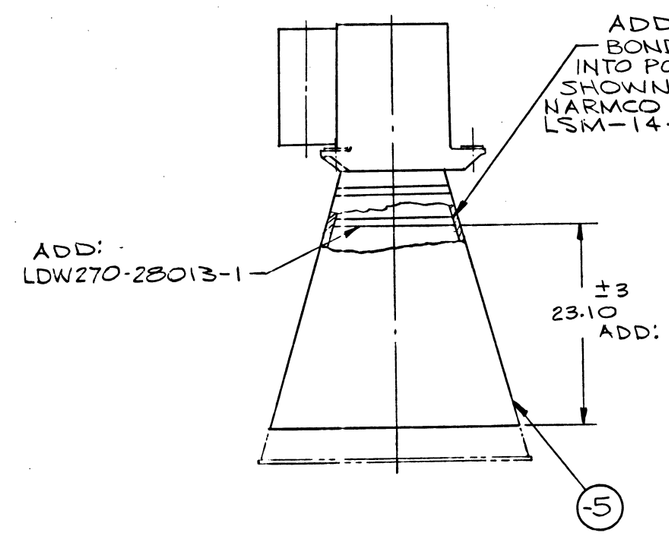
ENG 32.3 REV 3-68

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-28010 | EO NO. C 5
CONTROL INFO NO. LEM 270-656

IN THE F/D & B/M ON -5 ENGINE ASSY
ADD: LDW270-28013-1 RING ASSY.

IN THE F/D, ZONE 5B, CHANGE PICTURE & ADD RELATED INFORMATION AS SHOWN



5

DETAIL SPEC REQ	CL I ENGRG CHG	CL II ENGRG CHG

REASON FOR EO: ADDED REQUIREMENT FOR THERMAL PLUG

DESCRIPTION OF EO: ON -5 ENGINE ASSY ADD: LDW270-28013-1 RING ASSY IN THE F/D, ZONE 5B, CHANGED PICTURE & ADDED RELATED INFORMATION AS SHOWN

GAEC EO RELEASE: E 10.3

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO
LM		LTA-8 (18)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		✓	

APPROVED BWD — DATE: 11/6/66 — PROP

RELIAB GROUP — GROUP LEADER 9/1/66 — STRESS GROUP 9-1-66 — LIAISON ENGRG — PROJ ENGRG 9-30

PRIORITY: C

DRAWING TITLE: ASCENT ENGINE INSTALLATION

DRAWING NO.: LDW270-28010

EO NO.: C3

ISSUED BY S. SCIARROTTA 9-13-66 x1471 SECTION PROPULSION GROUP NO. 345 PL 35

IN F/D ZONE 5C

NOW:

LDW270-10011-11
NAS1273-16
MS21043-6
AN960C616
TYP 3 PLCS
} FOR-1

LDW270-10011-11
LDW270M10078-11
NAS1273-18
MS21043-6
AN960C616
GW502F-6C
TYP. 3 PLCS.
} FOR-7

SEE DETAIL "Δ" FOR-7 INSTL
SEE DETAIL "A" FOR-1 INSTL

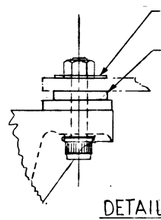
WAS:

LDW270-10011-11
NAS1273-16
MS21043-6
AN960C616
TYP. 3 PLCS.

SEE DETAIL "A"

-1 ENGINE INSTL (REF)
ADD: -7 ENGINE INSTL SAME AS -1 EXCEPT AS SHOWN

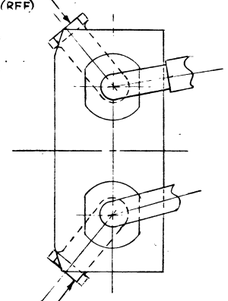
IN F/D ADD



DETAIL "Δ" TYP 3 PLCS
SCALE 1/1 FOR-7 INSTL
(Δ USE NEXT AVAILABLE LETTER)

DETAIL "A" ADD: TYP 3 PLCS (REF)
SCALE 1/1 FOR-1 INSTL

NOW:
FOR-7
LDW280-28350-11 (REF)
FOR-1
LDW280-16000-536 (REF)
WAS:
LDW280-16000-513



NOW:
FOR-7
LDW280-28350-13 (REF)
FOR-1
LDW280-16000-537 (REF)

WAS:
LDW280-16000-512

PLAN VIEW (REF)

PRINTING INFO ONLY

FULL SIZE SHEET AREA (36X60)	15.0 SQ FT
½ SIZE SHEET AREA (¼ OF FULL)	3.75 SQ FT

ADD: TO B/M

QTY PER ASSEMBLY -7	-5	-1	CODE IDENT	PART NO.	U/I	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
12				NAS6S3V5	E	BOLT	STD PART						SEE NOTE **
3				GW502F-6C	E	WASHER	GROMMET STD						
12				AN960C10L	E	WASHER	STD PART						SEE NOTE **
3				AN960C616	E	WASHER	STD PART						
3				MS21043-6	E	NUT	STD PART						
3				NAS1273-18	E	BOLT	STD PART						
3				LDW270M10078-11	E	WASHER	STD PART						
3				LDW270-10011-11	E	WASHER	SEE DWG						SEE NOTE *
J 1		1		LDW270-28010-5	S	ASCENT ENG ASSY							SEE NOTE ##
J				LDW270-28010-7	E	ASCENT ENG INSTL							

ADD: NOTE *: THE -5 ASSEMBLY IS TO BE USED INTERCHANGEABLY BETWEEN THE -1 & THE -7 INSTL. THE -7 INSTL IS THE SAME AS THE -1 INSTL EXCEPT AS SHOWN.
NOTE **: NAS6S3V5 BOLT (12 REQD) AN960C10L WASHER (12 REQD) AND LDW270-10011-11 WASHER (3 REQD) MAY BE USED INTERCHANGEABLY BETWEEN THE -1 & THE -7 INSTL. IN THE M/B -7 ADD EFFTY. LTA-8 (18), N/A LDW280-28001 QTY PER MODULE (1)

DESCRIPTION OF E.O. (CONT.)
IN F/D ZONES 12B & 12C CHANGED CALLOUTS TO READ "FOR-7 LDW280-28350-11 & -13 (REF) & FOR-1 LDW280-16000-536 & -537 (REF)
WAS: FOR-1 LDW 280-16000-512 & 513.

LFM

| | | | | | | |

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW270-28010		EO NO. C5
CONTROL INFO NO. LM 52-2319		

IN F/O ADD NOTE *

ON LSC270-00500-7 REMOVE 3 WIANCKO PRESSURE TRANSDUCERS P/N 56158-1 S/N 0014, 0024, & 0007.

* USE NEXT AVAILABLE No.

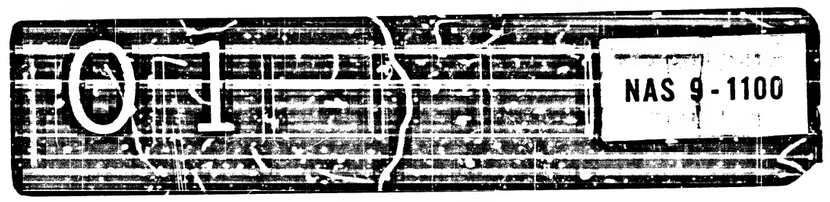
DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	ECO20338 (52)

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
HARDWARE NOT REQD	IN F/O ADDED NOTE *	C

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP	APPROVED BY	DATE	M&SC CogEng	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	M&SC Dsgn Mgr	PROJ ENGRG	
LM		LTA-8(18)		✓		✓			1-24-68				7/11/68		7/24/68		

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	ASCENT ENGINE INSTALLATION	LDW270-28010	C5

ISSUED BY WHATSIT X4606 SECTION MSC. PROJ. ENG. GROUP NO. 827 PL 52



LDW270-28012 B

LM	LTM280-25150	PA-1 (47)	1										
	LDW280-54001	LM-15 (45)	1										
		LM-14 (44)	1										
		LM-13 (43)	1										
		LM-12 (42)	1										
		LM-11 (41)	1										
		LM-10 (40)	1										
		LM-9 (39)	1										
		LM-8 (38)	1										
		LM-7 (37)	1										
		LM-6 (36)	1										
		LM-5 (35)	1	LM	LTM280-25562	PA-1 (47)	1						
	LDW280-54001	LM-4 (34)	1	LM	LDW280-52001	LM-2 (32)	1						
LM	LDW280-53001	LM-3 (33)	1	LM	LDW280-51001	LM-1 (31)	1	LM	LDW280-28001	LTA-8 (18)	1		
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM		
PART NO. LDW270-28012-7				PART NO. LDW270-28012-3				PART NO. LDW270-28012-1			45		

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	1.10	2.00	3.00	3.01				
REV	B	B	B	B	B				
SHEET		1.11							
REV		B							
SHEET									
REV									
LAST SECT LTR USED	B								
LAST DASH NO. USED	-7								

GRUMMAN REL INFO B
PRIM NO. W(009)
450 MP-16 B 9/7/7

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100 | LINE ITEM 009 | DOCUMENTATION TYPE II

DRAWN BY	SCIARROTTA 6-7-66		
LAYOUT BY		WEIGHTS	Spencer 6/11/66
CHECKED BY	W. Montgomery 6/8/66 Mgr. Mech. Engrg.	Rel.	P. Krugman 6/11
PROP.	W. H. Lambright 6/10/66		
V.D.I.			
STRESS		PROJ ENGR	Della Porta 6-22-66
		REL GROUP	Bortz 6-15-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

DUAL SOLENOID VALVE INSTL
A/S ENGINE ISOLATION

SIZE	CODE IDENT NO.		
B	26512	LDW270-28012	B
SCALE NONE		SHEET 1.00 OF 6	

ENG 77.1 12-65

01
NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET 1.11

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.10						EOA1	SH 1 OF 4 WAS SH 1 OF 3 ADDED SH 1.10. EOA1 SUPERSEDED BY EOA3	NOT REQD	NOT	REQD	E. SULSENTI 6-30-66		
	2	1.00, 1.10 2.00, 3.00						EOA2	ADDED -5 VALVE INSTL & RELATED INFO. FOR -3 IN MOD BLK CHANGED N/A FOR LEM-1 & -2 WAS LDW280-28001 ADDED CLEANLINESS LEVEL "G" TO -1, -3, -5	LEM-1, -2, -3 LEM-4, -5 & -6					
	3	2.00 & 3.00						EOA3	SUPERSEDES EOA1 ON -1 & -3 ADDED NAS1132V5(4) WAS GB511J-08-9(4). ALSO ADDED MS21043-08(2)	LTA-8 LEM-1 & -2	✓				
	4	1.10 & 3.00						EOA4	IN THE NOTES ADD NOTE 2 & CHGD DIM., WAS Y-11.89 (2 PLACES	LTA-8 LEM-1 THRU LEM-6	NOT	REQD			
B	1	1.00 2.00 3.00						EO B1	IN THE F/D, B/M & M/B DELETED -5 INSTL., IN THE F/D CHGD CALLOUT TO READ FOR -1 & -3" FOR ELECTRICAL INSTL SEE LDW280-28359 FOR LTA-8, LDW280-51359 FOR LM-1, LDW280-52359 FOR LM-2, LDW280-53359 FOR LM-3 & LDW280-54359 FOR LM-4 THRU LM-15 "WAS: "LDW280-2835 FOR LTA-8, LDW280-51359 FOR LEM-1, LDW280-52359 FOR LEM-2, LDW280-53359 FOR LEM-3, LDW280-54359 FOR LEM-4, LDW280-55359 FOR LEM-5 & LDW280-56359 FOR LEM-6." IN THE M/B TO -3 ADDED EFFECT FOR MODULE "LM-3 (33)" MODEL "LM" N/A "LDW280-53001" REQD "1" & MODULES "LM-4 (34) THRU LM-15 (45)" MODEL "LM" N/A "LDW280-54001" REQD PER MODULE "1"	LTA-8 LM-1 THRU LM-15		- 5 ✓	S. SCIARROTTA 8-29-67		
	2							EO B2	ON -3 REMOVED LSC270-00822-7 ADDED LSC270-00822-7-2	LM-1 → 15	✓				

CHG APPROVED	LTR	GROUP LDR	PROP	VEH DES INT	STRESS	WEIGHTS	RELIABILITY
	A						
	B						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28012	B

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	QUAL APPD
B	3	1.00					✓	LEO270-47 EO B3	IN THE M/B TO -3 ADDED "PA-1" REQM N/A 'LTM280-25562" QTY "1"	PA-1(47)	NOT	REQD	S SCIARROTTA 8-25-67	[illegible] 8-30-67	
	4	1.00 3.00						LCD1575	IN THE M/B & F/D ON LM-3(33) THRU LM-15(45) DELETED -3 INSTL & ANY RELATED INFO. REPLACED BY -7 INSTL	LM-3(33) THRU LM-15(45)		-3			
	5	1.00 3.00 3.01							TO -7 INSTL ADDED PA-1 (47) EFFECT QTY 1 N/A LTM280-25150 SHT 1.00 OF 6 WAS 1.00 OF 4 ADD SHTS 1.11 & 3.01. ADDED -7 INSTL	PA-1 (47) LM-3(33) THRU LM-15(45)	NOT	REQ'D			
	6	3.00						LCD1076	IN THE F/D REVISED PICTURE TO SHOW REF LDW280-28172-3 WAS LDW280-28172-1 & TO CALLOUTS ADDED "SEE NOTE #3" 2 PLCS IN THE NOTES ADDED NOTE #3	LM-1, -2 & PA-1	✓				

FOR CONTINUATION OF REVISIONS SEE SHEET _____

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28012	B

SCALE NONE SHEET 1.11

ENG 77.3 5-65

01

NAS 9-1100

		4					GBS11J-08-6	E	BOLT	GRUM STD							
		4					AN960C8L	E	WASHER	STD. PART							
				4	4		9N960D8L	E	WASHER	STD. PART							
		4		4	4		MS21043-08	E	NUT	STD. PART							
				4	4		NAS1132V5	E	BOLT	STD PART.							
		1		1			LSC270-00822-7-2	S	DUAL SOLENOID	VALVE (SEE	NOTE#1)						
					1		LSC270-008223	S	DUAL SOLENOID	VALVE (SEE	NOTE#1)						
G							LDW270-28012-7	E	DUAL SOLENOID	VALVE INSTL							
G							LDW270-28012-3	E	DUAL SOLENOID	VALVE INST'L							
G							LDW270-28012-1	E	DUAL SOLENOID	VALVE INSTL.							
		-7		-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE	
QTY PER ASSEMBLY																	

CLEANLINESS LEVEL

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

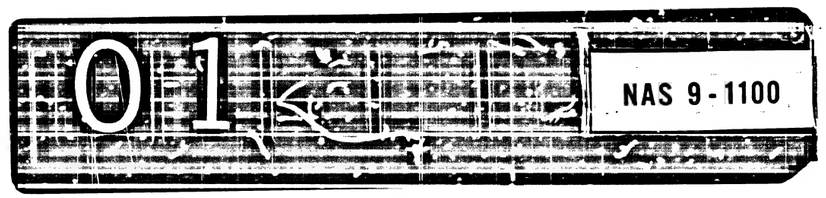
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

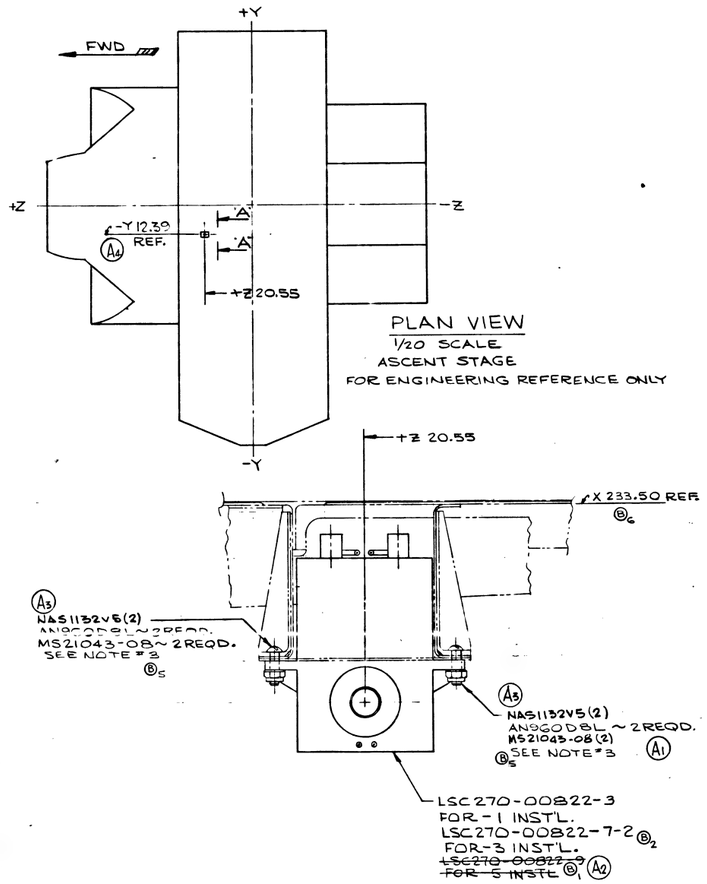
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28012	B

SCALE NONE SHEET 2.00

ENG 77.2 7-65

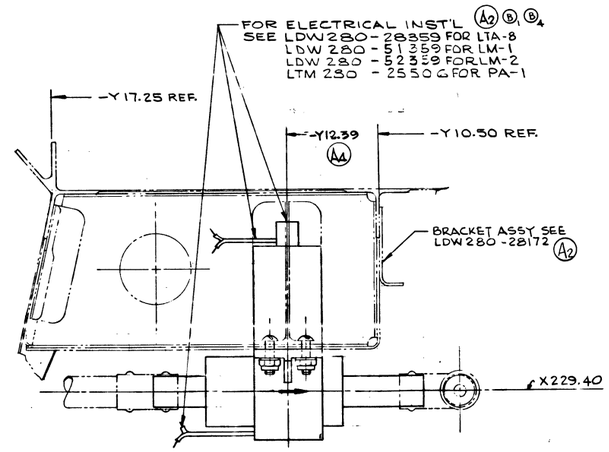




PLAN VIEW
1/20 SCALE
ASCENT STAGE
FOR ENGINEERING REFERENCE ONLY

NOTES:

1. COMMERCIAL PART - SEE SPECIFICATION CONTROL DRAWGING LSC 270-00822 BEFORE ORDERING.
2. VALVE LSC 270-00822 IS NOT TO BE FLUSHED WITH TRICHLOROFLUOROMETHANE (FREON MF OR EQUIVALENT). ALL INSTALLATIONS INCORPORATIUG THIS VALVE ARE TO BE INCORPORATED AFTER MANUFACTURING ACCEPTANCE TEST COLD FLOW TO PRECLUDE INCOMPATIBILITY EFFECTS TO VAVLE.
3. LUBRICATE BOLT THREADS WITH DUPONT LUBRICANT PR-240AC & TORQUE TO 14-18 INCH-LBS (LM-2 ONLY).

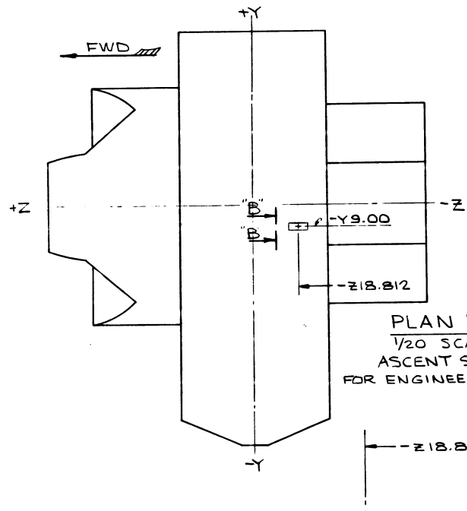


VIEW A-A

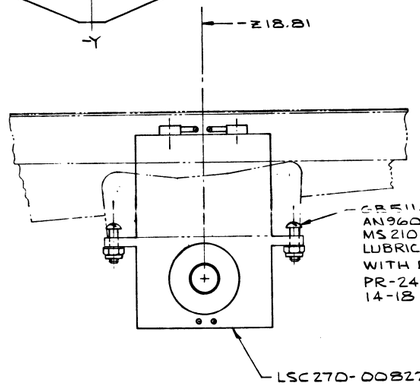
-1 VALVE INSTL.
B5 -3 VALVE INSTL.
~~-5 VALVE INSTL.~~ B1

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .020
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
250 FOR ALL DRILLED HOLES
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
SYMBOL √ DENOTES SURFACE TO BE MACHINED
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
TOLERANCE ON LOFTED DELINEATIONS IS

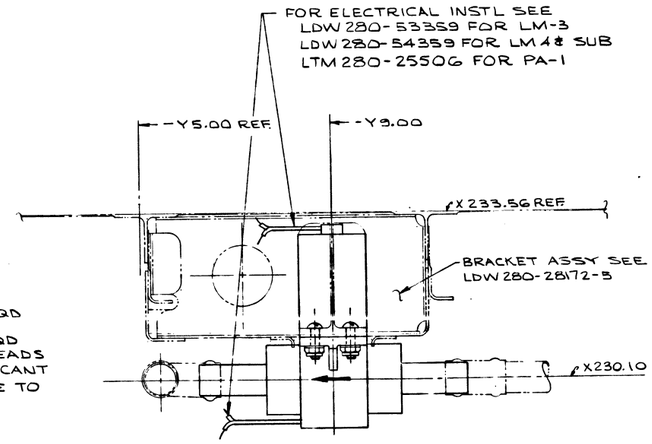
GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LM	SIZE D	CODE IDENT NO. 26512	LDW270-28012 B
MODEL OR END ITEM	SCALE 1/1		SHEET 3.00



PLAN VIEW
1/20 SCALE
ASCENT STAGE
FOR ENGINEERING REFERENCE ONLY



FOR ELECTRICAL INSTL SEE
LDW280-53359 FOR LM-3
LDW280-54359 FOR LM-4 & SUB
LTM280-25506 FOR PA-1



VIEW B-B
ROTATED C.C.W. 90°

-7 VALVE INSTL.

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.	
FILLET AND INSIDE CORNER RADII TOLERANCES .0108 TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2.3 XNP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 IN THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES.	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ✓ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, MS & NAS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK			
LM	SIZE D	CODE IDENT NO. 26512	LDW270-28012	3
MODEL OR END ITEM	SCALE 1/1		SHEET 3.5	

DD 753 644

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-28012 | EO NO. C1
CONTROL INFO NO. 270-1162

* FOR -7 INSTL, REMOVE LM-4 THRU LM-15 EFFECTIVITY
RESTRICT -7 INSTL. TO LM-3 AND PA-1
CREATE -9 INSTL, FOR LM-4 THRU LM-15
SAME AS -7 INSTL EXCEPT LSC 270-822-7-4
REPLACES LSC 270-822-7-2

INITIAL SPEC NUM | CL II ENGRG CHG | CL I ENGRG CHG | LCD 2247 SCA 726

REASON FOR EO: USE VIBRATION ACCEPTANCE TESTED HARDWARE

DESCRIPTION OF EO: *SEE N: ABOVE

GAEC ED RELEASE: 1/14/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-4(3rd TH/RU LM-15(4th)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: REWORK ✓ | SCRAP

	APPROVED BY	DATE
PROJ		1/14
SUPPORT		
RELIAB. GROUP		
GROUP LEADER		1/19/67
STRESS GROUP		
LIAISON ENGRG		
PROJ ENGRG		1/19/67

PRIORITY: C
DRAWING TITLE: DUAL SOLENOID VALVE INSTL
DRAWING NO.: LDW270-28012
ED NO.: C1

ISSUED BY S. NEWMAN, X1611 SECTION PROPULSION GROUP NO. 270 PL 25

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NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-28012 | EO NO. C2
CONTROL INFO NO. LM-5-18079

ADD NOTE *

ELECTRICAL BONDING PER LSP14-13334

RELEASED BY LIAISON

* NEXT AVAILABLE NO.

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG
	V	

REASON FOR EO: BONDING NOTE OMITTED

DESCRIPTION OF EO: ADDED BONDING NOTE *

(5) GAEC EO RELEASE C

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM3 (33) THRU LM15 (45)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	DATE
✓		✓		3/11/68 5KAT	

SUPPORT | RELIAB. GROUP | GROUP L'ADER | STRESS GROUP | LIAISON ENGRG | PECI ENGRG

PRIORITY: C

DRAWING TITLE: DUAL SOLENOID VALVE INSTL A/S ENG ISOLATION

DRAWING NO: LDW270-28012

EO NO. C2

ISSUED BY LIAISON John J. BLASE SECTION PROP. GROUP NO. 345 PL 15

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW270-28012		EO NO. C3
CONTROL INFO NO. LDW52-3813		

SHT. 4.00
ZONE 6A

LSC270-00822-3
FOR -1 INSTL
LSC 270-00822-7-2
FOR -3 INSTL.

S/B

LSC270-00822-3
FOR -1 INSTL
LSC270-00822-7-4
FOR -3 INSTL

(182)

DETAIL SPEC REQ		CL II ENGRG CHG	√	CL I ENGRG CHG		

REASON FOR EO: UPDATE PA-1 TO LM-3 CONFIGURATION

DESCRIPTION OF EO: -3 INSTL LSC270-00822-7-4 WAS LSC270-00822-7-2

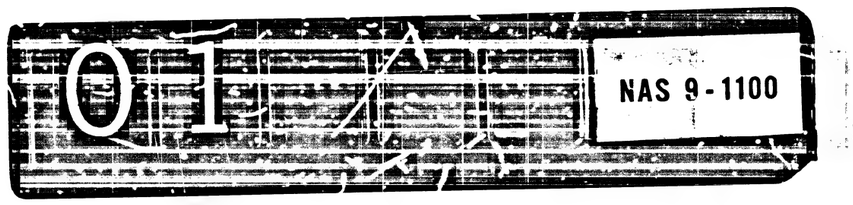
GAEC EO RELEASE: C — JK 5/10/68

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		PA-1(47)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY				DATE				
✓		✓					SUPPORT	RELIAB GROUP	5/7/68			5/10/68
									GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	DUAL SOLENOID VALVE INSTL. A/S ENGINE ISOLATION	LDW270-28012	C3

ISSUED BY O. Johansen 13. 5 68 SECTION DGN. ENG/MSC-WSTF GROUP NO. 764 PL 82



GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW 270-28012		EO NO. C4
CONTROL INFO NO. LDW 82-3933		

ON-7 VALVE INSTL. (SH 3.01)

IN VIEW B-B REVISE CALLOUT "BRACKET ASSY SEE LTM280-26946-1 (REF)" (WAS) "BRACKET ASSY SEE LDW 280-28172-5".

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	

REASON FOR EO: TO CORRECT SOLENOID BRACKET CALLOUT.

DESCRIPTION OF EO: ON-7 INSTL. BRACKET ASSY LTM280-26946-1 (WAS) LDW280-28172-5

(5) (2) GAEC EO RELEASE: 12/6/68

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	NOT	REQD	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		NOT REQD	

APPROVED BY / DATE									
				SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ. ENGRG
						RAK	RJD	MD	[illegible]
						7/16/68	7-22-68	7-22-68	7/23/68

PRIORITY: E

DRAWING TITLE: DUAL SOLENOID VALVE INSTL. A/S ENGINE ISOLATION

DRAWING NO.: LDW270-28012

EO NO.: C4

ISSUED BY P. DUGAN X5214 SECTION DEV. ENG'G/WSTF GROUP NO. 794 PL 82

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.2 REV 3-65

DWG. NO. LEO 270		EO NO. 81
CONTROL INFO NO. LM 270-1370		

REMOVE LM-15(45) EFFECTIVITY FROM THE FOLLOWING DWGS:

DRAWING NUMBER	TITLE	CHANGE NO.
LDW270-23101-15	SEE DWG.	B4
-28012-9		C5
-28013-1		B9
-51458-1,-3,-7,-17,-19,-23		C1
-53204-5		B8
-54020-7		D2
-54100-11		B9
-56402-1,-3		A4
-56452-1,-3		A3
P10002-11		A2
P10003-11		A7
M10037-11,-15		A6
M10038-11		A3
M10071-13-1, -14-1		B8
M10081-11		A1
M10082-11		A1
M10083-11		A1
M10084-11		A1
M10085-11		A1
M10086-11		A1
LDW270M10087-11	SEE DWG.	A1

NAS 9-1100

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD 3587	LCRP 270-1	(5)

REASON FOR EO: ELIMINATION OF PROPULSION SUBSYSTEM FROM LM-15 (REF TWX JC32-68-1977 & -2028)

DESCRIPTION OF EO: For * REMOVED LM-15(45) EFFECTIVITY

GAEC EO RELEASE: 12-6-68

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	DATE	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
LM		LM-15(45)		✓			✓		12/11/68			12/11/68			12/12/68	

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SEE DRAWING	LEO 270	81

ISSUED BY J. REBHOLZ 12-6-68 X1471 SECTION PROPULSION GROUP NO. 345 PL 25

ENG 32.1 REV 3-65

GRUMMAN AEROSPACE CORPORATION
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 270 | EO NO. 88
CON. ROL INFO NO. LM 270-1409

ON LM-10 (40) THRU LM-14 (44)
FOR THE FOLLOWING DRAWINGS BELOW,
N/A LDW 280-60001 WAS LDW 280-54001

DRAWING NUMBER	DASH NO.	TITLE	CHANGE NO.
LDW 270-51401	-1, -3, -7	SEE DWG.	C2
LDW 270-28012	-9	SEE DWG.	C6
LDW 270-54200	-1-7	SEE DWG.	B5

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD 3994 PKG 1

REASON FOR EO: TO ADD NEW N/A DWG NO. REF LCD 3994; ECP 131

DESCRIPTION OF EO: FOR -* N/A LDW 280-60001 WAS LDW 280-54001, EFF. LM10 THRU LM14

GAEC EO RELEASE: P (5)

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM		LM 10(40) THRU LM 14(44)	

DRAWING CHANGE REQD: ✓ REVISE DWG; RECORD EO
DISPOSITION OF PARTS: NOT REWORK; REQ'D SCRAP

	APPROVED BY	DATE	PROP.	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
	H. Tang	12-9-69				H. Pin 12-9-69			KB 1/7/69

PRIORITY: C
DRAWING TITLE: SEE DWG.
DRAWING NO.: LEO 270
EO NO.: 88

ISSUED BY LAWRENCE N. SULTANA X1471 SECTION PROPULSION GROUP NO. 270 PL 25
12-15-69

01

NAS 9-1100

LDW270-28013

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW270-53010	DVT	6
		QUAL TEST	5
		LEM-15(45)	1
		LEM-14(44)	1
		LEM-13(43)	1
		LEM-12(42)	1
		LEM-11(41)	1
		LEM-10(40)	1
		LEM-9(39)	1
		LEM-8(38)	1
		LEM-7(37)	1
		LEM-6(36)	1
		LEM-5(35)	1
		LEM-4(34)	1
	LDW270-53010	LEM-3(33)	1
	LDW270-51010	LEM-2(32)	1
	LDW270-51010	LEM-1(31)	1
LEM	LDW270-29010	LTA-9(18)	1
PART NO. LDW270-28013-1		GAEC SCH NO. 45	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	1.10	1.11	2.00	3.00				
REV	A	A	A	A	A				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	B
LAST DASH NO. USED	-13

GRUMMAN REF INFO

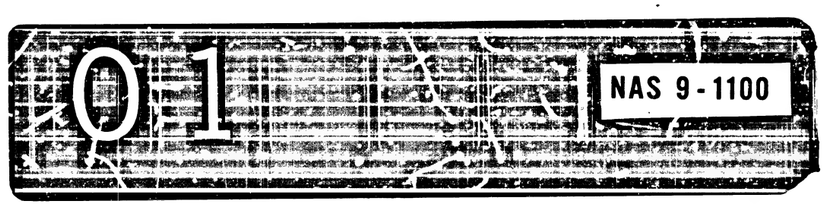
PRIM NO.	E(6)69	EMF
459	MP-14	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS – DECIMALS – ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS 9-1100			LINE ITEM # 1	DOCUMENTATION TYPE II
DRAWN BY	E.SICK 3.1.9/66	RELIABILITY	F.Krueger 2/13	GRUMMAN AIRCRAFT ENGRG CORP
LAYOUT BY	J.WESLEY			BETHPAGE, L. I., NEW YORK
CHECKED BY	[illegible] 9-27-66	THERMO	M. Solon 11/2/66	RING ASSY
GR LEADER	[illegible] 9-27-66			ASCENT ENGINE - NOZZLE
VEH DES INT	[illegible]			RADIATION SHIELD
STRUCTURE	J.R 9/13/66	PROJ ENGR	R. M. Gerber 9-16	SIZE B / CODE IDENT NO. 26512 / LDW270-28013 / A
STRUCTURE	[illegible] 9-29	REL GROUP	J. Tagliavia 9/15/66	SCALE NONE / SHEET 1.00 OF 5
WEIGHTS	L Garcia 9/13/66			

ENG 77.1 12-65



REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00, 1.10, 2.00						EO A1	SH 1.00 OF 5 WAS SH 1.00 OF 4 ADDED SH 1.10 IN B/M FOR -1, -3 REVISE QUANTITIES FOR NAS1271H4, AN960C416L (16) WAS (8).	NOT REQD	NOT	REQD	T. FREDA 9-20-66		
	2	1, 1.10						EO A2	IN MODEL BLOCK FOR -1 & -3 INSTL: REMOVED LTA-8(18) EFFECTIVITY	LTA-8(18)		✓			
	3	1.10, 2.					✓	EO A3 (B)	IN B/M FOR -1 & -3 INSTL, COMPONENTS & HARDWARE ADDED CLEANLINESS PER LSP-14-0011	LTA-5(15)	✓	RL			

CHG APPROVED	LTR	GROUP LDR	PROPULSION	V.D.I.	RELIABILITY
	A				

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-25452	A

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01 NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
AS REQD		GT835E-8	E	TAPE	GRUMMAN STD						
AS REQD		GT835P-8	E	TAPE	GRUMMAN STD						
7		LDW270-28013-11	E	INSULATION	MYLAR						
1		LDW270-28013-13	E	INSULATION	H FILM						
1		LDW270P10003-11	E	RING	SEE DWG						
C		LDW270-28013-1	E	RING ASSY	(BONDED)				NONE	NONE	
-1											

CLEANLINESS LEVEL PER LSP 14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28013	A

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01 NAS 9-1100

REVISIONS

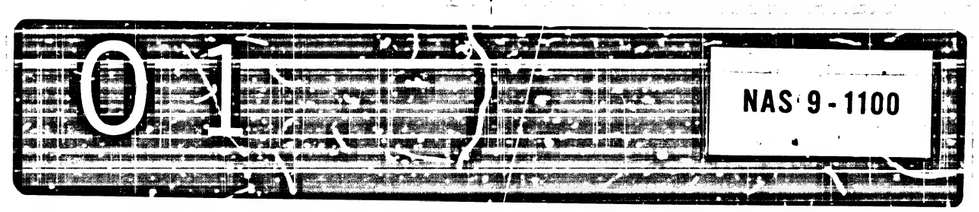
CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	QUAL APPD
A	9	3.00							IN DETAIL B, SHEET 3.00, CHANGED CALLOUT TO READ "LDW270-28013-13, ALUMINIZED SIDE FACING INBOARD". WAS "H FILM ALUMINIZED SIDE NS".	NOTED ON DRAWING	NOT REQUIRED				
	10	3.00							IN DETAIL B, SHEET 3.00, CHANGED CALLOUT TO READ "LDW270-28013-11, ALUMINIZED SIDE FACING INBOARD, (7 LAYERS)". WAS "MYLAR ALUMINIZED SIDE NS (7 LAYERS)".						
	11	2.00							ON LDW270-28013-1 ASSEMBLY, ADDED: CLEANLINESS LEVEL PER LSP 14-0011.						
	12	3.00							IN VIEW A-A, INCREASED TOLERANCE OF OVERLAP TO 2±1/4, WAS 2 ±1/32.						
	13	3.00							IN TOP VIEW, ADDED OVERLAP VENT HOLES.		✓				
	14	3.00							ADDED DETAIL C, TYPICAL INSULATION FLAT PATTERN.		NOT REQUIRED				
	15	3.00							(L) ADDED NOTE 8						
B	1	1.00 1.11 3.00							INC EO B1	LTA-8, LM-1 THRU LM-15 QUAL TEST DVT			SCHWETER 3-7-69		
	2	1.00							INC EO B2	PA-1		N.D.			

FOR CONTINUATION OF REVISIONS SEE SHEET 1.12

ENG 77.3 5-66

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28013	B
SCALE NONE		SHEET 1.11	



REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
B	3	1.00 1.12							INC EO B3 ADDED SH 1.12	QUAL TEST LM-4 THRU LM-15			HERB. SCHWETER 3-7-69		
	4	1.00		C					INC EO B4	LM-3 THRU LM-15 PA-1 LTA-3					
	5	1.00							INC EO B5	LTA-3					
	6	1.00		LFM-9					INC EO B6	PA-1					
	7	1.00							INC EO B7	DVT					
	8	1.00		LFM-197					INC LEO 270-68	PA-1					
	9	1.00		(R)					INC LEO 270-81	LM-15			H.D.		

CHG APPROVED	LTR	GROUP LDR	VEH DES INT	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY	THERMO
	B							

ENG 77.16 3-66

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

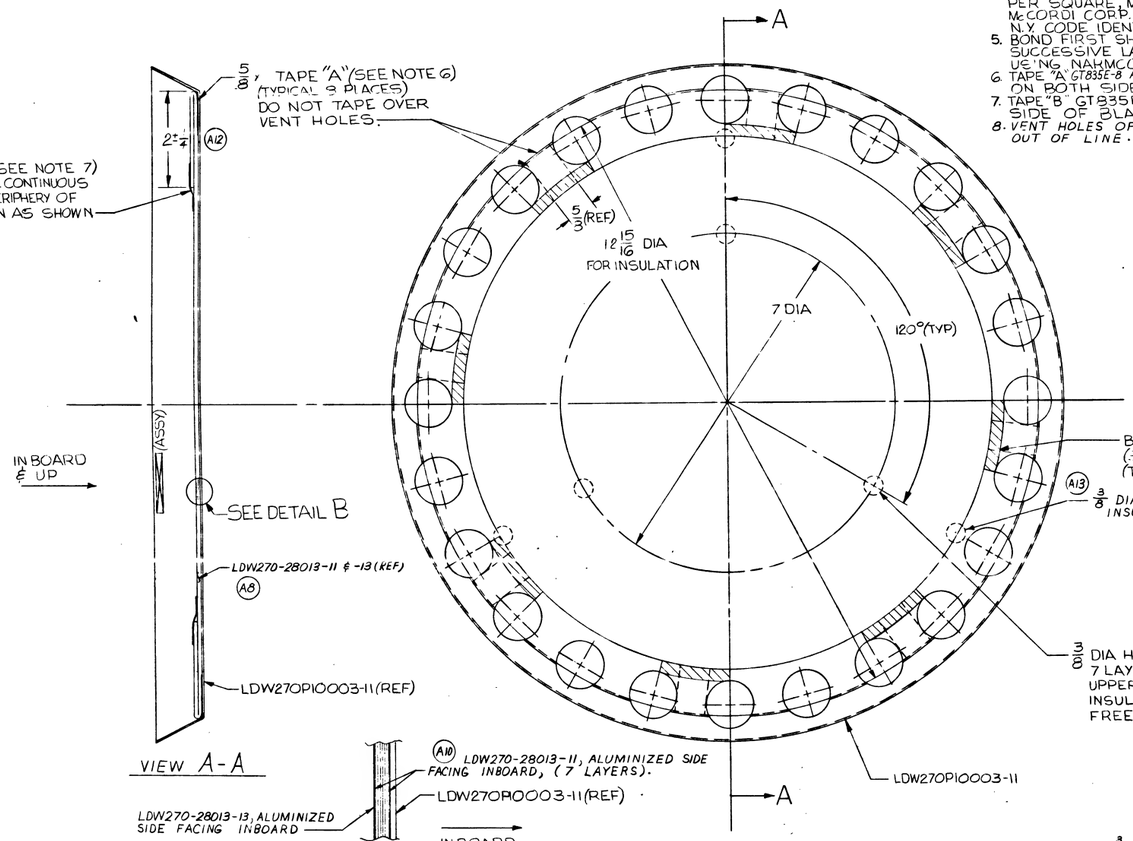
SIZE	CODE IDENT NO.		
B	26512	LDW270-28013	B

SCALE NONE SHEET 1.12 (R)

(01)

NAS 9-1100

NOTES
1. SUPER INSULATION TO BE FABRICATED UNDER CONDITIONS THAT CONFORM TO LSP 14-0011, LEVEL C.
2. LDW270-28013-11 & -13 TO BE PREWRINKLED & LAID UP INTO A MULTIPLE SHEET BLANKET CONSISTING OF 7 LAYERS OF ALUMINIZED MYLAR & 1 LAYER OF H FILM. INSULATION IS ALUMINIZED ON ONE SURFACE ONLY THEREFORE THE ALUMINUM SURFACE OF ONE SHEET SHALL FACE THE INSULATED SURFACE OF THE ADJACENT SHEET(SEE DETAIL B) DURING MANUFACTURE OF BLANKETS THE ALUMINUM FACE MUST BE UP. ON ASSY THE ALUMINUM FACE MUST BE AS SHOWN IN DETAIL B.
3. LDW270-28013-11 .00015" THICK MAY BE PURCHASED FROM THE McCORDI CORP. 707 FENIMORE ROAD, MAMARONECK, N.Y. CODE IDENT NO 24761.
4. LDW270-28013-13, .0005 THICK, ALUMINIZED ONE SIDE ONLY, 2 OHMS PER SQUARE, MAY BE PURCHASED FROM THE McCORDI CORP. 707 FENIMORE ROAD, MAMARONECK, N.Y. CODE IDENT NO 24761.
5. BOND FIRST SHEET TO LDW270P10003-11 & EACH SUCCESSIVE LAYER TO THE PRECEDING LAYER USING NARMCO 7343, LSM 14-4552.
6. TAPE "A" GT835E-8 A/R MYLAR TAPE WITH ADHESIVE ON BOTH SIDES.
7. TAPE "B" GT835P-8 TO BE USED ON EXTERNAL SIDE OF BLANKET.
8. VENT HOLES OF SUCESSIVE LAYERS MAY BE OUT OF LINE.



MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DRG
ASSY STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.
FILLET AND INSIDE CORNER RADII TOLERANCES .010R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES.
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
200 FOR ALL DRILLED HOLES
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
SYMBOL X DENOTES SURFACE TO BE MACHINED
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS = 1/32
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED
TOLERANCE ON LOFTED DELINEATIONS IS

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK			
	SIZE	CODE IDENT NO.	LDW270-28013 B
SYSTEM	F	26512	
MODEL OR END ITEM	SCALE FULL		SHEET 3 OF 3

LDW270-28013 B

ENG 735

01 NAS 9-1100

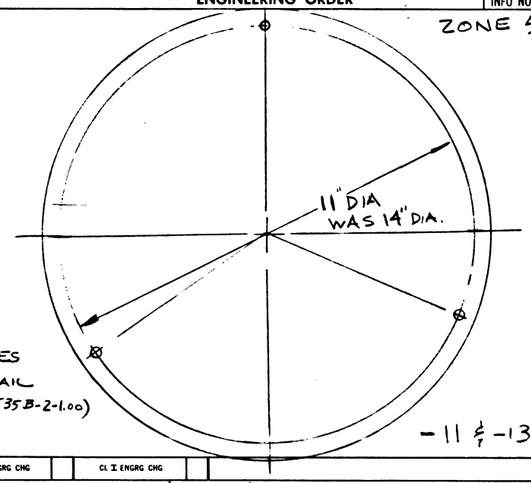
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

H-G, ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW270-28013		FO NO. B-1
CONTROL INFO NO. LM-29-1004		

ZONE 5C



PATCH EXISTING HOLES WITH 1" SQUARE CLEAR MYLAR, 3M #853 (GT535B-2-1.00)

-11 & -13 (REF)

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG		5

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
HOLES ARE MISLOCATED	ON -11 & -13 11" DIA WAS 14" DIA	FR

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY / DATE			SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
LM	LTA-8(1B), LEM-1(31) THRU		LEM 15(45)	✓		✓		1					K.B.T. ~ 11/7			PME 11-28-66	12/1/66
	QUAL TEST, DVT			PRIORITY C24	DRAWING TITLE: RING ASSY - A/S ENGINE-NOZZLE RADIATION SHIELD								W.A.G. ~ 11-28-66				

DRAWING NO. LDW270-28013 — EO NO. B-1

ISSUED BY LIAISON J. ALTMAN X7930 SECTION PROP. SUB SYS. GROUP NO. 270 PL. 35 EMF J

01 NAS 9-1100

1

ENG 22.1 REV 3-65

1*

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-28013		EO NO. B1
CONTROL INFO NO. LM270-734		

CHANGE M/B AS FOLLOWS.

(add) →	LM	LTM270-50000	PA-1 (W5)	2
(name)	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
	PART NO LDW270-28013-1			

3

DETAIL SPEC REQ		CL II ENGRG CHG	✓	CL I ENGRG CHG		

REASON FOR EO: ADDITIONAL REQUIREMENTS FOR FITH TESTING AT WSTF (PA-1)

DESCRIPTION OF EO: IN M/B FOR-11 ADDED PA-1 (W5)

GAEC EO RELEASE: CE 11/10/66; CWP 11/10/66; Ltr 11-11-66

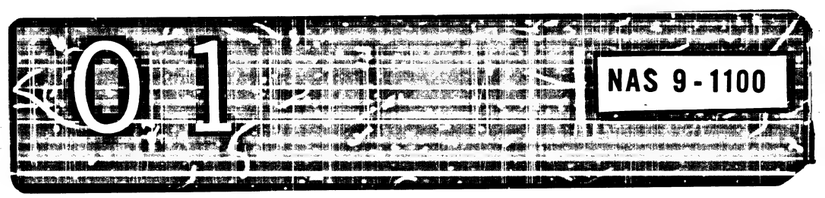
MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		PA-1 (W5)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	DATE				
✓		NOT REQUIRED		6	11/10/66	Prop	SUPPORT	RELIAB. GROUP	GROUP LEADER: 11/10/66 RB

STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
		10-10-66	

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	ASCENT ENGINE-NOZZLE RADIATION SHIELD	LDW270-28013	B1

ISSUED BY R.W. DIETZ X1471 SECTION PROPULSION GROUP NO. 270 PL 35



ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-28013 | EO NO. D2

CONTROL INFO NO. LM270-734

CHANGE M/B AS FOLLOWS.

(add) →	LM	LTM270-50000	PA-1 (WS)	2
(page)	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER. NO.	REQD PER MODULE OR END ITEM
	PART NO LDW270-28013-1			

EO NUMBER WAS B1

3

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	

REASON FOR EO: ADDITIONAL REQUIREMENTS FOR FITH TESTING AT WSTF (PA-1)

DESCRIPTION OF EO: IN M/B FOR-11 ADDED PA-1 (WS)

GAEC EO RELEASE: 11/16/66

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		PA-1 (WS)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: NOT REQUIRED | REWORK | SCRAP

APPROVED BY / DATE: 6 | 11/16/66 | RB | 11-15-66

GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY: C

DRAWING TITLE: ASSY ENGINE-NOZZLE RADIATION SHIELD

DRAWING NO.: LDW270-28013

EO NO.: B2

ISSUED BY R.W. DIETZ X1471 SECTION PROPULSION GROUP NO. 270 PL 35

280

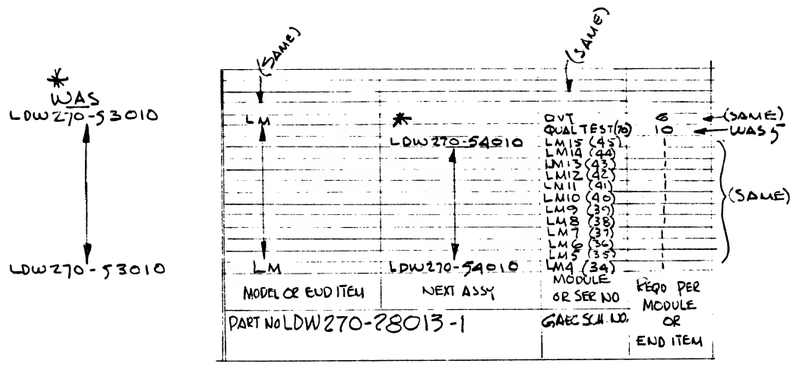
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER CMK/JA

DWG. NO. LDW270-28013		EO NO. B3
CONTROL INFO NO. LM 270 - 805		

CHANGE M/B AS FOLLOWS:—



(5)

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG

REASON FOR EO: ADDITIONAL PIECES REQUIRED FOR QUAL TEST (QA-1)

DESCRIPTION OF EO: CORRECTED NEXT ASST CALLOUTS FOR LM 4 THRU LM15 NEXT ASSY WAS LDW270-53010. ADDED FIVE (5) MORE UNITS TO "REQ'D" COL FOR QUAL TEST WAS 5

GAEC EO RELEASE: 2/2/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		QUAL TEST (70)	
		LM4-LM15 (34) (43)	

DRAWING CHANGE REQD	DISPOSITION OF PARTS	APPROVED BY								
REVISE DWG	RECORD EO	NOT REQUIRED / REWORK / SCRAP	DATE	1/31/67	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	QUAL
			6	PROP							

PRIORITY: C

DRAWING TITLE: ASSY ASCENT ENGINE NOZZLE RADIATION SHIELD

DRAWING NO.: LDW270-28013

EO NO.: B3

ISSUED BY P.W. DIETZ x1471 SECTION PROPULSION GROUP NO. 345 PL 35

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG NO. LDW270-28013 | EO NO. B4
CONTROL INFO NO. LM270-1064

THIS EO REVISE EOB3
CHG N/A TO LDW270-54020 LM4(34) THRU LM15(45)
IN THE M/B SHT 1.00 TO-1 ADD EFFECT

MODEL	N/A	MODULE	QTY
LM	LTM270-50005	PA-1 (47)	3
LM	LDW270-23020	LTA-3 (13)	1

IN THE M/B SHT 1.00 CHG N/A OF LM-3(33)

MODEL	N/A		MODULE	QTY
LM	LDW270-53020	WAS LDW270-53010	LM-3(33)	1

DETAIL SPEC REQ | CL II ENGRG CHG | V | CL I ENGRG CHG | | LCD 1422 | 5

REASON FOR EO
ROTATE ASCENT ENGINE 180°

DESCRIPTION OF EO
REF E.O. B3
CHG N/A ON LM-4(34) → LM15(45) TO LDW270-54020
WAS LDW270-54010 & ON LM3(33) TO LDW270-53020
WAS LDW270-53010 ADDED EFFECT OF -1 TO PA-1(47)
& LTA-3(13)

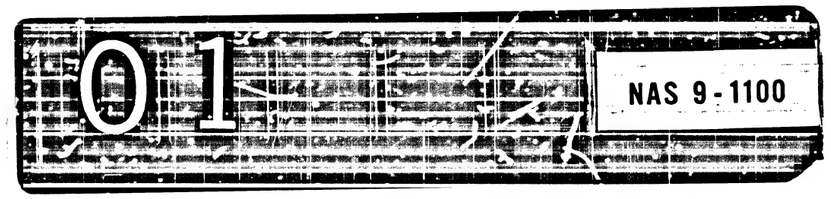
GAEC EO RELEASE C — 9/20/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		PA-1 (47)	
		LTA-3 (13)	
		LM3(33) → LM15(45)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO | REWORK | SCRAP ✓
DISPOSITION OF PARTS: C
PRIORITY: C
DRAWING TITLE: RING ASSY - A/S NOZZLE RADIATION SHIELD
DRAWING NO.: LDW270-28013
EO NO.: B4

	APPROVED BY	DATE
GROUP LEADER		9/29/67
STRESS GROUP		
LIAISON ENGRG		9/29
PROJ ENGRG		9/29
~~CONT~~		

ISSUED BY S. SCIARROTTA X1471 SECTION PROPULSION GROUP NO. 345 PL 25



GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO.	LDW 270-28013		EO NO.	B5
CONTROL INFO NO.	LM-5-17272			

THIS IS A REV. OF EO B4
REMOVE LTA-3(13) EFFECTIVITY

RELEASED BY LIAISON

DETAIL SPEC REQ		CL II ENGRG CHG	✓	CL I ENGRG CHG		LCD 1422	(5)

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
NO SHEILDING ON LTA-3(13). ROTATE ASCENT ENGINE 180	REF. E.O. B4 REMOVE EFFECTIVITY LTA-3(13)	C

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP	APPROVED BY: DATE	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	CONT
LM		LTA-3(13)		✓		✓		11/16/67			11-9-67	11-8-67	AB/ld	11-9-67	

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	RING ASSY - A/S NOZZLE RADIATION SHIELD	LDW 270-28013	B5

ISSUED BY F. PARCELLA x86755 SECTION V. D. I. GROUP NO. 335 PL 25

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NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG. NO. LDW270-28013 | EO NO. B6
CONTROL INFO NO. LM270-1152

THIS EO REVISES EOB4
CHG QTY REQD FROM 3 TO 8 ON PA-1(47)

MODEL	N/A	MODULE	QTY
LM	LTM270-50005	PA-1(47)	8 WAS 3

LFM

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD 1422

REASON FOR EO: ROTATE ASCENT ENGINE 180°

DESCRIPTION OF EO: REF. EO B4 CHANGED QTY REQD FROM 3 TO 8 ON PA-1 (47)

GAEC EO RELEASE: 1/13/66

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 9	PA-1 (47)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: NOT REQD | REWORK | SCRAP

APPROVED BY: KB | PROP | SUPPORT | RELIAB. GROUP | GROUP LEADER | STRESS GROUP | LIAISON ENGRG | PROJ. ENGRG
DATE: 1/12/66 | 1/13/66 | 1/13/66

PRIORITY: C
DRAWING TITLE: RING ASSY - A/S NOZZLE RADIATION SHIELD
DRAWING NO.: LDW270-28013
EO NO.: B6

ISSUED BY K. HORNE EXT. 1471 SECTION PROPULSION GROUP NO. 345 PL 25

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NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO.	LDW270 28013		EO NO. B7
CONTROL INFO NO.	LM 270 - 1183		

DISCRIPTION OF E.O.

* IN THE M/B ON DVT (7) CHG QTY REQD TO "18" WAS: "6"

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCD 2120 A CCA 695 (5)

REASON FOR EO: REQD ADDITIONAL 12 FOR ASCENT ENGINE DVT

DESCRIPTION OF EO: SEE ABOVE *

GAEC \ C EO RELEASE: 1/2 2/5/68

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		DVT (70)	

DRAWING CHANGE REQD: ✓ REVISE DWG; RECORD EO

DISPOSITION OF PARTS: NOT REQD REWORK; SCRAP

APPROVED BY								
DATE				M Dewey duty 2/2/68		M Dewey 2/1/68		
	PROP	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

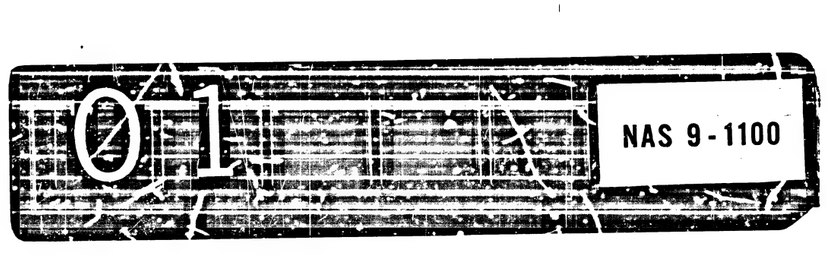
PRIORITY: C

DRAWING TITLE: RING ASSY-ASCENT ENGINE NOZZLE RADIATION SHIELD

DRAWING NO.: LDW270-28013

EO NO.: B1

ISSUED BY S. SCIARROTTA x1471 SECTION PROPULSION GROUP NO. 345 PL 25



GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO.	LED-270		EO NO. 68
CONTROL INFO NO.	LM270-1250		

ADD EFFECT & N/A AS LISTED BELOW

PART No.	MODEL	N/A	MODULE	REQD	EO No.
LTM270-50005-57	LFM	LTM270-50020	PA-1(47)	1	
LTM270-50005-55				1	
LTM270-50005-53				1	A7
LTM270-50005-51				1	
LTM270M50008-11				1	A1
LTM270M50009-11				1	A2
LDW270-28013-1				3	B8
LDW270-53204-5				1	B7
LDW270-10012-11	LFM	LTM270-50020	PA-1(47)	12	B3

*

LFM

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓ LCD 2635 CCA 931	5

REASON FOR EO: SUPPORT ROCKETDYNE TEST PROGRAM

DESCRIPTION OF EO: SEE ABOVE *

GAEC EO RELEASE: H.F 7/16/62

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM	LFM 197	PA-1(47)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		NOT REQD	

APPROVED BY	PROD	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	EO NO.
DATE	6/26/62	—	—	6/26/62	—	—	6/26/62	

PRIORITY: C

DRAWING TITLE: SEE DWGS.

DRAWING NO.: LEO-270

EO NO.: 68

ISSUED BY S.SCIARROTTA x1471 SECTION PROPULSION GROUP NO. 345 PL 25

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NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENO 32.2 REV 3-65

DWG. NO. LEO 270		EO NO. 81
CONTROL INFO NO. LM 270-1370		

REMOVE LM-15(45) EFFECTIVITY FROM THE FOLLOWING DWGS:

DRAWING NUMBER	TITLE	CHANGE NO.
LDW270-23101-15	SEE DWG.	B4
-28012-9		C5
-28013-1		B9
-51458-1,-3,-7,-17,-19,-23		C1
-53204-5		B8
-54020-7		D2
-54100-11		B9
-56402-1,-3		A4
-56452-1,-3		A3
P10002-11		A2
P10003-11		A7
M10037-11,-15		A6
M10038-11		A3
M10071-3-1, -14-1		B8
M10081-11		A1
M10082-11		A1
M10083-11		A1
M10084-11		A1
M10085-11		A1
M10086-11		A1
LDW270 M10087-11	SEE DWG.	A1

LEO 270
NAS 9-1100

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓ LCD 3587	LCRP 270-1	(5)

REASON FOR EO: ELIMINATION OF PROPULSION SUBSYSTEM FROM LM-15 (REF TWX JC32-68-1977 & 2028)

DESCRIPTION OF EO: FOR * REMOVED LM-15(45) EFFECTIVITY

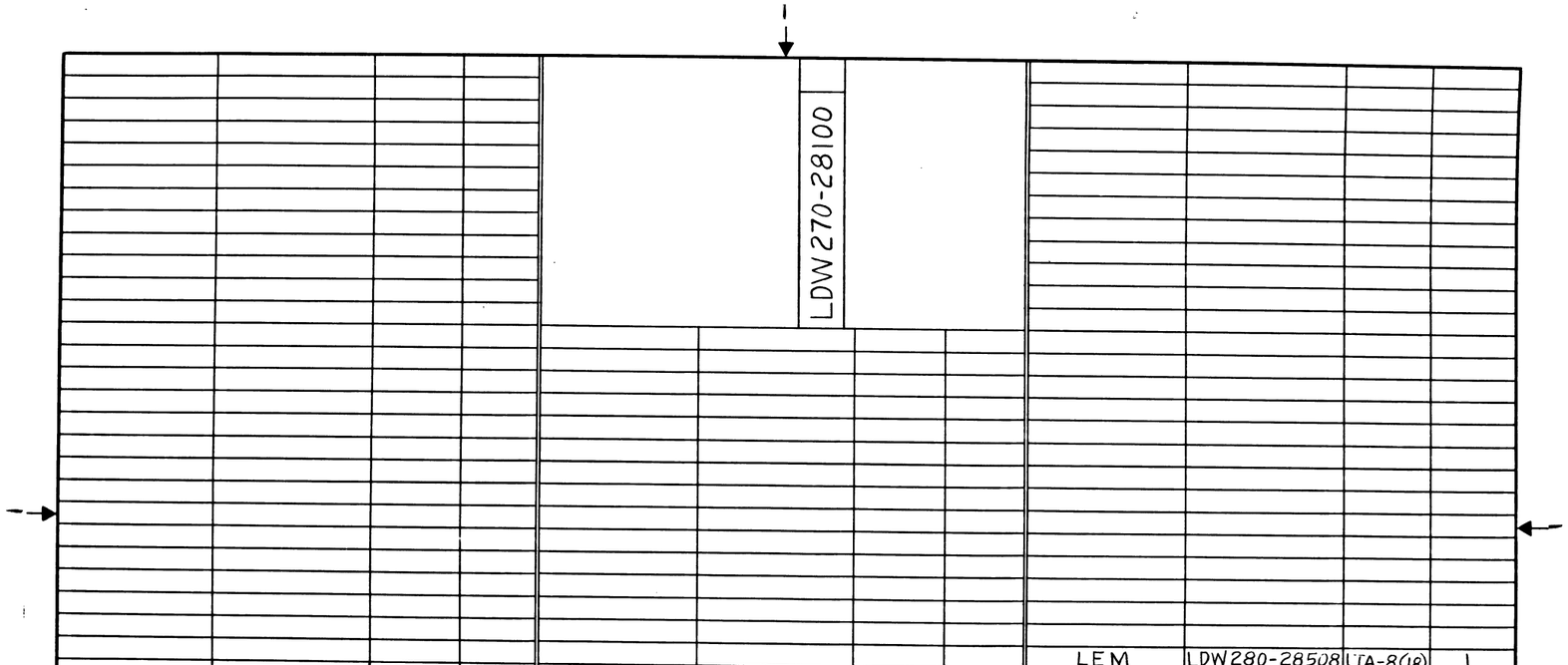
GAEC EO RELEASE: 12-7-68

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
LM		LM-15(45)		✓			✓

APPROVED BY										
DATE							12/11/68			12/12/68
			SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SEE DRAWING	LEO 270	81

ISSUED BY J. REBHOLZ 12-6-68 X1471 SECTION PROPULSION GROUP NO. 345 PL 25



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		LEM	LDW280-28508	LTA-8(18)	1
								PART NO. LDW 270-28100-1		55	

2

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	2.00	3.00						
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	J
LAST DASH NO. USED	-1

GRUMMAN REL INFO
PRIM NO. VE1009 6-24-66 X
470 MP

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS-9-1100 LINE ITEM # 9 DOCUMENTATION TYPE II

DRAWN BY	E. RIMMAUDO	6-14-66		
LAYOUT BY		RELIABILITY	7.5 Douglas for L.K. 6/24/66	
CHECKED BY				
GROUP LEADER	W. Liebman	6-24-66		
PROP.	R.L. THOMPSON			
STRUCT	6/24/66	PROJ ENGR	6/24/66	
V.D.I		REL GROUP	7-1-66	
WEIGHTS	L. Garcia 7/1/66			

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

INSTALLATION - DESCENT ENGINE

SIZE	CODE IDENT NO.	
B	26512	LDW270-28100

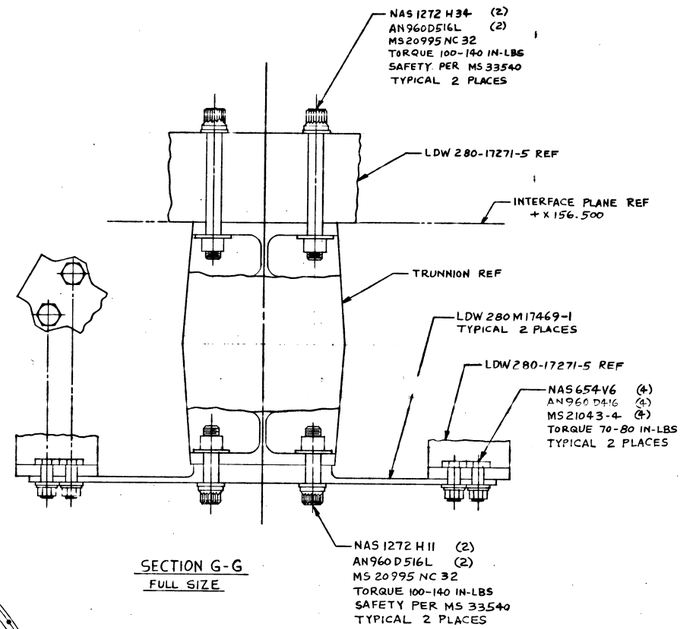
SCALE 1/4 NOTED NONE SHEET 1.00 OF 3

ENG 77.1 12-66

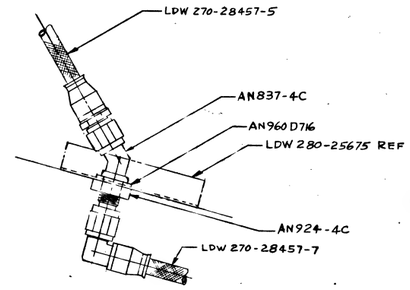
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NAS 9-1100

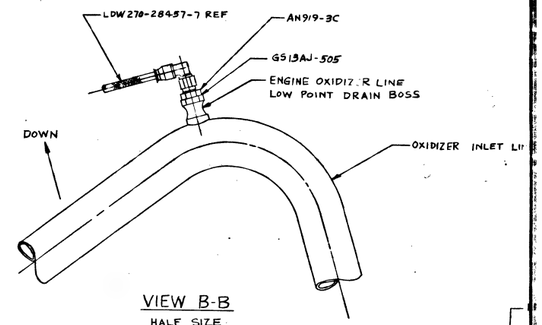
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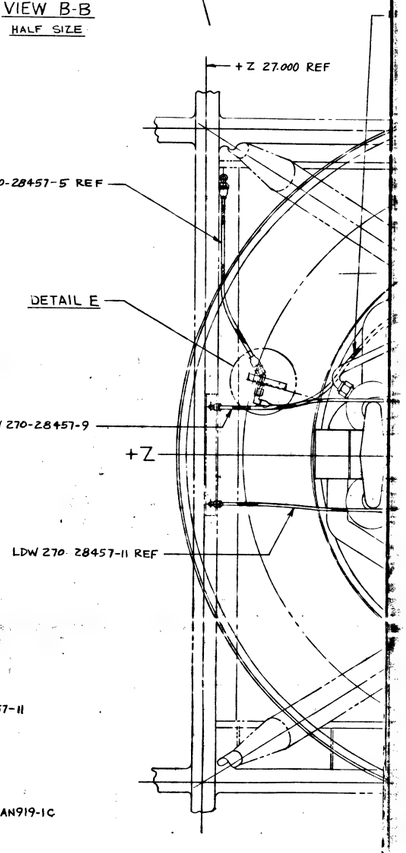
SECTION G-G
FULL SIZE

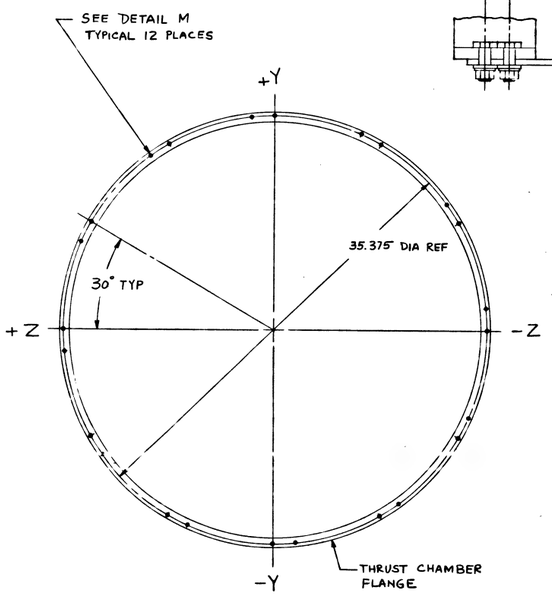


DETAIL E
FULL SIZE



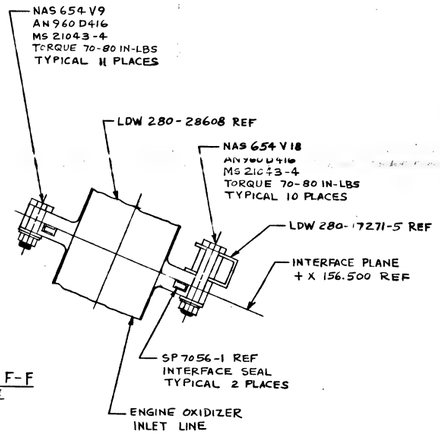
VIEW B-B
HALF SIZE



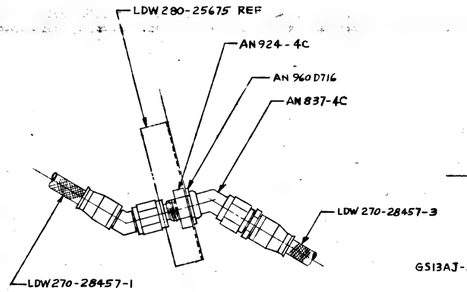


SECTION K-K

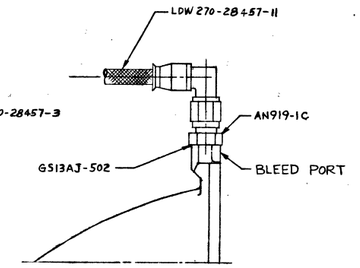
✦ STUD LOCATION FOR ENGINE HEAT SHIELD MOUNTING - 12 PLACES



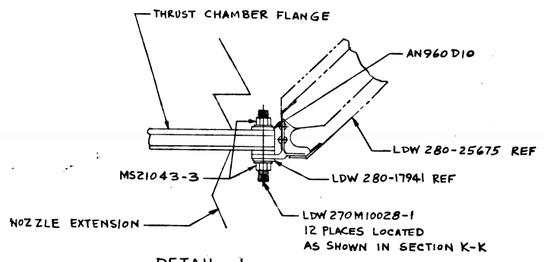
SECTION F-F
FULL SIZE



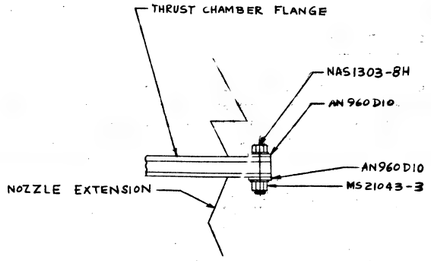
DETAIL D
FULL SIZE



DETAIL H - FULL SIZE
ENGINE OXIDIZER HIGH POINT BLEED PORT SHOWN.
TYPICAL FOR ENGINE FUEL HIGH POINT BLEED PORT



DETAIL L
FULL SIZE

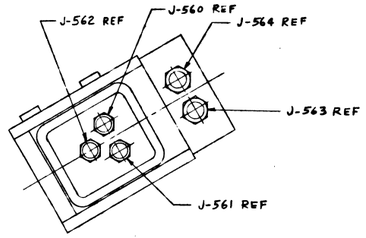


DETAIL M
FULL SIZE

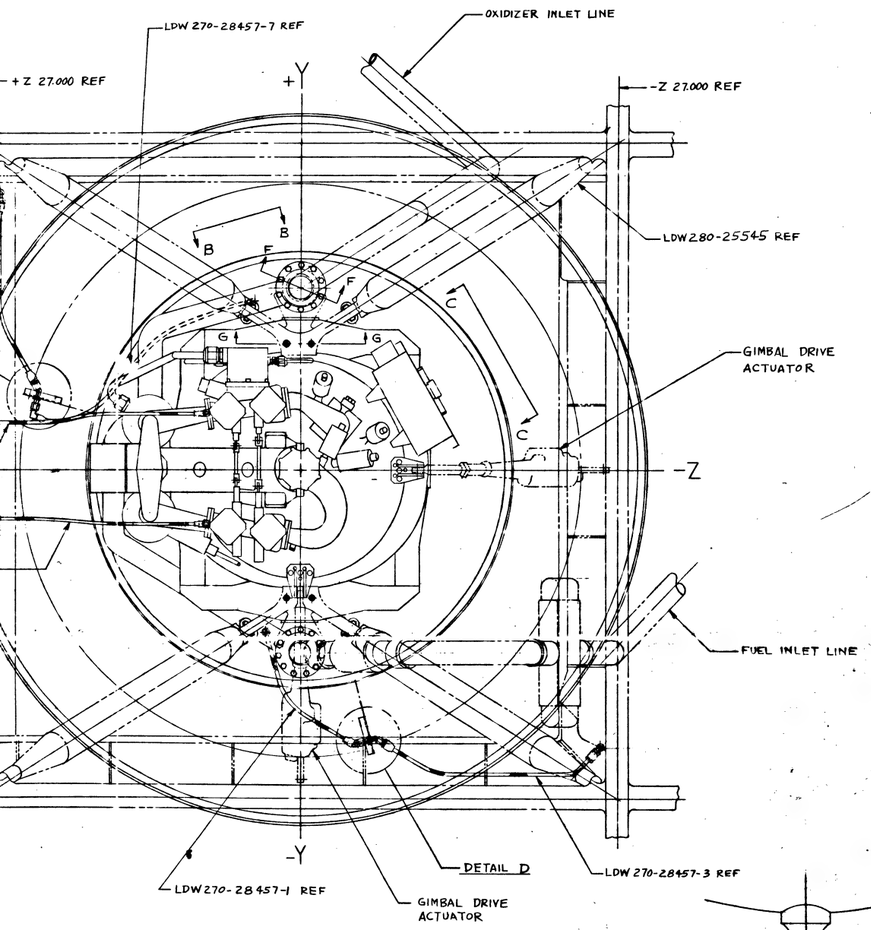
01-7103
NAS 9-1100

ER LINE
AIN BOSS

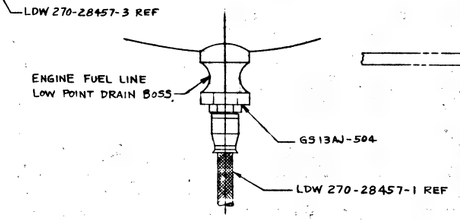
OXIDIZER INLET LINE



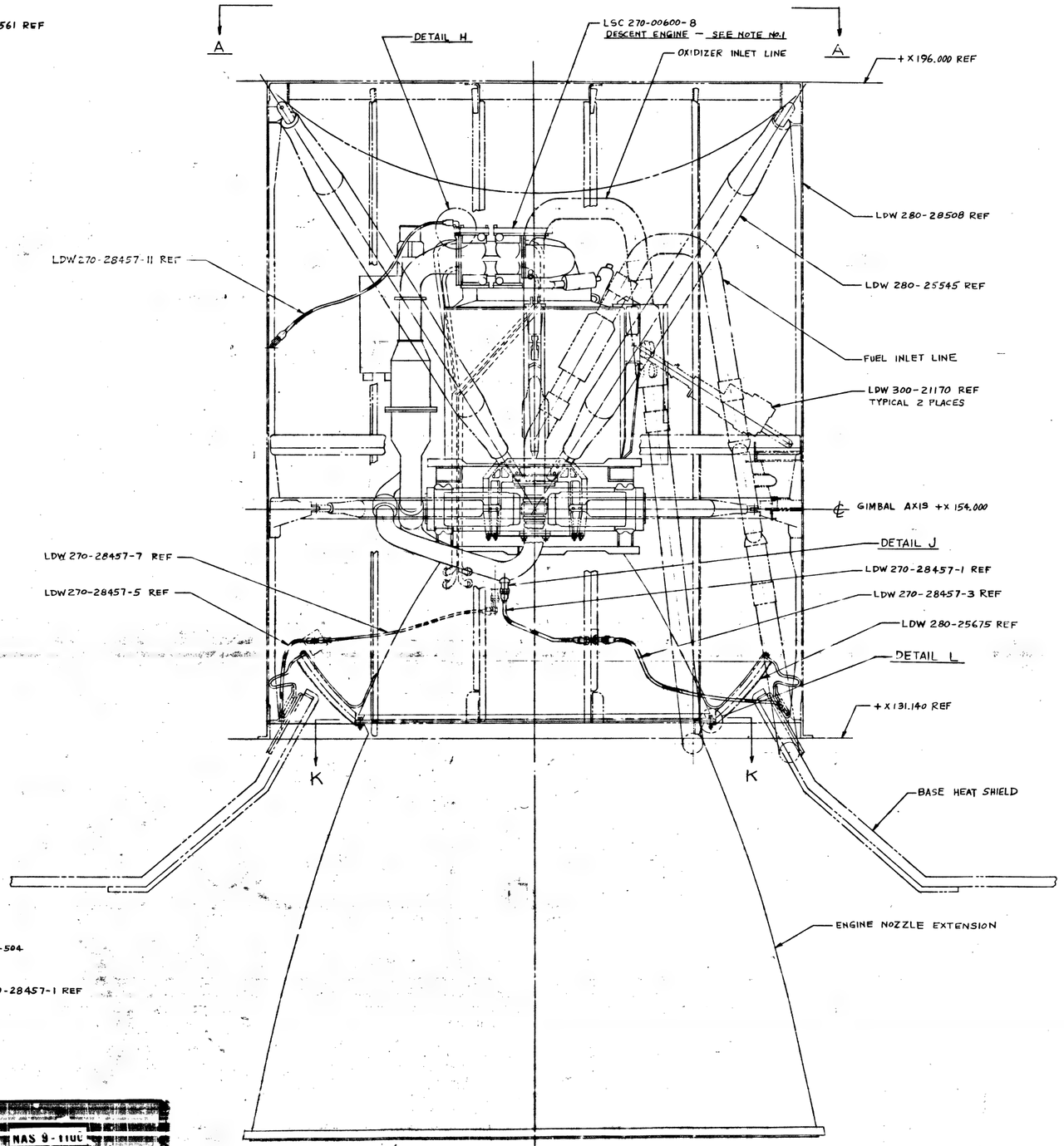
VIEW C-C



VIEW A-A

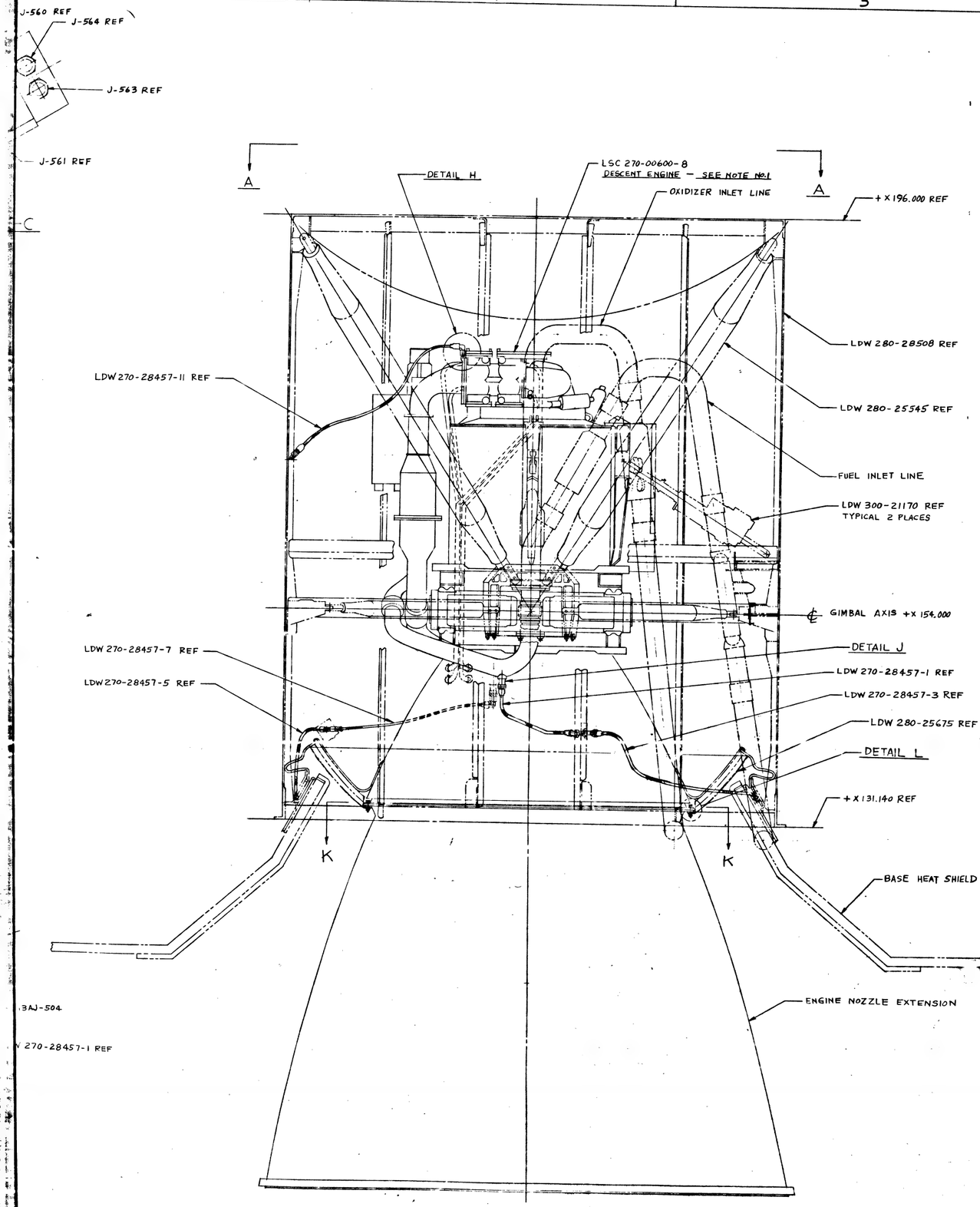


DETAIL J
FULL SIZE



NOTE:
1. COMMERCIAL PART- SEE SPECIFICATION CONTROL DRAWING NO. LSC 27

02403 NAS 9-1100



NOTE:

1. COMMERCIAL PART - SEE SPECIFICATION CONTROL DRAWING NO. LSC 270-00600-8

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

- PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED [ ] USE BOTH SIDES I' ...SARY.
- FILLET AND INSIDE CORNER RADII TOLERANCES .018R TO .062R ± .010; .063R TO .250R ± .015; OVER .250R ± .030
- DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.
- EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
- DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
- MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
- DIAMETERS MARKED MUST BE CONCENTRIC WITHIN READING FULL INDICATOR
- HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
- ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0015 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
- 125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
- 250 √ FOR ALL DRILLED HOLES
- REMOVE ALL BURRS. [ ] ALL EDGES .015-.031
- INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARRED IS
- SYMBOL ⌐ DENOTES SURFACE TO BE MACHINED
- UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
- LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
- TOLERANCE ON LOFTED DELINEATIONS IS

DWG SIZE 24 X D
PRINTING INFO ONLY
FULL SIZE SHEET AREA (24 X 36) = NO. FT.
1/2 SIZE SHEET AREA (12 X 18) = 9 SQ. FT.
PRINT TRIM LINE

03703 NAS 9-1100

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L.I., NEW YORK		
LEM	SIZE J	CODE IDENT NO. 26512	LDW 270-28100
MODEL OR ENG ITEM	SCALE 1/4 NOTED		SHEET 3.00

LDW 270-28100 B
LDW 270-28100 A

3/3

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG. NO. LDW270-28100 | EO NO. A1
CONTROL INFO NO. LEM270-638

IN F/D OF DWG (SH. # 3.00, ZONE 9C):
NAS 654 V7 WAS NAS 654 V6

IN B/M (SH. # 2.00) FOR -1 INSTL:
NAS 654 V7 WAS NAS 654 V6

REMOVE CLEANLINESS LEVEL REQUIREMENTS
FROM DWG (SH. # 2.00)

5

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG

REASON FOR EO
BOLT IS TOO SHORT
CLEANLINESS REQ. NOT APPLICABLE

DESCRIPTION OF EO
ON -1: NAS 654 V7 WAS
NAS 654 V6 & REMOVED C.L. REQUIREMENTS

GAEC EO RELEASE: FR 9/6/66

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LTA-8(18)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: REWORK ✓ | SCRAP
PRIORITY: C
DRAWING TITLE: INSTALLATION - DESCENT ENGINE
DRAWING NO.: LDW 270-28100
EO NO.: A1

	APPROVED BY	DATE
GROUP LEADER	[illegible]	9/12/66
STRESS GR'UP	[illegible]	9/12/66
LIAISON ENGRG	—	—
PROJ ENGRG	RMG	9-8
		9/8/66

8-30-66 PROP | SUPPORT (W.I.P.) | RELIAB GROUP

ISSUED BY E. RIMMAUDO X1471 SECTION PROPULSION GROUP NO. 345 PL 35

01 NAS 9-1100

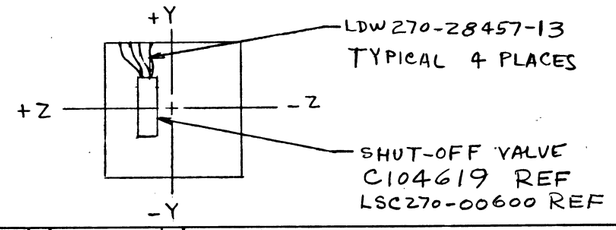
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG NO	LDW 270-28100		EO NO.	A2
CONTROL INFO NO.	LM-270-744			

IN ZONE 9C, LOCATE ENGINE SHUT-OFF VALVE AND
ADD ONE EACH OF LDW 270-28457-13 HOSE ASSY
TO EACH OF THE FOUR (4) SHUT-OFF VALVE VENT LINES
CONNECT THE OTHER END TO A 3/8, 45° BULKHEAD
FITTING ON +Y COMPARTMENT WALL



DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG		LCR 669

REASON FOR EO: SHUT-OFF VALVE VENT LINES NOW REQD ON LTA-8(18) (LCR669)

DESCRIPTION OF EO: ADDED (4) LDW 270-28457-13 HOSE ASSY

GAEC EO Release: FR 12/3/66

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LTA-8(18)		LTA-8(18)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: REWORK ✓ | SCRAP

APPROVED BY								
DATE						11/30/66	12/1/66	12/1/66
	1	PROP	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG

PRIORITY: C

DRAWING TITLE: INSTALLATION DESCENT-ENGINE

DRAWING NO.: LDW 270-28100

EO NO.: A2

ISSUED BY E. RIMMAUDO X1471 SECTION PROPULSION GROUP NO. 270 PL 35

Q1

NAS 9-1100

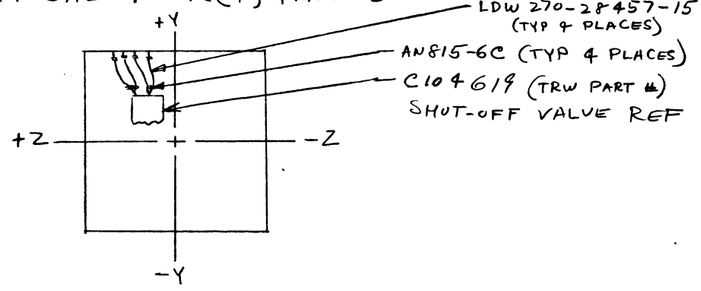
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW 270-28100		EO NO. A3
CONTROL INFO NO. LM-270-759		

IN ZONE 9C: LDW 270-28457-15 WAS LDW 270-28457-13
ADD AN815-6C UNION TO ENGINE SHUT-OFF VALVE VENT LINE
AS SHOWN: TYPICAL FOUR(4) PLACES



SEE EO CONTR. # LM270-758

* DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG

REASON FOR EO: -15 HOSE ASSY REQUIRES UNION LCC-669.

DESCRIPTION OF EO: ADDED (4) AN815-6C UNION; LDW 270-28457-15 WAS LDW 270-28457-13

GAEC EO RELEASE: FR 12/1/66

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LTA8(1F)		LTA-8(1F)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		✓	

APPROVED BY	DATE	PROP	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
[illegible] 12/1/66	12/1/66	2			RD		[illegible] 12/7	[illegible] 12/7/66

PRIORITY: C

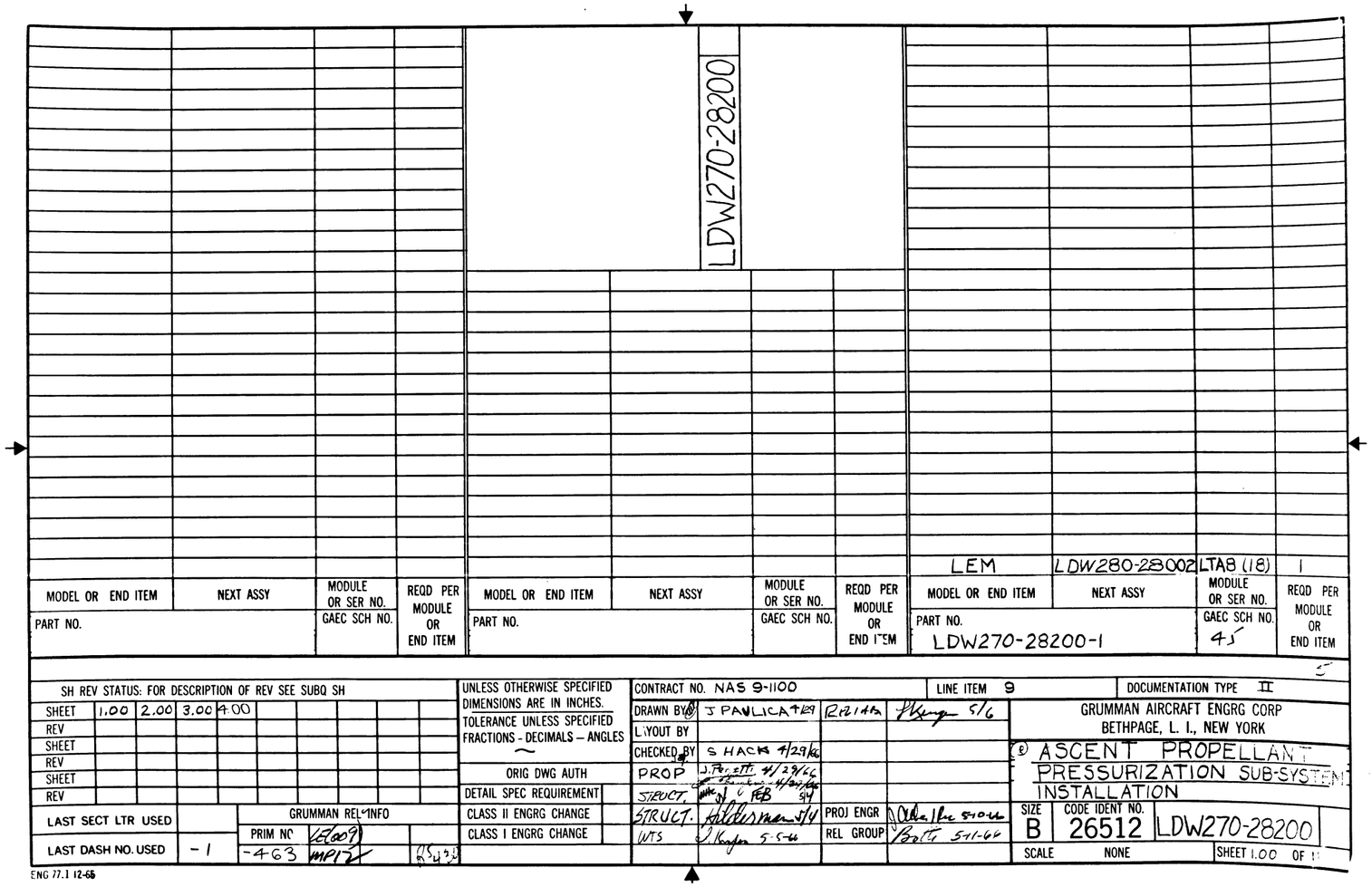
DRAWING TITLE: INSTALLATION — DESCENT ENGINE

DRAWING NO.: LDW 270-28100

EO NO.: A3

ISSUED BY E. RIMMAUDO x1471 SECTION PROPULSION GROUP NO. 270 PL 35

01 NAS 9-1100



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28002	LTA8 (18)	1
PART NO. LDW270-28200-1		GAEC SCH NO. 45	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	2.00	3.00	4.00						
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED		GRUMMAN REL INFO	
LAST DASH NO. USED	-1	PRIM NO	LED009
		-463	MP1-2

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES ~

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS 9-1100 | LINE ITEM 9 | DOCUMENTATION TYPE II

DRAWN BY	J PAULICAT	4/29	Rejected	5/6
LAYOUT BY				
CHECKED BY	S HACK	4/29/66		
PROP	J. Perotti	4/29/66		
STRUCT.	J. Perotti	4/29/66		
STRUCT.		FEB 64	PROJ ENGR	
WTS		5-5-66	REL GROUP	5-11-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ASCENT PROPELLANT PRESSURIZATION SUB-SYSTEM INSTALLATION

SIZE	CODE IDENT NO.	
B	26512	LDW270-28200

SCALE NONE | SHEET 1.00 OF

ENG 77.1 12-65

01 NAS 9-1100

C						12		MS21043-3	E	NUT	STD PART							
C						12		AN960C10L	E	WASHER	STD PART							
C						12		GB511J-3-8	E	BOLT	GRUMMAN STD							
A						1		LDW270-28202-2	E	HE TANK INSTL	SEE DWG							
A						1		LDW270-28202-1	E	HE TANK INSTL	SEE DWG							
K						1		LDW270-28201-3	S	MODULE ASSY(6x)	SEE DWG							
K						1		LDW270-28201-1	S	MODULE ASSY(5x)	SEE DWG							
A								LDW270-28200-1	E	ASCENT PRESS	SUB-SYSTEM							
LEVEL	QTY PER ASSEMBLY					-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE	

CLEANLINESS LEVEL PER LSP-14 COII

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW270-28200

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTES:

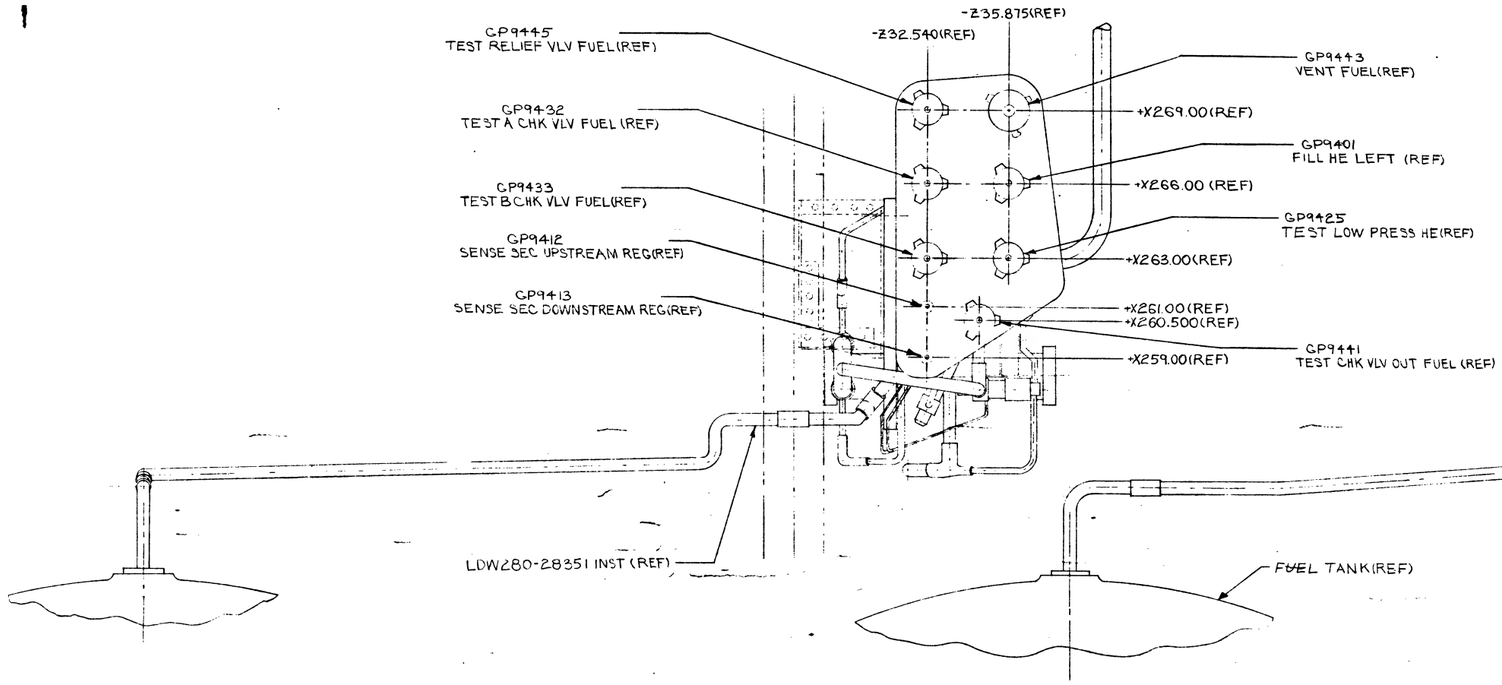
#1 LINE TO BE UNCAPPED AFTER COMPLETION OF BRAZING OPERATIONS
THIS LINE MUST REMAIN OPEN IN ORDER TO INSURE THAT THE PRESSURIZATION SYSTEM WILL ALWAYS BE AT A PRESSURE EQUAL TO THE SURROUNDING PRESSURE

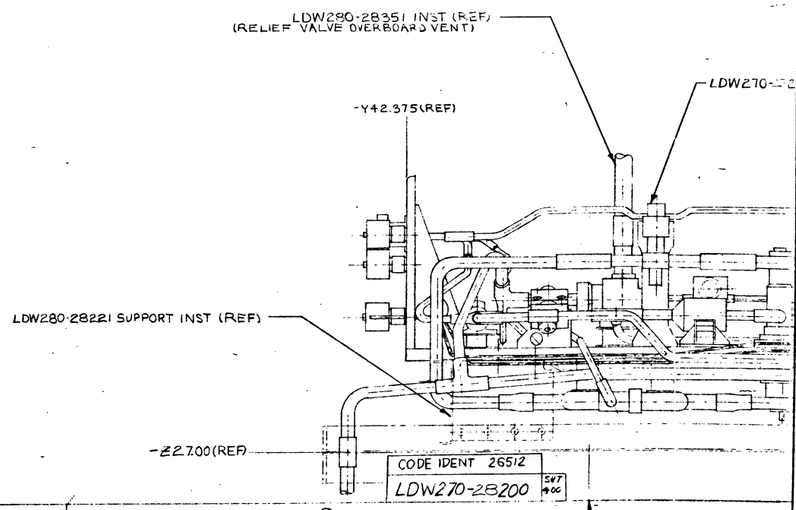
GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-28200	
SCALE NONE		SHEET 300	

ENG 73.1 6-64

01

NAS 9-1100





01703 NAS 9-1100

SEE NOTE *1

GB511J-3-8
AN960C10L
MS21043-3
(6 PLACES)

LDW280-28351 INST(REF)

+X253.563(REF)

-Y22.875(REF)

SEE NOTE *1

GB511J-3-8
AN960C10L
MS21043-3
(6 PLACES)

+X253.563(REF)

+Y22.875(REF)

-Z35.875(REF)

GP9442
VENT OXID(REF)

+X269.00(REF)

GP9402
FILL HE RIGHT(REF)

+X266.00(REF)

GP9406
TEST HIGH PRESS HE(REF)

+X263.00(REF)

+X261.00(REF)
+X260.50(REF)

+X259.00(REF)

GP9440
TEST CHK VLV OUT OXID(REF)

OXIDIZER TANK(REF)

LDW280-28351 INST(REF)

LDW280-28351 INST(REF)

LDW270-28202-1 HELIUM TANK INST

LDW270-28202-2 HELIUM TANK INST

Y0.00 (REF)

LDW270-28200-1 SUBSYSTEM INSTALLATION

10.27.03

NAS 9-1100

INST (REF)
ARD VENT)

.875(REF)

LDW270-28201-1 MODULE ASSY

LDW270-28201-3 MODULE ASSY

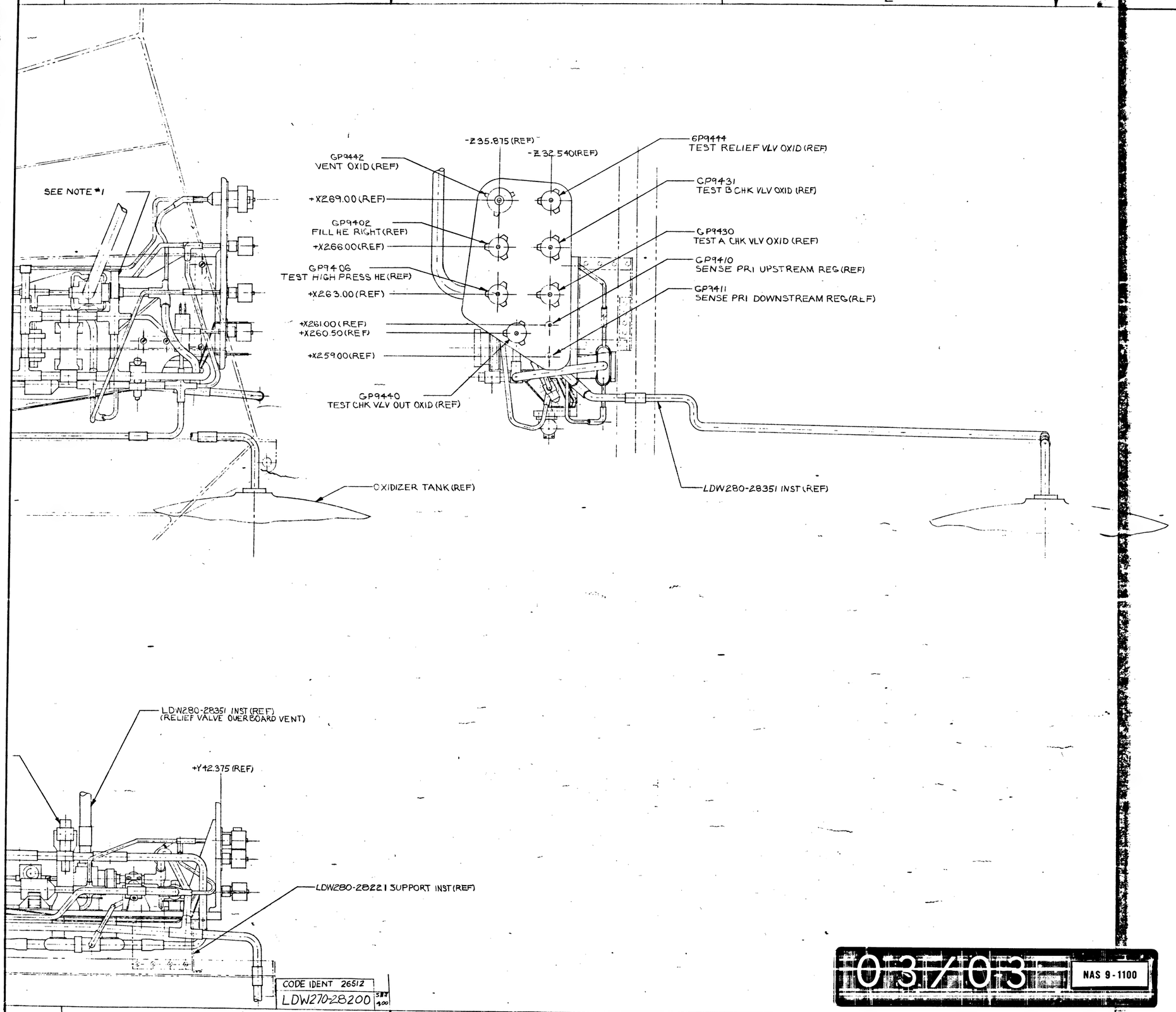
LDW280-28351 INST (REF)
(RELIEF VALVE OVERBOARD VENT)

+Y42.375 (REF)

LDW280-28221 SUPPORT INST(REF)

CODE IDENT 26512
LDW270-28200 SHT NO.

CODE IDENT 26512
LDW270-28200 SHT NO.



MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY.
FILLET AND INSIDE CORNER RADII TOLERANCES .015R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
250 FOR ALL DRILLED HOLES
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
SYMBOL ⌐ DENOTES SURFACE TO BE MACHINED
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
TOLERANCE ON LOFTED DELINEATIONS IS

DWG SIZE 34 X 121

PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X 180) = 34 SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL) = 8½ SQ. FT.

PRINT TRIM LINE

LDW270-28230

LDW270-28200

CODE IDENT 26512
LDW270-28200 SHT 4.00

03703 NAS 9-1100

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK		
LEM	SIZE J	CODE IDENT NO. 26512	LDW270-28200
MODEL OR END ITEM	SCALE 1/2		SHEET 4.00

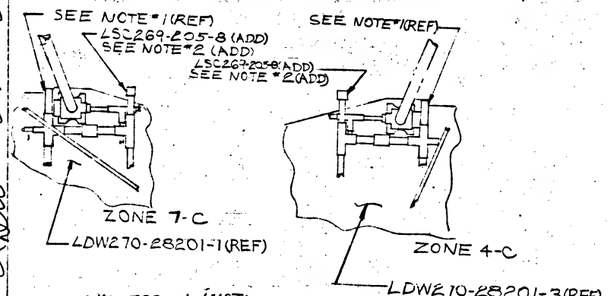
THIS IS AN ORIGINAL DWG.

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LDW270-28[illegible] ED NO. A1
CONTR'S INFO NO. LEM 270-543

Add 270 21200 Q1

ON SHEET 400
REVISE F/D FOR -1 INSTALLATION
AS SHOWN BELOW



IN B/M FOR -1 INSTL
(ADD) 2 LSC269-205-8

SHEET 3.00
ADD NOTE*2: AFTER INSTALLATION OF LDW270-23201-183 MODULES. BYPASS LINES LDW280-16000-7/16 ASH-8$-721ASH-8 SHALL BE CUT AND CAPPED AS SHOWN. THE CAPS SHALL BE BRAZED IN ACCORDANCE WITH LSP14-6303.

REASON FOR ED: TO ISOLATE PRESSURIZATION SYSTEM FROM PROPELLANT TANKS

IM F/D AND P/P F.E.-11IN'S DESCRIPTION OF ED: ADDED LSC269-205-8(2) ADDED NOTE#2

EFFECTIVITY: LEM

DRAWING CHANGE TYPE: REVISED

INSPECTION OF PARTS: REVISED

APPROVED BY: DATE 6-27-66

SUPPORT

RELEASED BY: DATE 6-27-66

ED RELEASE: DATE 6-27-66

PROJECT: C

DRAWING TITLE: ASCENT PROPELLANT PRESSURIZATION SUB-SYSTEM INST

DRAWING NO.: LDW270-28200

ED NO.: A1

S.E. HACK V 16-1

SECTION PROPULSION GROUP NO. 270 PL 35

ENG 32.1 REV 3-68 LIAISON ENGINEERING #5

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LDW270-28200 | EO NO. A2
CONTROL INFO NO. LEM-5-7850

ON-1 IN FLD. & B/M GB511J-3-8 (12) W/B
NAS1133-10V (12)

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG

REASON FOR EO
GB511 BOLTS ARE NOT AVAILABLE

DESCRIPTION OF EO
ON-1 NAS1133-10V (12) WAS GB511J-3-8(12)

GAEC EO RELEASE: FR | | WB

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LTA-8(18)	

DRAWING CHANGE REQD: REVISE DWG | RECORD EO
DISPOSITION OF PARTS: REWORK | SCRAP

	APPROVED BY	DATE
SUPPORT UNIT		6/6/66
RELIAB GROUP	FR	2/13
GROUP LEADER		6/16/66
STRESS GROUP		7-25-66
LIAISON ENGRG		7/27/66
PROJ ENGRG	RWC (WIFE)	8-10-66
GOVT		7-29-66

PRIORITY: C
DRAWING TITLE: ASCENT PROPELLANT PRESS. SYS. INSTL.
DRAWING NO.: LDW270-28200
ED NO.: A2

ISSUED BY LIAISON - J. JARVIS
SECTION PROP.
GROUP NO. 270 PL 35

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LDW270-28200 | EO NO. A3

CONTROL INFO NO. LEM270-604

FOR-1 ASS'Y
IN MODEL BLOCK

N/A LDW280-28002 S/B LDW280-28001

E.O. NUMBER WAS A2
LOWER R H CORNER

DETAIL SPEC REQ | CL II ENGRG CHG ✓ | CL I ENGRG CHG

REASON FOR EO: INCORRECT NEXT ASSEMBLY

DESCRIPTION OF EO: FOR-1 ASS'Y N/A LDW280-28001 (WAS) LDW280-28002

GAEC EO RELEASE: A3

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LTA-8 (1B)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO | DISPOSITION OF PARTS: REWORK ✓ | SCRAP

APPROVED BY / DATE: 8/5/66 | SUPPORT | RELIAB GROUP | GROUP LEADER 8/5/66 | STRESS GROUP | LIAISON ENGRG | PROJ ENGRG 8/16/66 | GOVT 8-15-66

QUANTITY: C

DRAWING TITLE: MODULE ASSEMBLIES ASCENT PROPULSION PRESS. SUBSYSTEM

DRAWING NO: LDW270-28200

EO NO.: A3

ISSUED BY S.P HACK K/471

SECTION PROPULSION

GROUP NO. 270 PL 35

LDW270-28201 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		LEM	LDW270-28200	LTA-8(1B)	1	LEM	LDW270-28200	LTA-8(1B)	1
				PART NO. LDW270-28201-3		GAEC SCH NO.		PART NO. LDW270-28201-1		GAEC SCH NO. 45	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	1.10		2.00	2.01	2.02	2.03	2.04	
REV	A	A		A	A	A	A	A	
SHEET	3.00	3.01	4.00	5.00					
REV	A	A	A	A					
SHEET									
REV									

LAST SECT LTR USED	
LAST DASH NO. USED	-3

GRUMMAN REL INFO A

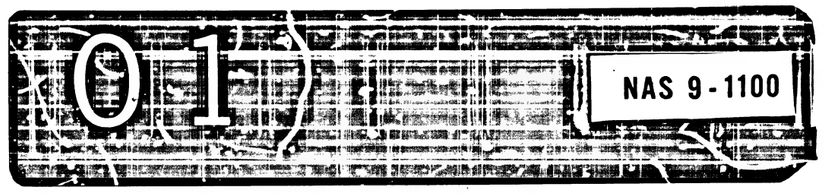
PRIM NO.	66009
463	MP-A 4266

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS9-1100 LINE ITEM 9 DOCUMENTATION TYPE II.

DRAWN BY	P. CAPPELLI 1/16	WEIGHT	L. Garcia 5/14/66	GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE, L. I., NEW YORK
LAYOUT BY	P CAPPELLI 3/29			
CHECKED BY	S HACK 4/19/66			MODULE ASSEMBLIES ASCENT PROPELLANT PRESSURIZATION SUB-SYSTEM
PROP	[signature] 4/19/66			
STRUCT	[signature] 4/19/66			
RELIAB.	[signature] 6/13	PROJ ENGR	[signature] 6-16	SIZE B | CODE IDENT NO. 26512 | LDW270-28201 A
		REL GROUP	[signature]	SCALE NONE | SHEET 1.00 OF 1.1



REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1,1.10,2.01&3.						EOA1	ON SHEET 2.01, LDW280-16000-828ASH-6. WAS LDW280-16000-828ASH-5. ON SHEET 3.00 DELETED NOTE* 4~SH.1 OF 10 (WAS) SH.1 OF 9 ADDED SH. 1.10	LTA-8	✓		D'AVELLA 9-2-66		
	2							EOA2	CANCELLED BY EOA7	NOT REQD	NOT	REQD			
	3							EOA3	CANCELLED BY EOA7	NOT REQD	NOT	REQD			
	4							EOA4	CANCELLED BY EOA7	NOT REQD	NOT	REQD			
	5	1,1.10,2.02,2.03&4B, 2.04,3,4.&5.7A&B.						EOA5	REMOVED NOTE*9~REMOVED LDW360-21262-3, LDW360-21264-1. REMOVED GC501D-36-231 C CLAMP & HARDWARE. ADDED MS21919WDG36 CLAMP & HARDWARE & LOCKWIRE.	LTA-8	✓				
	6	1,1.10,2.3.01& 4.	5A&C 6A&C					EOA6	ON SHEET 3.01 ADDED NOTE NO. 12 (SHOULD BE NOTE NO. 11)~ FOR-1 LDW280-16000-1117ASH-4 (WAS) LDW280-16000-445ASH-4, LDW280-16000-1118ASH-4 (WAS) LDW280-16000-446ASH-4, LDW280-16000-1119ASH-4 (WAS) LDW280-16000-447ASH-4, LDW280-16000-1155ASH-4 (WAS) LDW280-16000-449ASH-4.~SH.1 OF 11 (WAS) SH.1 OF 10 ADDED SH. 3.01.	LTA-8	✓				
	7							EOA7	CANCELLED EO'S A2, A3 & A4	LTA-8	✓				
	8	4.&5.	5A 7A						REF EOA5 -IN DESCRIPTION, SHOULD BE ON-1, LSC270-717-2 (WAS) LSC270-717-4, ON-3, LSC270-717-1 (WAS) LSC270-717-3, LDW360-21263-5 (WAS) LDW360-21263-3 AND "REMOVED GC501D-36-231" SHOULD BE "REMOVED GC501D-56-231"~IN FLD, ON-1 & 3 "ANS1133VE SHOULD BE "NAS1133V2.	NOT REQD	NOT	REQD			
	9	4&5.	5B 7B						CHANGED COMMERCIAL CALLOUT TO G.A.E.C. VENDOR APPROVED EQUIVALENT	NOT REQD	NOT	REQD			

CHG APPROVED	LTR	GROUP LDR	PROP	STRUCT	RELIABILITY	WEIGHT
	A					

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28201	A

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

LEVEL	QTY PER ASSEMBLY		CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
	-3	-1											
L		1		LDW280-16000-471ASH-4	E	TUBE	SEE DWG						
L		1		-473ASH-4									
L		1		-472ASH-4									
L		1		-471ASH-6									
L		1		-470ASH-8									
L		1		-467ASH-8									
L		1		-466ASH-6									
L		1		-465ASH-6									
L		1		-464ASH-2									
L		1		-463ASH-2									
L	1			-459ASH-8									
L	1			-458ASH-2									
L	1			-457ASH-2									
L	1			-456ASH-6									
L	1			-455ASH-6									
L	1			-453ASH-6									
L		1		-451ASH-6									
L		1		-1155ASH-4									
L		1		-448ASH-4									
L		1		-1119ASH-4									
L		1		-1118ASH-4									
L		1		-1117ASH-4									
L		1		-444ASH-4									
L		1		LDW280-16000-443ASH-8	E	TUBE	SEE DWG						
K				LDW270-28201-3	S	MODULE ASSY (OX)							
K				LDW270-28201-1	S	MODULE ASSY (FUEL)							

CLEANLINESS PER LSP-14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : LPC-19-2 (GRUMMAN) LPC-19-3 (VENDOR

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28201-1	A

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

LEVEL	QTY PER ASSEMBLY -3	QTY PER ASSEMBLY -1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCPIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
C	1			LDW280-28205-4	E	PLATE ASSY	SEE DWG						
C		1		LDW280-28205-3		PLATE ASSY							
C	2	2		LDW270P10001-1		GROMMET							
C	1	1		LDW270P10000-1		INSERT							
L		1		LDW280-16000-889ASH-6		TUBE							
L	1			-828ASH-6									
L		1		-732ASH-8									
L		1		-721ASH-8									
L		1		-720ASH-4									
L		2		-719ASH-8									
L		1		-718ASH-8									
L		1		-717ASH-8									
L	1			-716ASH-8									
L	1			-715ASH-4									
L	2			-714ASH-8									
L	1			-713ASH-8									
L	1			-712ASH-8									
L		1		-482ASH-8									
L	1			-479ASH-8									
L	1			-477ASH-8									
L	1			-476ASH-4									
L	1			LDW280-1600D-475ASH-4	E	TUBE	SEE DWG						

CLEANLINESS PER LSP-4-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : LPC-19-2 (GRUMMAN) LPC-19-3 (VENDOR)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28201	A

SCALE NONE SHEET 2.01

01 NAS 9-1100

LEVEL	-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
L	1			LSC270-715-1	S	REGULATOR	SEE NOTE 1						
L	1	1		LSC270-714-5	S	EXPLOSIVE VA							
L	1	1		LSC270-712-1	S	FILTER							
L	1	1		LSC269-258-2	E	TEE							
L	1	1		-255-3		CROSS							
L	1			-255-2		CROSS							
L	2	2		-234-19		TEE							
L	1	1		-231-2		CROSS							
L	2	2		-230-1		UNION							
L		1		-228-6		TEE							
L	3	3		-226-6		90° ELBOW							
L	1	1		-226-4		90° ELBOW							
L	5	5		-224-4		UNION							
L	4	4		-204-8		TEE							
L	1	1		-204-4		TEE							
L	2	2		-203-4		45° ELBOW							
L	1	1		LSC269-202-4	E	90° ELBOW	SEE NOTE 1						
L	1	1		LDW390-28070-5	S	SOLENOID VALVE	SEE DWG						
L	1			LDW360-21262-5	E	TRANSDUCER INSTL							
L		1		LDW360-21262-1	E	TRANSDUCER INSTL	SEE DWG						

CLEANLINESS PER LSP14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

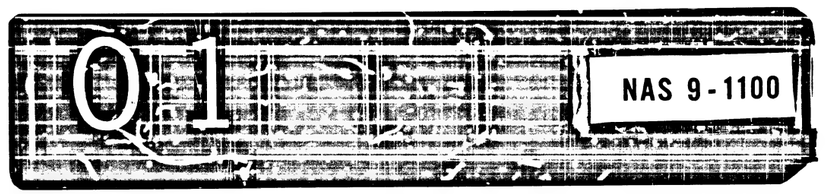
I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : LPC-19-2 (GRUMMAN) LPC-19-3 (VENDOR)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28201	A

SCALE NONE SHEET 2.02

ENG 77.2 7-65



LEVEL	QTY PER ASSEMBLY						CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
					-3	-1											
C					1	1		GC12H-21	E	CLAMP	GRUMMAN STD						
C					2	2		GC12H-8									
C					1	1		GC12H-6									
C						1		GC12H-4		CLAMP							
C					3	3		GB511J-3-34		BOLT							
C					5	5		GB511J-3-13									
C					4	4		GB511J-3-4									
C					29	30		GB511J-3-2									
C					1	1		GB511J-08-13		BOLT	GRUMMAN STD						
C					4	4		GC12H-2	E	CLAMP	GRUMMAN STD						
L					2	2		LSC270-819-9	S	EXPLOSIVE VA	SEE NOTE 1						
L						1		LSC270-817-2		CHECK VA							
L					1			LSC270-817-1		CHECK VA							
L					4			LSC270-813-5		DISCONNECT COUP							
L						4		LSC270-813-4									
L						1		LSC270-813-3									
L					2	1		LSC270-813-1									
J					1			LSC270-805-2									
J						1		LSC270-804-2		DISCONNECT COUP							
L						1		LSC270-717-2		RELIEF VALVE							
L					1			LSC270-717-1		RELIEF VALVE							
L						1		LSC270-715-3	S	REGULATOR	SEE NOTE 1						

CLEANLINESS PER LSP19-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : LPC-19-2 (GRUMMAN) LPC-19-3 (VENDOR)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28201	A

SCALE NONE SHEET 2.03

7-65

01

NAS 9-1100

LEVEL	QTY PER ASSEMBLY				CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
			-3	-1											
C			37	38		MS21043-3	E	NUT	STD PART						
C			1	1		MS21043-08		NUT							
C			1	1		NAS1133V2		BOLT							
C			1	1		MS21919WDG36		CLAMP							
C			38	39		AN960C10L		WASHER							
C			1	1		AN960C8L	E	WASHER	STD PART						

CLEANLINESS PER LSP-14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : LPC-19-2 (GRUMMAN) LPC-19-3 (VENDOR)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28201	A

SCALE NONE SHEET 2.04

01 NAS 9-1100

NOTES:

1. COMMERCIAL PART SEE SPECIFICATION CONTROL DRAWING LSC270-712, LSC270-713, LSC270-714, LSC270-715, LSC270-717, LSC270-804 LSC270-805, LSC270-813, LSC270-819 & LSC269 BEFORE ORDERING
2. FOR MOCK UP OF THIS ASSEMBLY USE THE FOLLOWING MOCKUP PARTS:

LMU270-70712	FILTER
LMU270-70713	SOLENOID VALVE
LMU270-80014	EXPLOSIVE VALVE
LMU270-70715	REGULATOR
LMU270-70717	RELIEF VALVE
LSK270-3015	DISCONNECT COUP
LMU270-80010	DISCONNECT COUP
LMU270-80008	CHECK VALVE

3. INDUCTION BRAZING OF FITTINGS SHALL BE IN ACCORDANCE WITH LSP-14-6303
4. MODULE ASSEMBLIES SHALL BE TESTED PER [illegible] OF LTP270-010 "APS HELIUM PRESSURIZATION MODULE PIT"
5. DO NOT REMOVE EXPLOSIVE VALVE INITIATOR PORT PLUGS UNTIL INSTALLATION OF INITIATORS.
6. TUBE STUBS SHALL BE CAPPED PER LSP-14-009 FOR SHIPMENT AND STORAGE. REMOVE CAPS PRIOR TO BRAZING INTO SYSTEM.
7. TORQUE MECHANICAL FITTINGS 50-60 INCH LBS
8. FITTING THREADS TO BE LUBRICATED WITH DRILUBE TYPE 822 MMS N306A (06186)
9. SAFETY WIRE PER MS33540.
10. FITTINGS SHALL BE CLEANED PER LSP-14-7072 AND SHALL CONFORM TO CLEANLINESS LEVEL "L" OF LSP-14-0011

CONTINUE ON SHEET 3.01

ENG 73.1 6-64

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28201	A

SCALE NONE SHEET 3.00

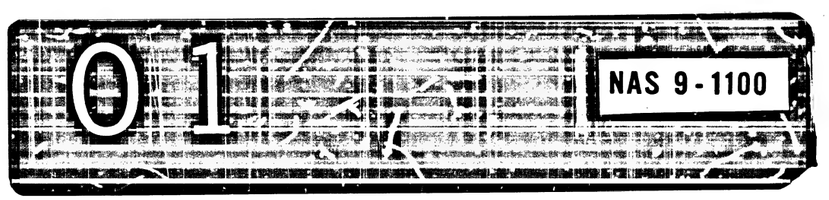
NOTES: CONTINUED

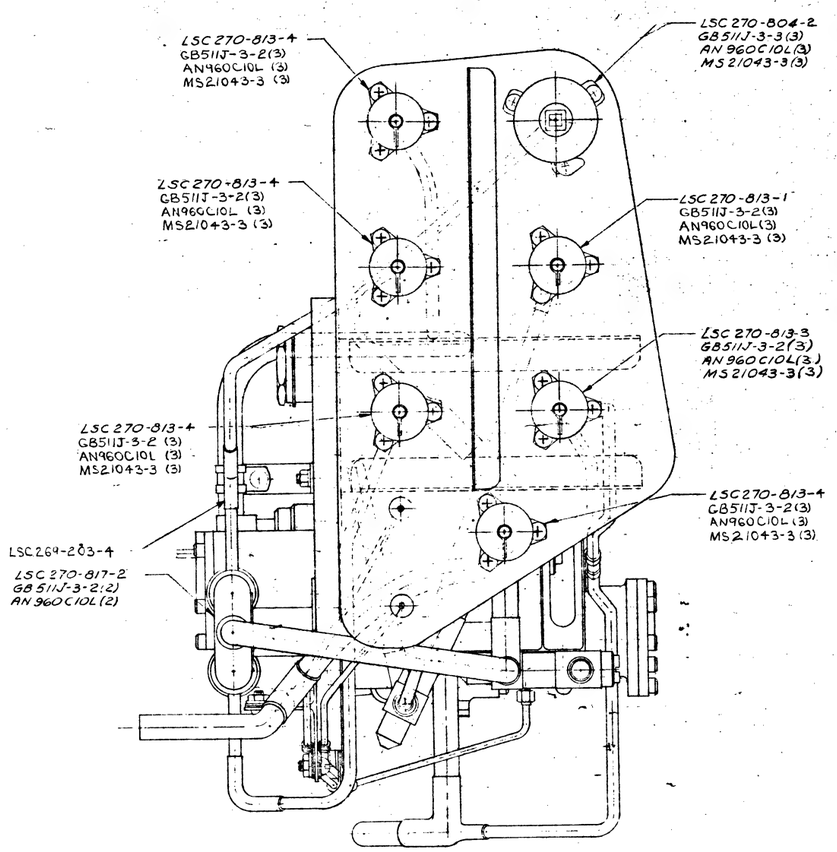
11. IMPERFECT BRAZES ARE ALLOWED ON ALL LINES AND COMPONENT STUBS EXCEPT THE FOLLOWING;

-1 ASSY	-3 ASSY
LDW280-16000-721ASH-8	LDW280-16000-716ASH-8
LDW280-16000-719ASH-8	LDW280-16000-714ASH-8
LDW280-16000-718ASH-8	LDW280-16000-713ASH-8
LDW280-16000-443ASH-8	LDW280-16000-477ASH-8
LDW280-16000-444ASH-4	LDW280-16000-476ASH-4
LDW280-16000-482ASH-8	LDW280-16000-479ASH-8
LSC270-819-9(OUTLET TUBE STUB)	LSC270-819-9(OUTLET TUBE STUB)
LSC270-804-2	LSC270-805-2
LSC270-717-2(INLET TUBE STUB)	LSC270-717-1(INLET TUBE STUB)

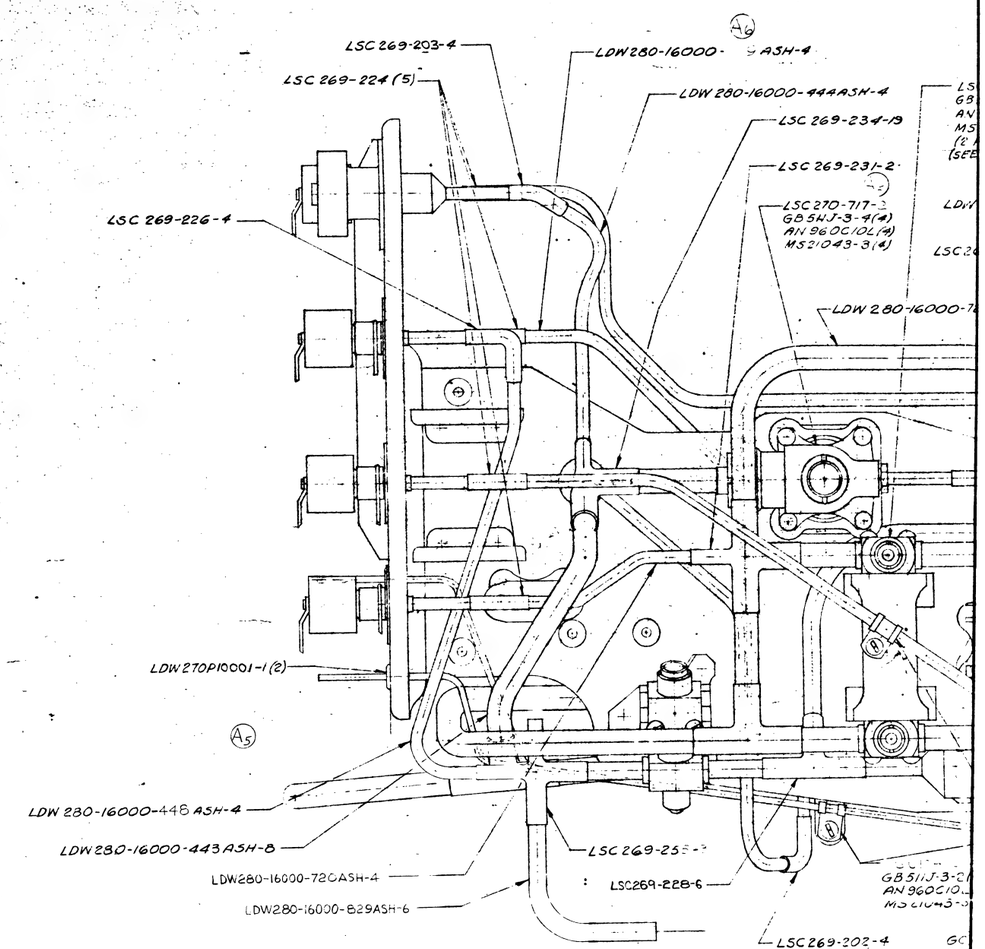
ENG 73.1 6-64

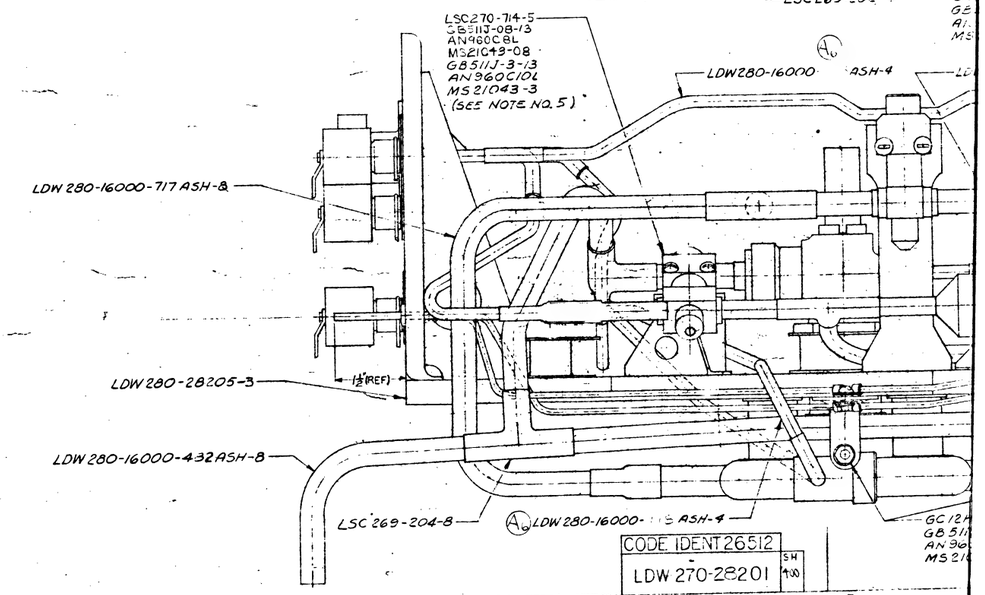
GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-28201	A
SCALE NONE		SHEET 3.01	





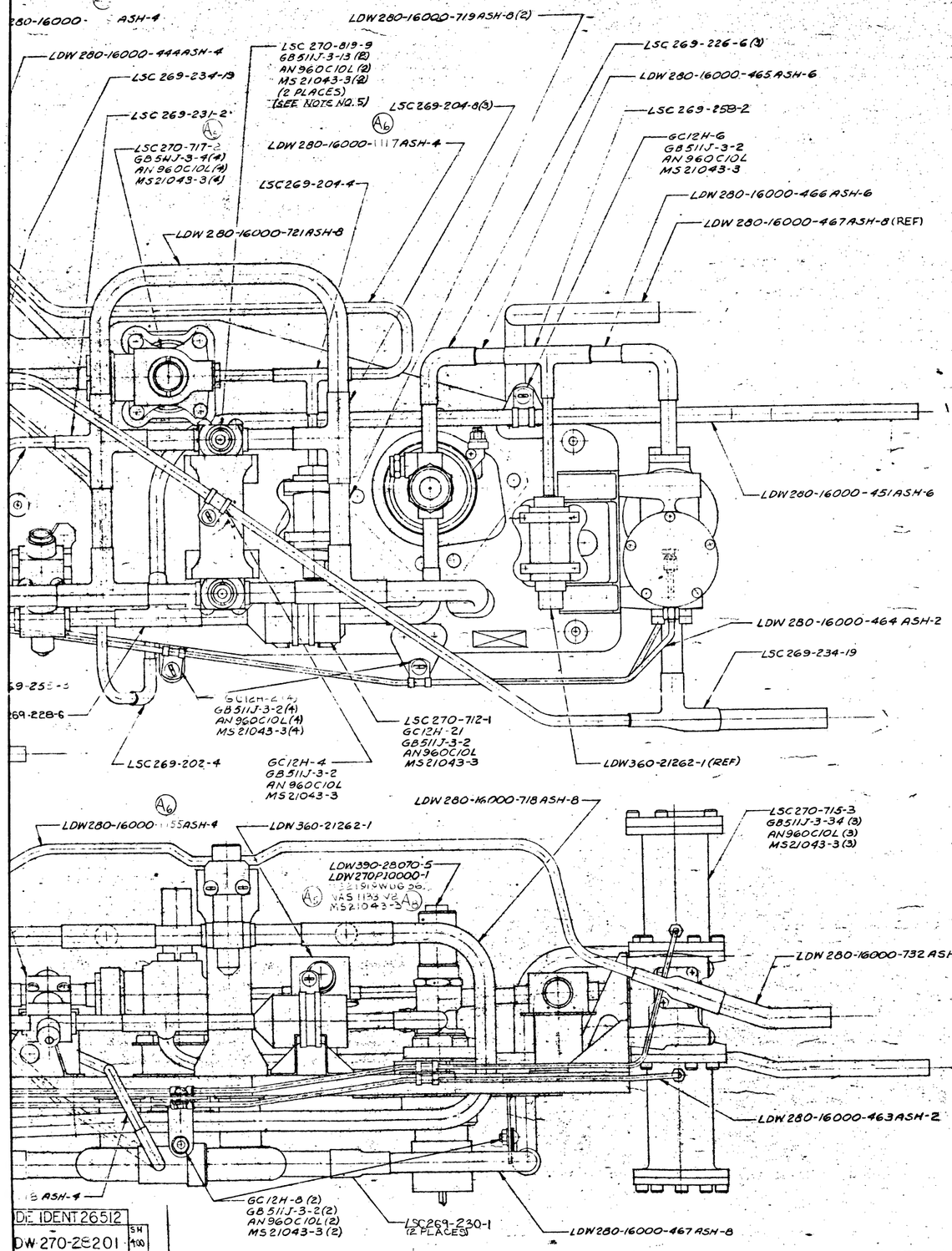
LDW270-28201-1 MODULE ASSEMBLY(FUEL)





01Q2 NAS 9-1100

CODE IDENT 26512
LDW 270-28201 SH 1 OF 1



MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
250 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ⚡ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

DWG SIZE = X 2.00

PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X 240)= 22 1/2 FT.
1/2 SIZE SHEET AREA (1/4 OF FULL)= 5 5/8 FT.

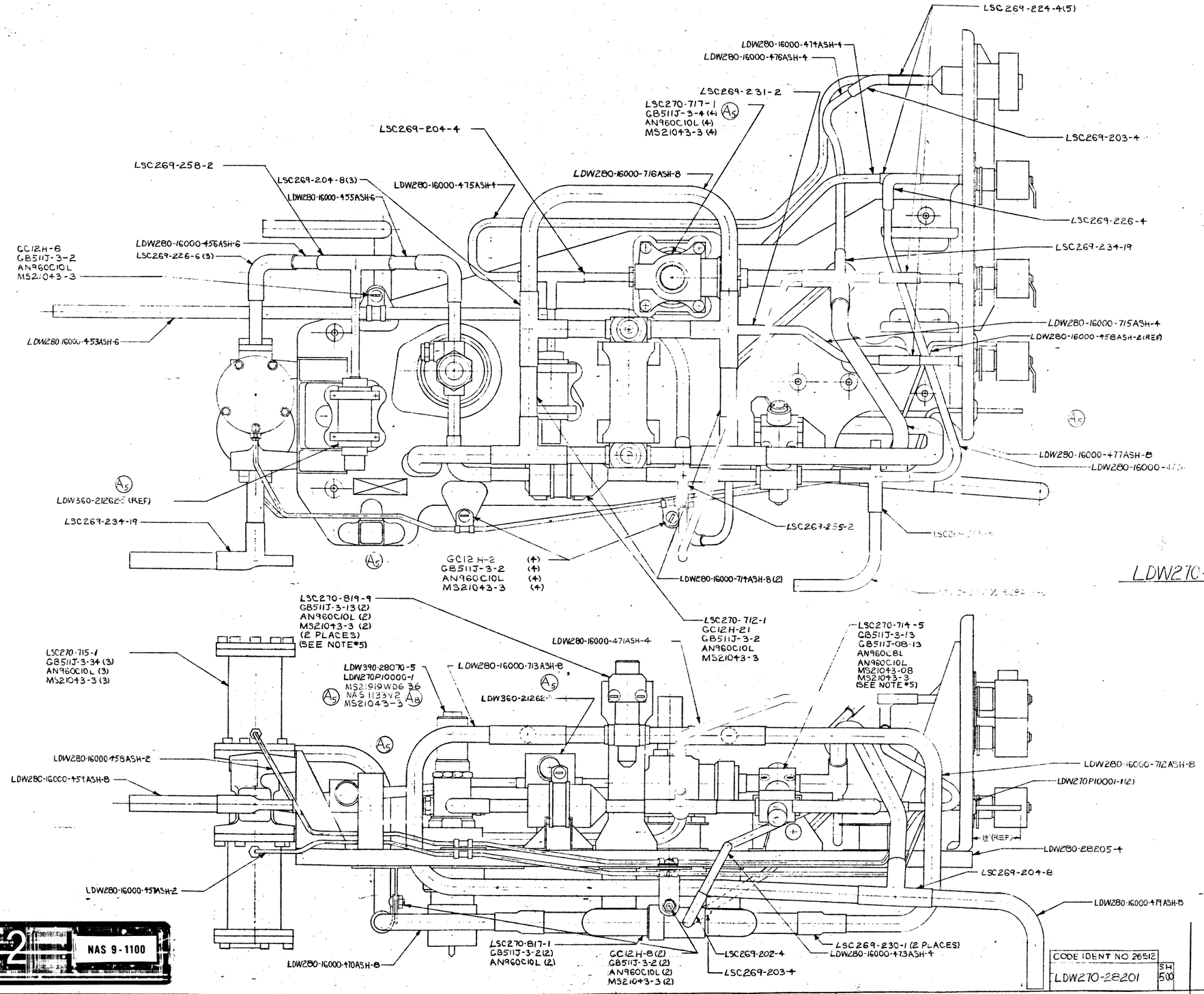
PRINT TRIM LINE

02/02 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
	SIZE J	CODE IDENT NO. 26512	LDW270-2E201 A
MODEL OR END ITEM	SCALE FULL		SHEET 4 OF 00

LDW270-2E201A

DIE IDENT 26512
LDW-270-2E201 SH 100



LDW270-[illegible]201-3 MCD

01202 NAS 9-1100

CODE IDENT NO 26512

LDW270-28201 SH 500

5)

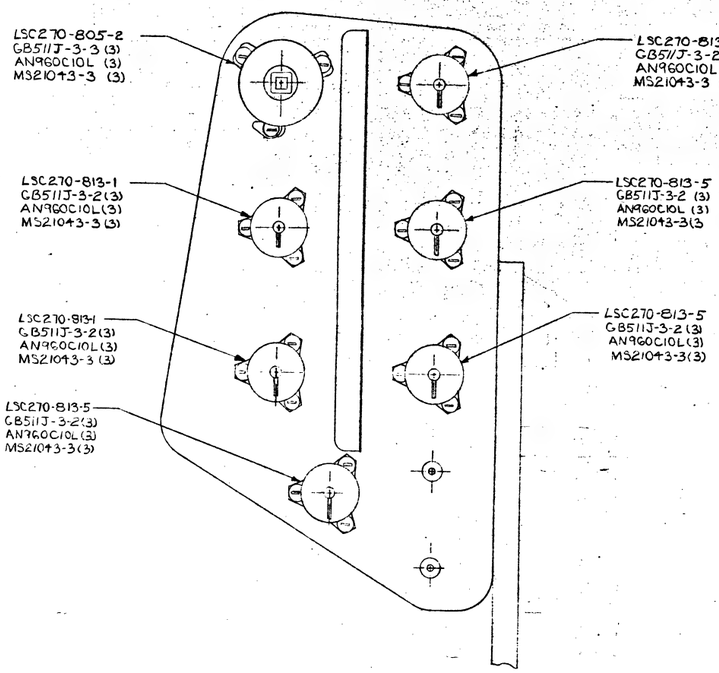
LSC269-203-4

LSC269-226-4

C269-234-19

280-16000-715ASH-4
16000-458ASH-2(REF)

80-16000-477ASH-B
LDW280-16000-477ASH-4



LDW270-26201-3 MODULE ASSEMBLY(OX)

LDW280-16000-712ASH-8
W270P16001-112)

80-28205-4

LDW280-16000-479ASH-8

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.	√
FILLET AND INSIDE CORNER RADII TOLERANCES .015R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, MAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

DWG SIZE 34 X 22

PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X) = SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL) = SQ. FT.
PRINT TRIM LINE

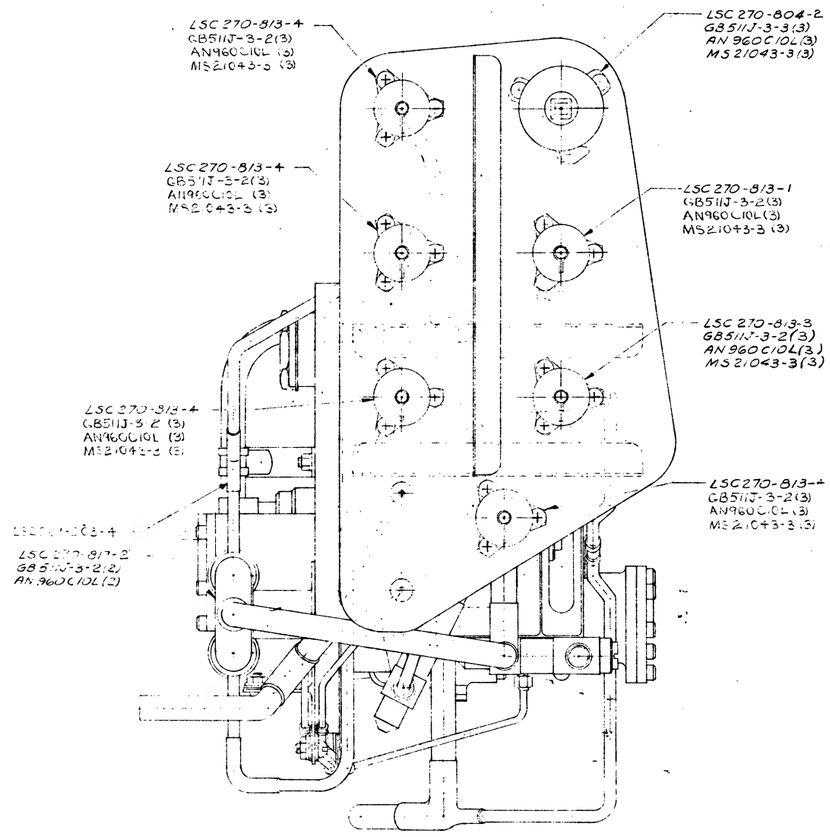
C
B
A

LDW270-26201

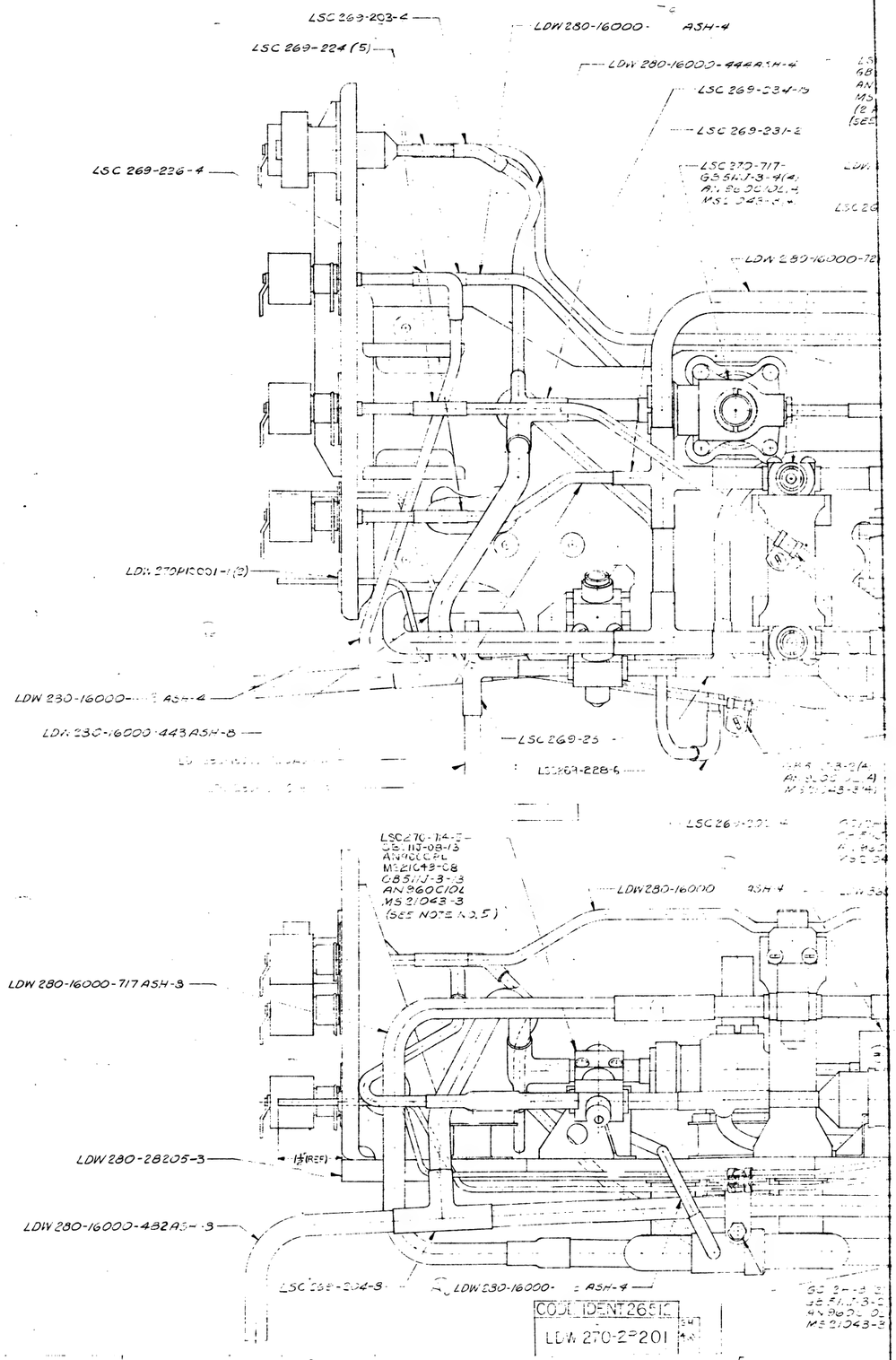
CODE IDENT NO 26512	
DW270-26201	SH 500

02/02 NAS 9-1100

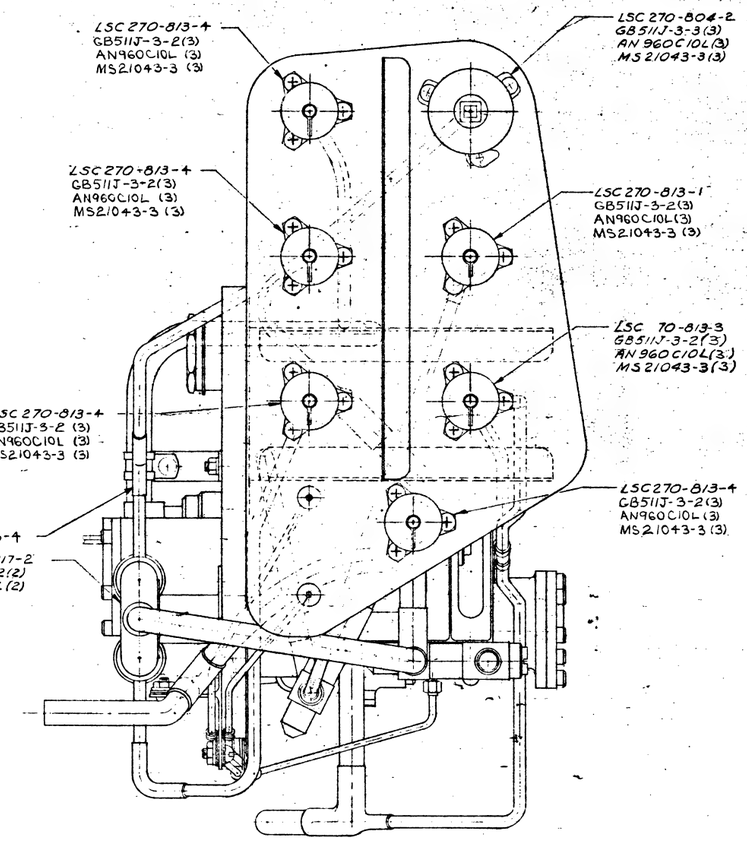
GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE J	CODE IDENT NO. 26512	LDW270-28201	
MODEL OR END ITEM	SCALE 1:1	SHEET 500	

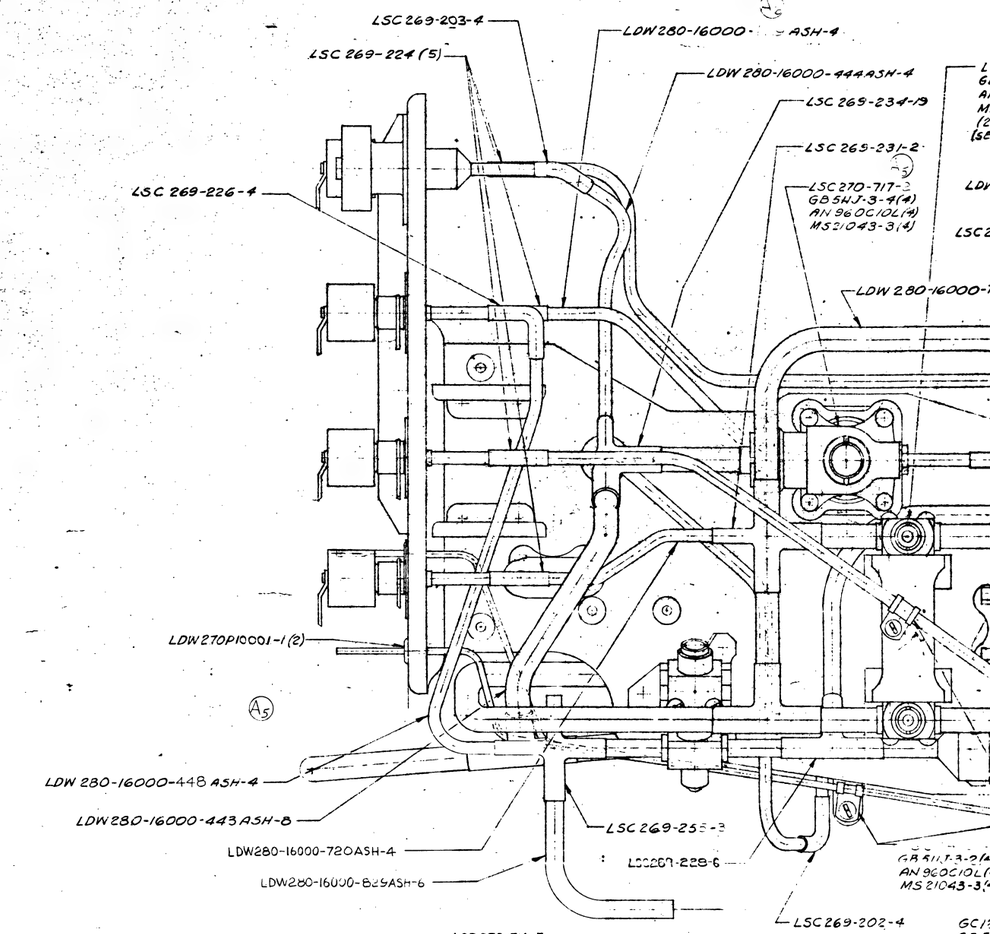


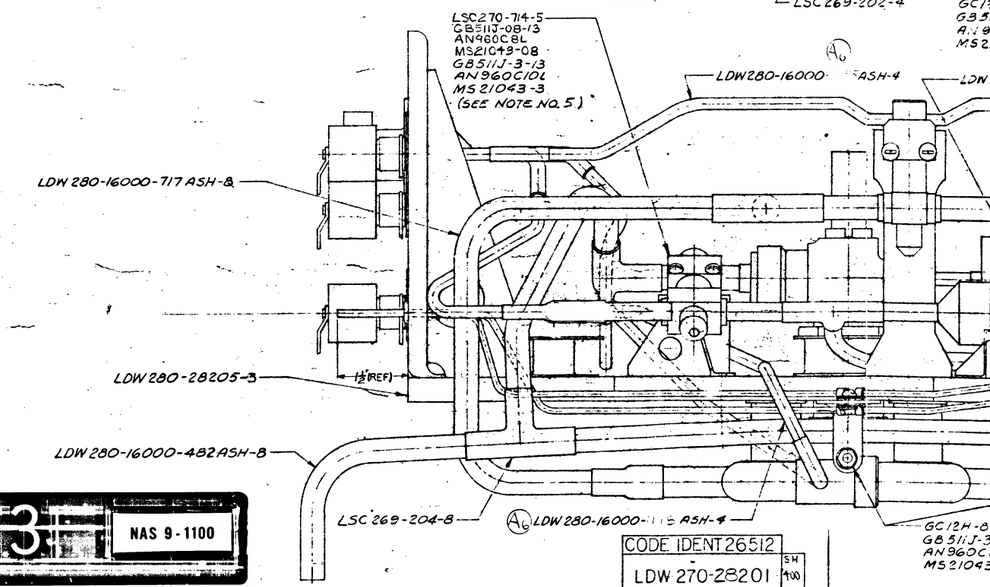
LDW 270-28201-1 MODULE ASSEMBLY (FUEL)



NAS 9-1100



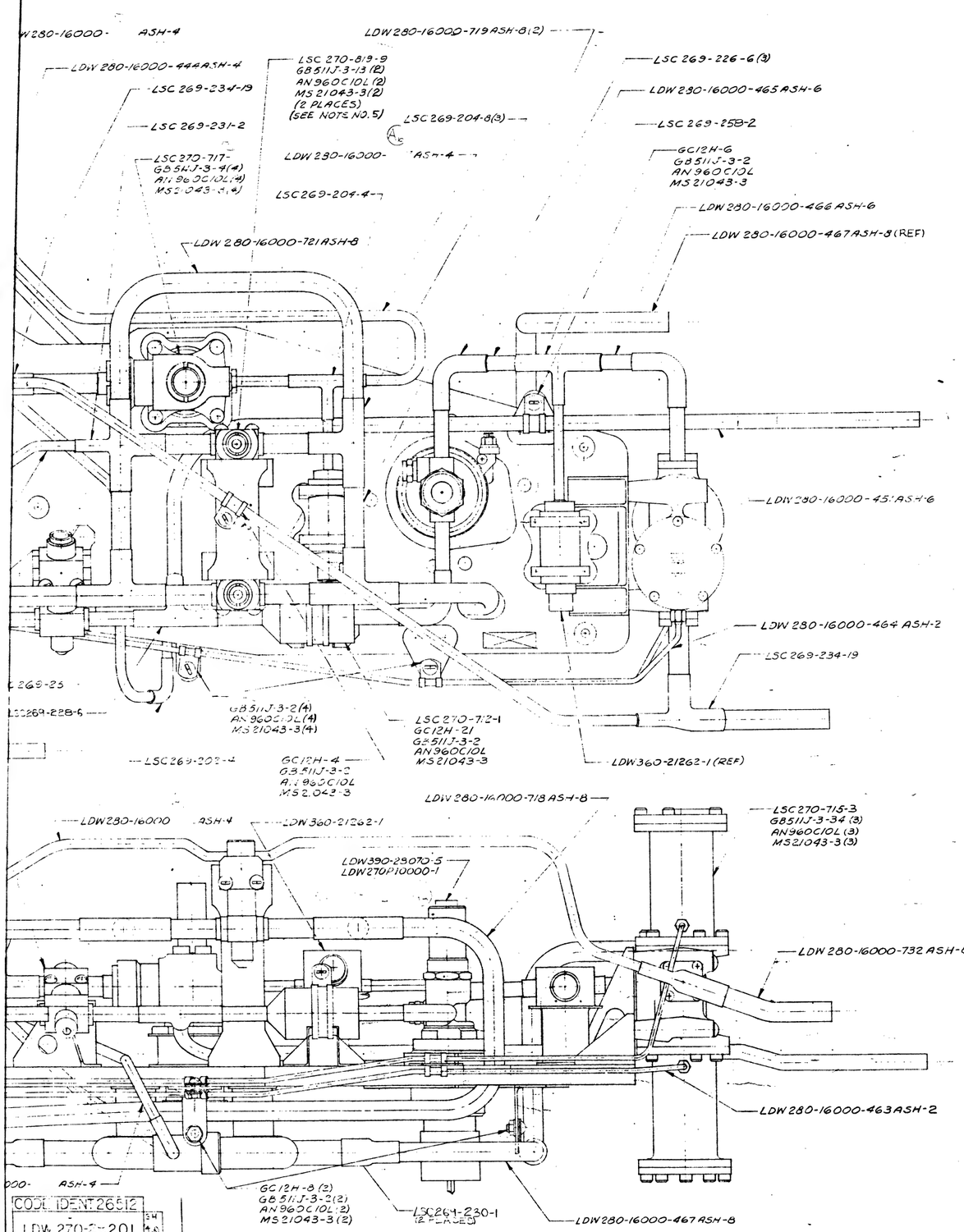




LDW 270-28201-1 MODULE ASSEMBLY(FUEL)

01 / 03 NAS 9-1100

CODE IDENT 26512
LDW 270-28201 SH 100



MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
APPLY [illegible] PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY.	√
FILLET AND INSIDE CORNER RADII TOLERANCES .01R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0001 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ↑ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

DWG SIZE 34 X [illegible]

PRINTING INFO ONLY

FULL SIZE SHEET AREA (35 X [illegible])
1/2 SIZE SHEET AREA (17 1/4 BY FULL)

PRINT TRIM LINE

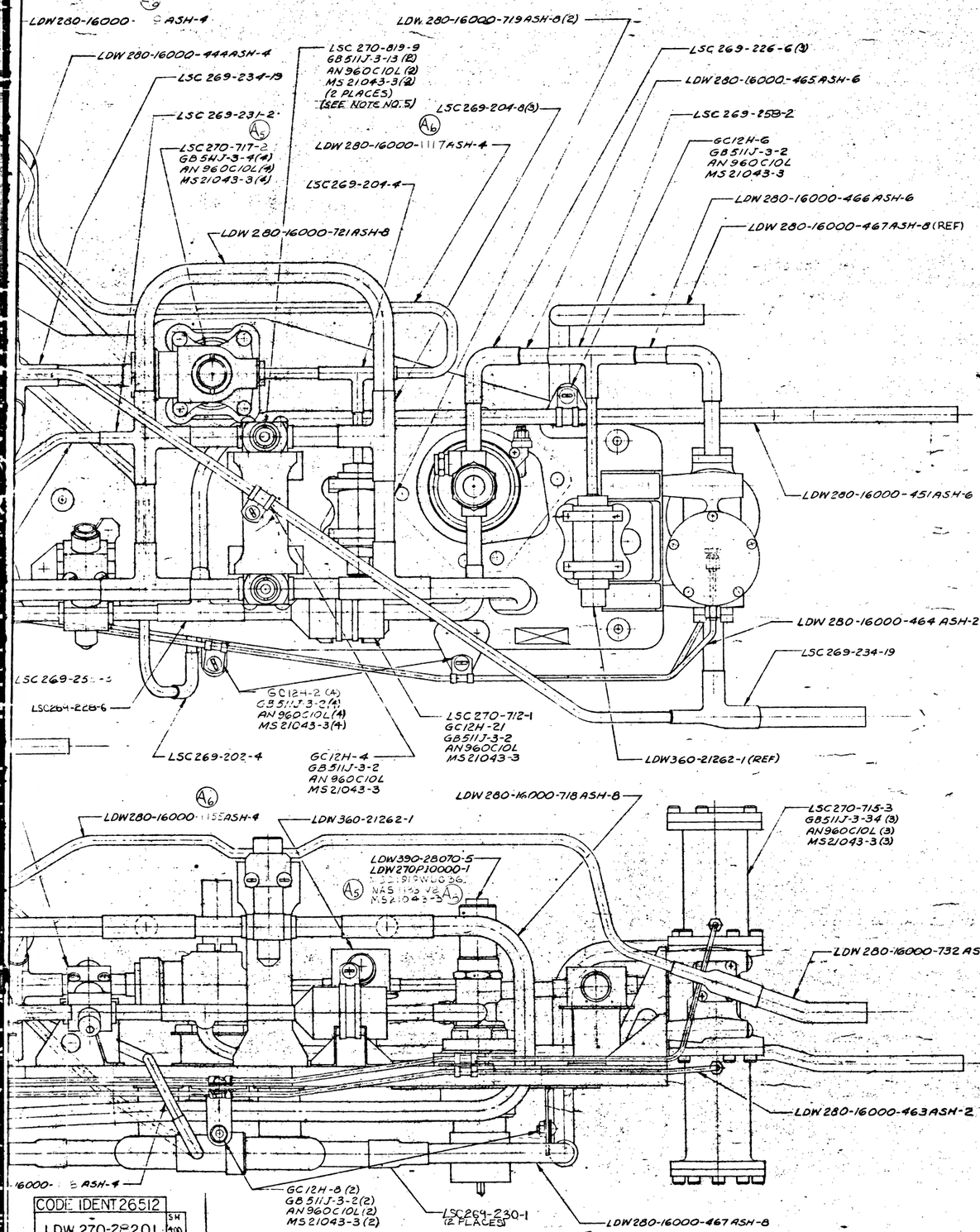
22 1/2 FT.
55 FT.

0.2/0.2 NAS 9-1100

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK		
MODEL OR END ITEM	SIZE J	CODE IDENT NO. 26512	LDW 270-[illegible] 201
SCALE [illegible]			SHEET [illegible]

CODE IDENT 26512
LDW 270-[illegible]-201 SH 4A

LDW 270-[illegible] 201



MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY.	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
250 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ∛ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

DWG. SIZE 34 x 65

PRINTING INFO ONLY
FULL SIZE SHEET AREA (34 x 90)= 22 1/2 SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL)= 5 5/8 SQ. FT.

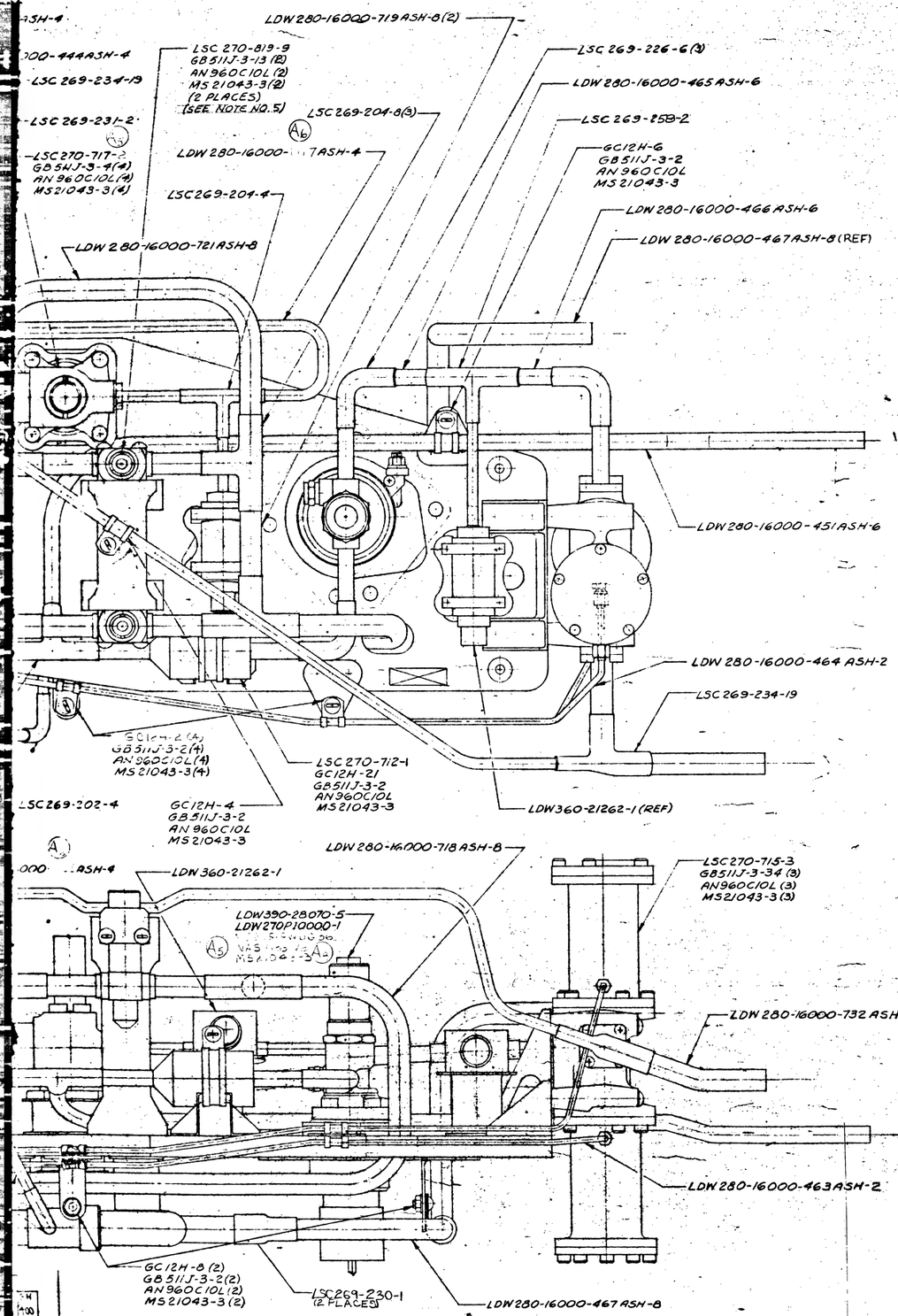
PRINT TRIM LINE

CODE IDENT 26512
LDW 270-28201 SH 400

02703 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE J	CODE IDENT NO. 26512	LDW270-28201	
MODEL OR END ITEM	SCALE FULL	SHEET 4.00	

LDW 270-28201 A



MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY.	√
FILLET AA- INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
250 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ⌐ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY Rivets SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

DWG SIZE 34 X 86

PRINTING INTO DWG: 22½ SQ. FT.
FULL SIZE SHEET AREA (36 X 90)= 5 5/8 SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL)=

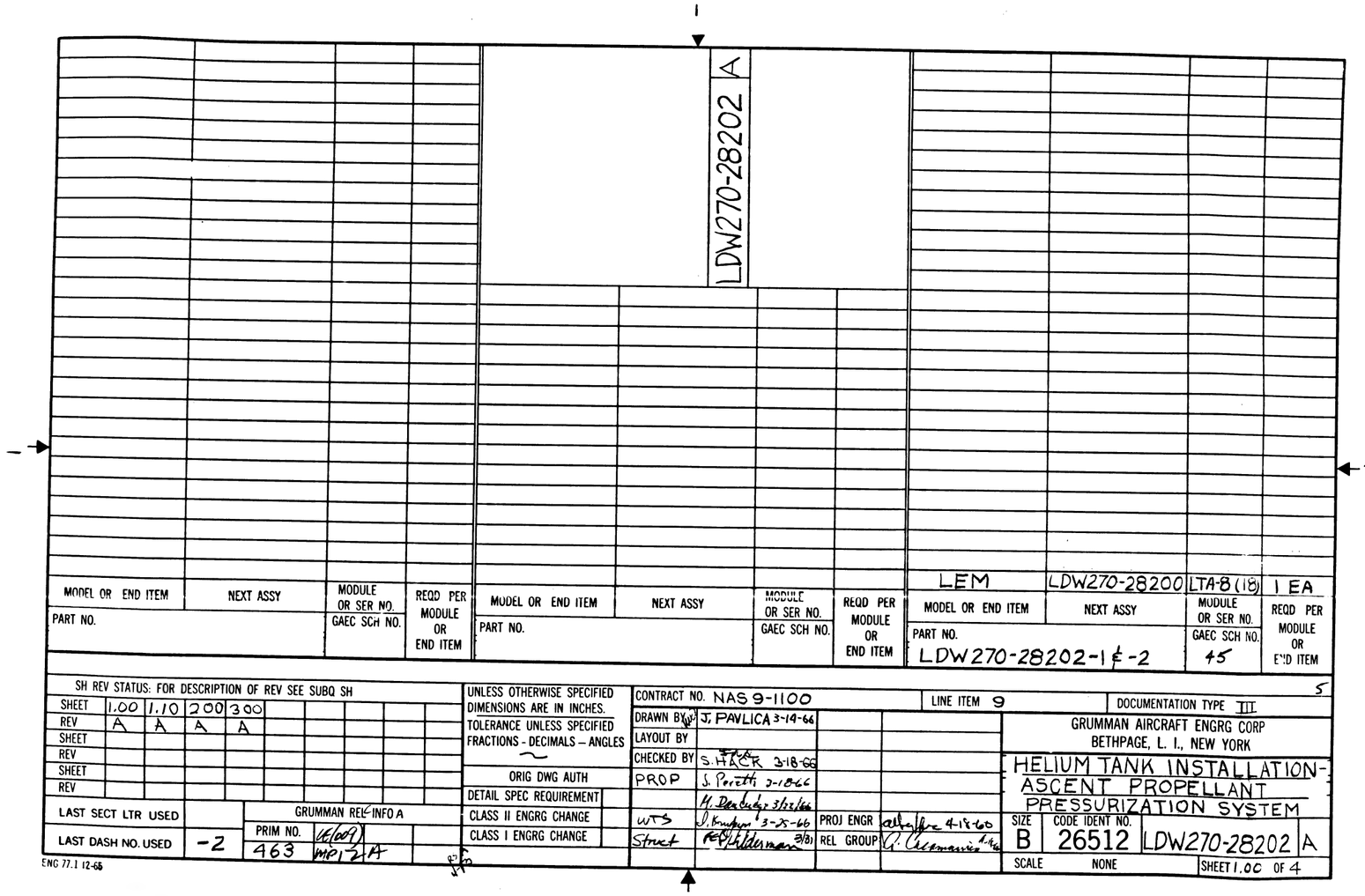
PRINT TRIM LINE

03703 NAS 9-1100

		GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK	
	SIZE J	CODE IDENT NO. 26512	LDW270-28201
REV. MODEL OR END ITEM	SCALE FULL		SHEET 4 OF 00

LDW270-28201A

THIS IS A DRAG DWG



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW270-28200	LTA-8 (18)	1 EA
PART NO. LDW270-28202-1 & -2		GAEC SCH NO. 45	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	200	300					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	
LAST DASH NO. USED	-2

GRUMMAN REL INFO A
PRIM NO. 463 MP1-2A

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS 9-1100 | LINE ITEM 9 | DOCUMENTATION TYPE III

DRAWN BY	J. PAVLICA 3-19-66		
LAYOUT BY			
CHECKED BY	S. HACK 3-18-66		
PROP	S. Poretti 3-18-66		
	M. Dembridge 3/22/66		
WTS	J. Knudsen 3-25-66	PROJ ENGR	4-18-66
Struct	R. Fitzsimmons 3/31	REL GROUP	4-18-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

HELIUM TANK INSTALLATION-
ASCENT PROPELLANT
PRESSURIZATION SYSTEM

SIZE	CODE IDENT NO.	
B	26512	LDW270-28202 A

SCALE NONE | SHEET 1.00 OF 4

ENG 77.1 12-65

5

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	SH CHG LTR	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	DET APPD
A	1	1.00 1.10								SHEET 1.00 OF 4 WAS SHEET 1.00 OF 3 ADDED SHEET 1.10 IN MODEL BLOCK REMOVED LEM, LDW270-51200, LEM 1 (31) 1 EACH, LEM 2 (32) 1 EACH	LTA-8		✓			
	2	2.00								IN B/M REMOVED 81896, LSC270-711-1 HELIUM TANK. SEE NOTE 2. ADDED LDW270-28213 TANK REWORK, SEE DRAWING		✓				
	3	3.00								REMOVED NOTE 2. IN ZONE 4-B LDW270-28213-1 WAS LSC270-711-1.						

FOR CONTINUATION OF REVISIONS SEE SHEET

ENG 77.3 5-64

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28202	A
SCALE NONE			SHEET 1.10

NAS 9-1100

QTY PER ASSEMBLY		CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
-2	-1											
1	1		NAS 509 -10		NUT	STD PART						
1	1		MS21042L6		NUT							
✓	✓		MS20995C32		SAFETY WIRE							
1	1		AN960D1016		WASHER							
1	1		AN960D616L		WASHER	STD PART						
1	1		LDW270-28213-1	S	TANK REWORK	SEE DWG						
			LDW270-28202-2	E	TANK INSTL(RH)							
			LDW270-28202-1	E	TANK INSTL(LH)							

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

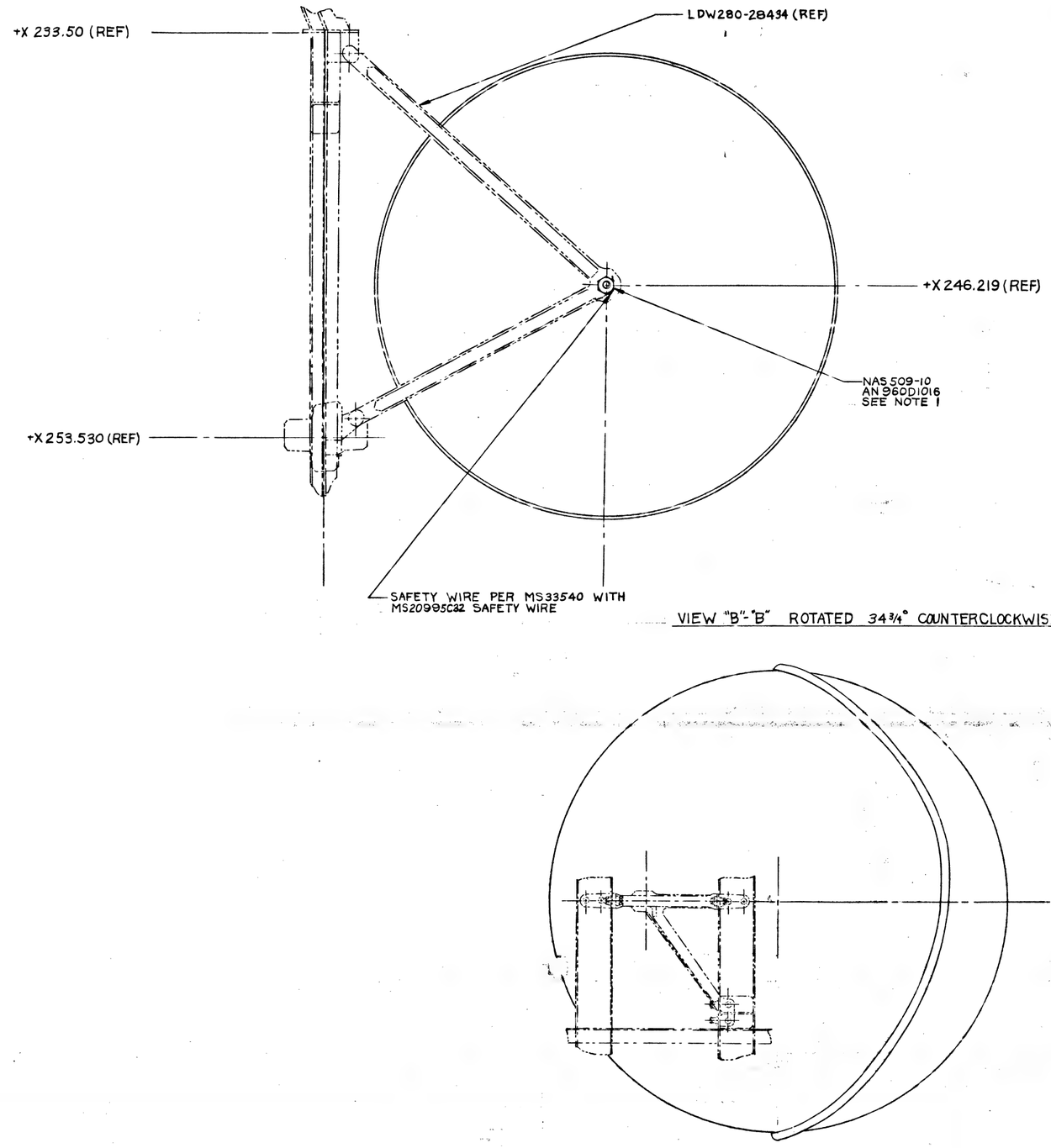
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28202	A

SCALE NONE SHEET 2.00

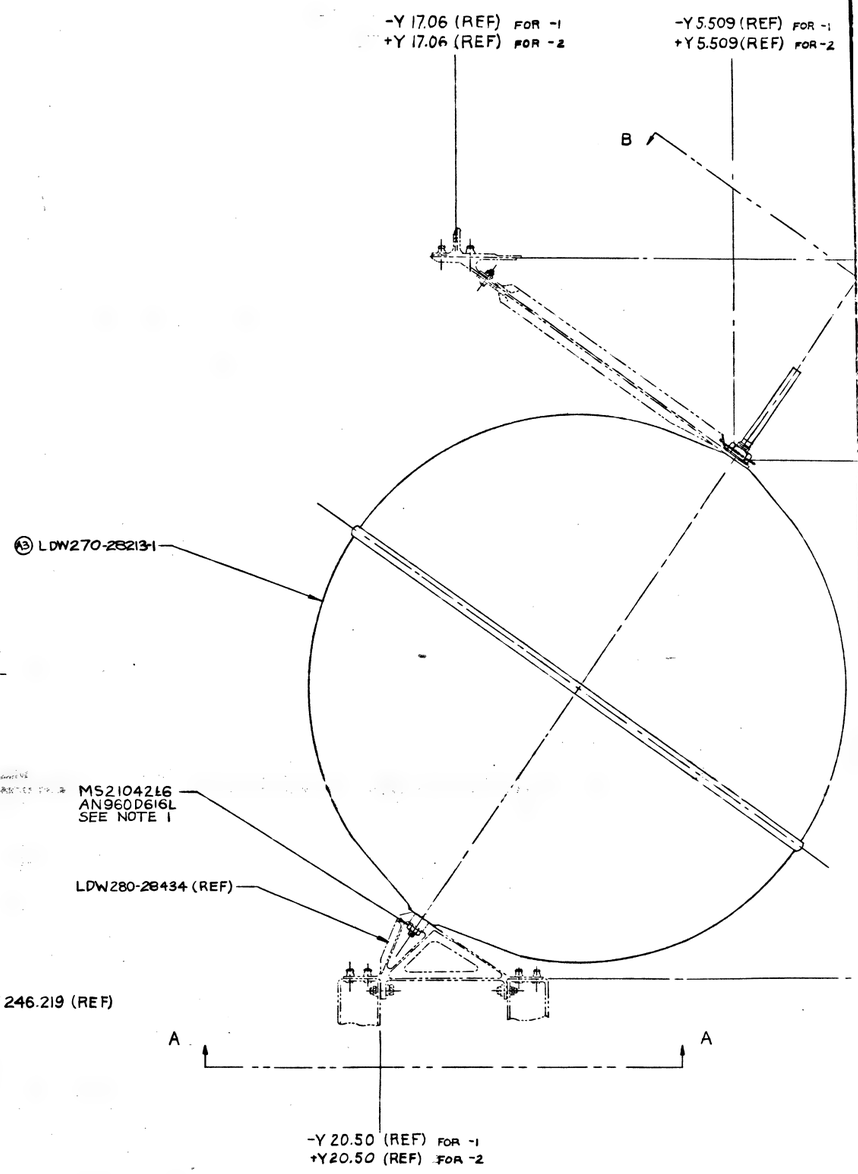
ENG 77.2 7-65

NAS 9-1100



VIEW "B"-"B" ROTATED 34 3/4° COUNTERCLOCKWISE

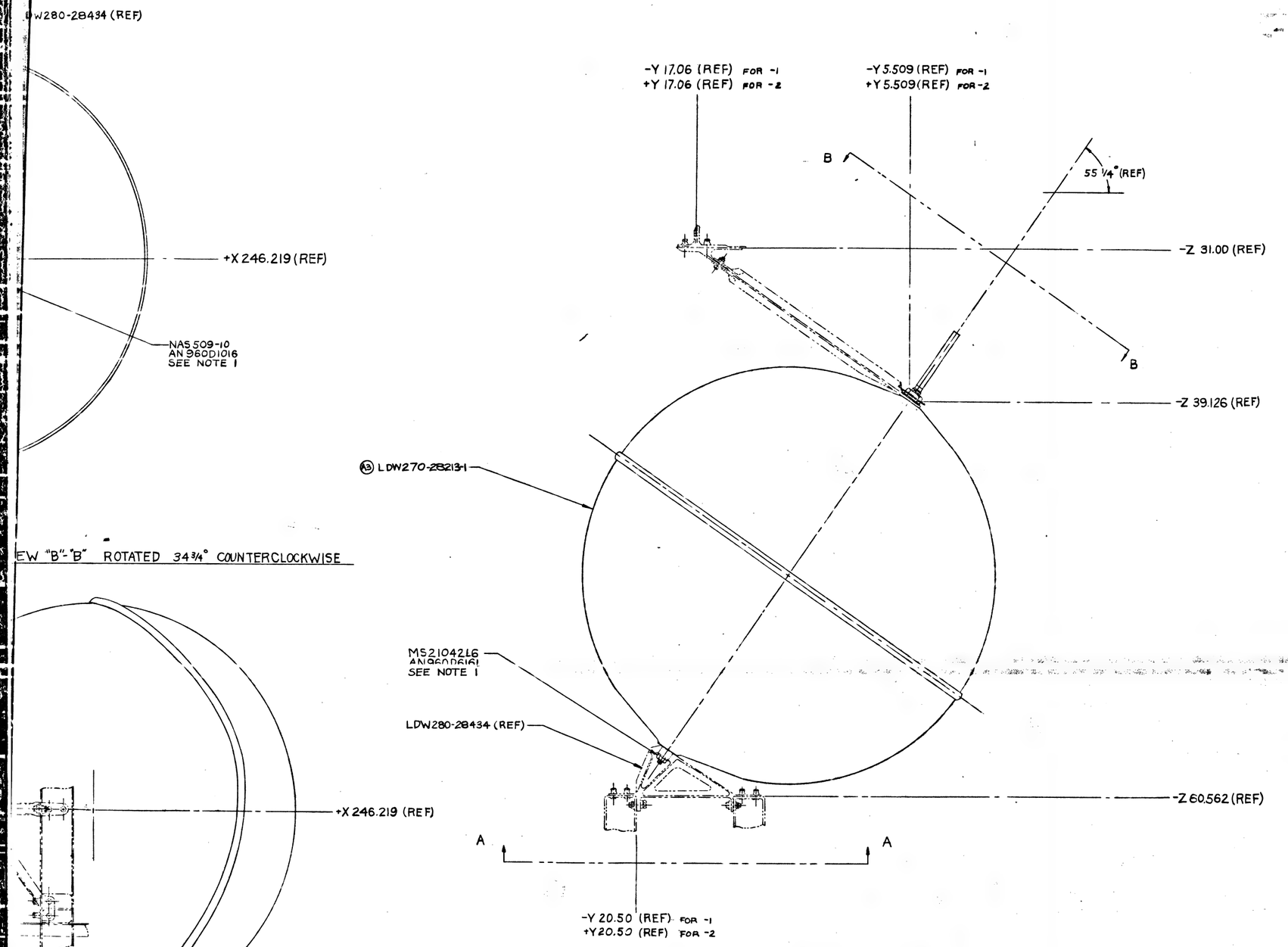
VIEW "A"-"A"



LDW270-28202-1 HELIUM TANK INST'L (SHOWN)
LDW270-28202-2 HELIUM TANK INST'L (OPPOSITE)

NAS 9-1100

CODE IDENT 26512	
LDW270-28202 A	SIZE 3.00



VIEW "B"-"B" ROTATED 34 3/4° COUNTERCLOCKWISE

VIEW "A"-"A"

LDW270-28202-1 HELIUM TANK INST'L (SHOWN)
LDW270-28202-2 HELIUM TANK INST'L (OPPOSITE)

NOTES:
1. TORQUE VALUE ON NUT TO BE 160 TO 190 INCH LBS.
2. ~~COMMERCIAL PART - LSC270-711 SEE SHEET 2 CONTROL DRAWING BEFORE ORDERING~~
3. FOR MOCK UP OF THIS INSTALLATION USE MOCK UP HELIUM TANK LMU270-70016-1

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.	
FILLET AND INSIDE CORNER RADII TOLERANCES .015R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING?	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
250 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ⚡ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

DWG SIZE 34 X 44
PRINTING INFO ONLY
FULL SIZE SHEET AREA OR X
1/2 SIZE SHEET AREA (1/4 OF FULL)
PRINT TRIM LINE
SQ. FT.
SQ. FT.

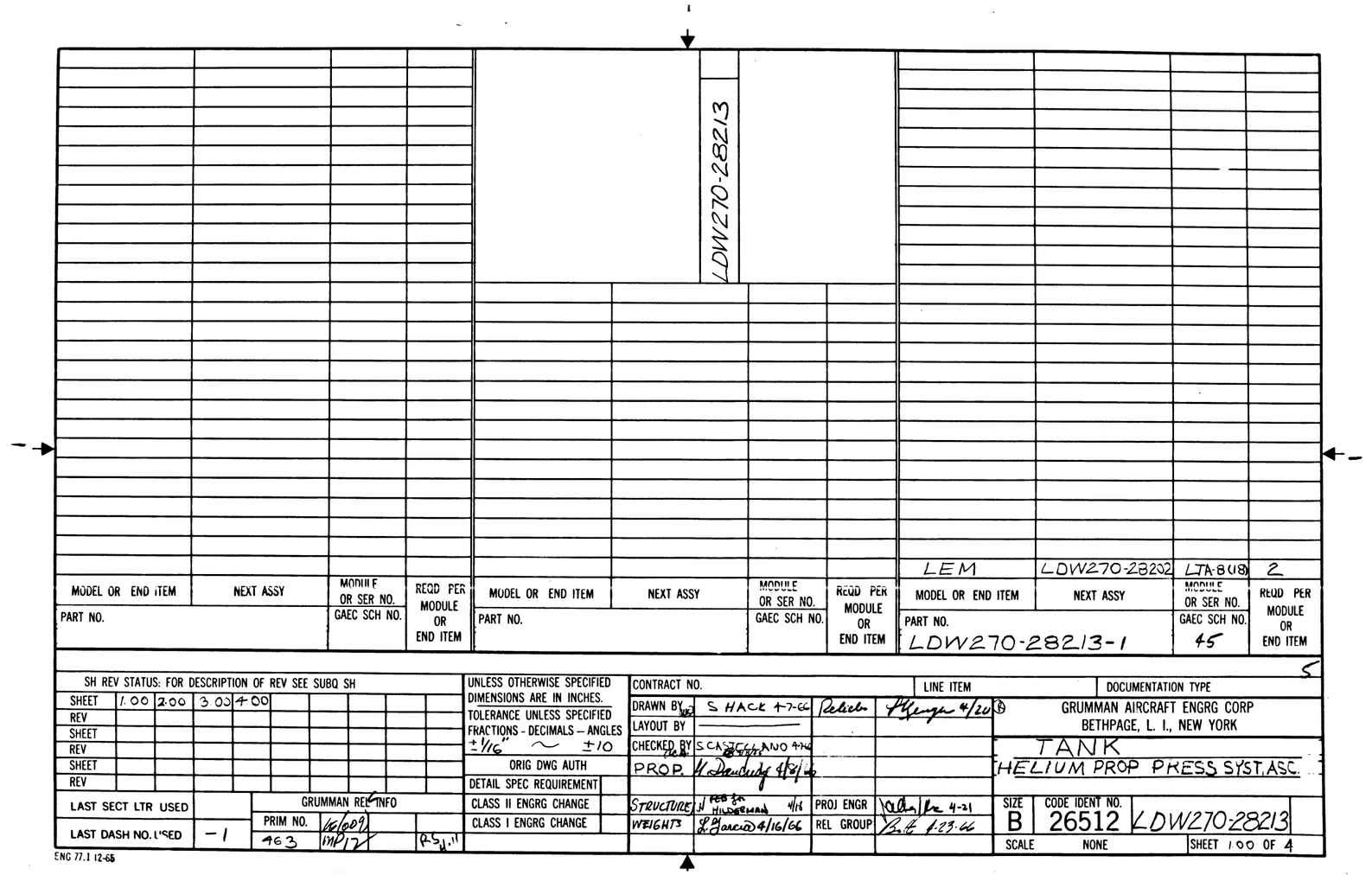
LDW270-28202A
LDW270-28202A
11/27

0-2-4-0-2 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE J	CODE IDENT NO. 26512	LDW270-28202	A
LTA-8(18) MODEL OR LRU ITEM	SCALE 1/2	SHEET 3.00	

CODE IDENT	26512
LDW270-28202 A	SIZE 3.00

4 3 2 1 2/2



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		LEM	LDW270-28202	LTA-8(1B)	2
								PART NO. LDW270-28213-1		GAEC SCH NO. 45	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00	2.00	3.00	4.00						
REV										
SHEET										
REV										
SHEET										
REV										

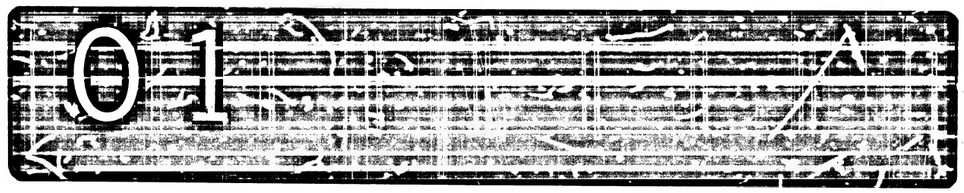
LAST SECT LTR USED		GRUMMAN REL INFO			
LAST DASH NO. USED	-1	PRIM NO.	463	6/6/69 IMP 1/7	12-5-67

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/16" ~ ±10

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO.			LINE ITEM	DOCUMENTATION TYPE
DRAWN BY	S HACK 4-7-66	Rebich	H Kenyon 4/20	GRUMMAN AIRCRAFT ENGRG CORP
LAYOUT BY				BETHPAGE, L. I., NEW YORK
CHECKED BY	S CASTELLANO 4-7-66			TANK
PROP.	M Dawidczyk 4/8/66			HELIUM PROP PRESS SYST. ASC.
STRUCTURE	H FEB for HILDEBRAND 4/18	PROJ ENGR	Allen Poe 4-21	SIZE B | CODE IDENT NO. 26512 | LDW270-28213
WEIGHTS	L Garcia 4/16/66	REL GROUP	S.H. 1-23-66	SCALE NONE | SHEET 1.00 OF 4

ENG 77.1 12-65



NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
1		LSC270-711000E		TANK ASSEMBLY							
-1		LDW270-28213-1	E	TANK							

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW270-28213

SCALE NONE SHEET 2 00

ENG 77.2 7-65

01

NAS 9-1100

NOTES

1 THE FOUR HOLES SHALL BE ON A COMMON PLANE WITHIN ±2 INCHES
2 AFTER DRILLING ELECTRO-ETCH PART NUMBER AND "DO NOT PRESSURIZE" PER LSP14-4706
3 STORAGE TANK BODY SHALL BE CLEANED IN ACCORDANCE WITH LSP-14-7072 AND SHALL CONFORM TO LEVEL "B" OF LSP-14-0011. TUBE SHALL BE CLEANED IN ACCORDANCE WITH LSP-14-7072 AND SHALL CONFORM TO LEVEL "L" OF LSP14-0011. AREA TO BE GLASS BEAD PEENED IS .50 MINIMUM FROM OPEN END
4 COMMERCIAL PART-SEE SPECIFICATION CONTROL DRAWING LSC270-711 BEFORE ORDERING.

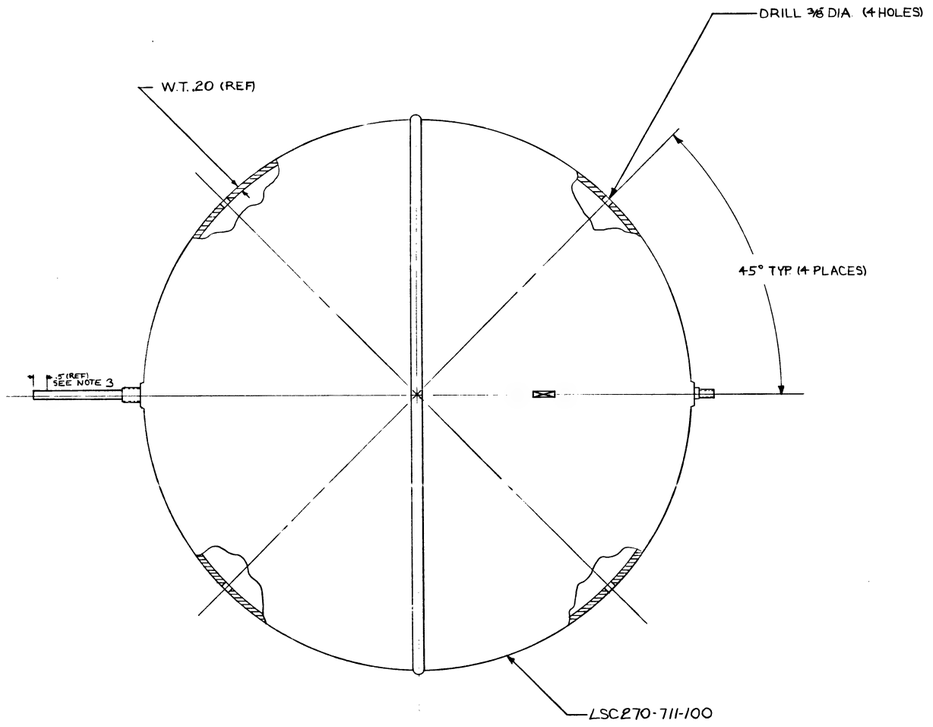
GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-28213	
SCALE NONE			SHEET 3.00

ENG 73.1 6-64

01 A

NAS 9-1100

LDW270-28213



LDW270-28213-1 (TANK)

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

ELECTRO ETCH PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.	SEE NOTE 2 √
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010; .063R TO .250R ± .015; OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ⚡ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK		
LTA-8(S)	SIZE D	CODE IDENT NO 26512	LDW270-28213
MODEL OR END ITEM	SCALE HALF		SHEET 4 OF 00

01

NAS 9-1100

LDW 270-28300A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW 270-28300-1		GAEC SCH NO. 55	
								LEM	LDW 280-28508	LTA-8(18)	1

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	1.10	2.00	3.00					
REV	A	A							
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	E	GRUMMAN REL°INFO A	
LAST DASH NO. USED	-1	PRIM NO. 486	mPi7

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS — ANGLES

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100 LINE ITEM 9 DOCUMENTATION TYPE II

DRAWN BY	P.R. CAPPELLI 5-13-66	WEIGHTS	J. Knudsen 6-10-66
LAYOUT BY			
CHECKED BY	D. Wade N. Gaul		
G.R. LEADER	J. Peretti 5/13/66		
PROPULSION			
STRESS	6/2/66	PROJ ENGR	Plymbell 13 June
STRUCT.	6/3	REL GROUP	C Cramanzer 6-15
RELIABILITY	6-9		

® GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

INSTALLATION
PROP-HELIUM PRESSURIZATION
DESCENT STAGE-SUB-SYSTEM

SIZE	CODE IDENT NO.		
B	26512	LDW 270-28300	A

SCALE 1/5 NONE SHEET 1.00 OF 4

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1, 1.10						EO A1	REVISE N/A NO. - LDW280-28508 WAS LDW280-28510. SH. 1 OF 4 WAS SH. 1 OF 3, ADDED SH. 1.10	LTA-8(18)	✓		GARY KOADS 4-2-64		X

CHG APPROVED	LTR	GROUP LDR	PROPULSION	STRESS	STRUCTURES	RELIABILITY	WEIGHTS
	A						

ENG 77.16 3-66

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28300	A

SCALE NONE SHEET 1.10

01 NAS 9-1100

QTY PER ASSEMBLY	PART NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
3	AN960D10L	E		WASHER	STD PART						
3	GB5111J3-2			BOLT	GRUMMAN STD						
1	LDW270-28306-1			EXPL VALVE INSTL	SEE DWG						
1	-28305-3			DISC COUP INSTL							
1	-28305-1			DISC COUP INSTL							
1	-28304-1			CHECK & RELIEF VA INSTL							
1	-28303-1			HEAT X INSTL							
1	-28302-1			TANK SIM INSTL							
1	-28301-1			MODULE ASSY							
1	-25451-13			DISC COUP INSTL							
1	-25451-7			DISC COUP INSTL							
1	-25451-5			DISC COUP INSTL							
1	LDW270-25451-1			DISC COUP INSTL	SEE DWG						
-/	LDW270-28300-1	E		HE PRESS SUB-SYSTEM INSTL							

CLEANLINESS LEVEL PER LSP-14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

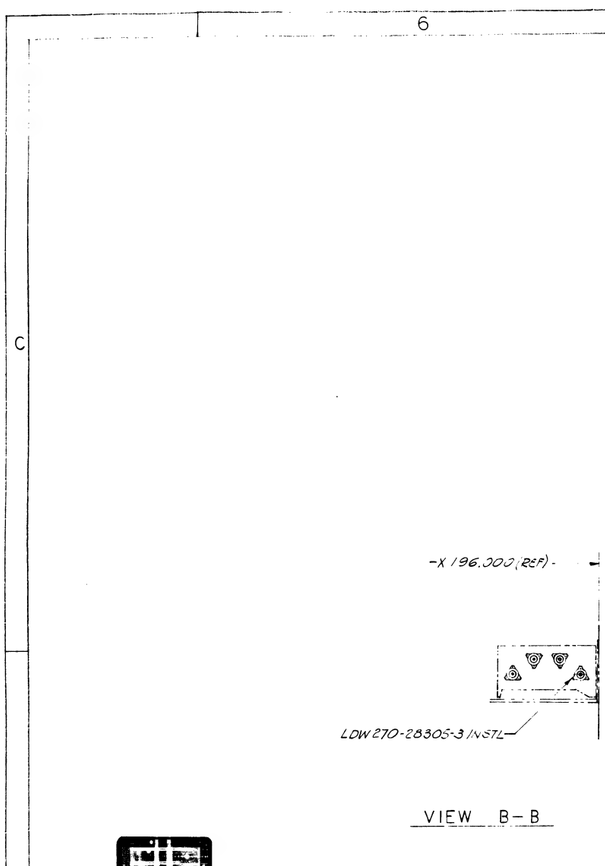
SIZE	CODE IDENT NO.	
B	26512	LDW 270-28300

SCALE NONE SHEET 2.00

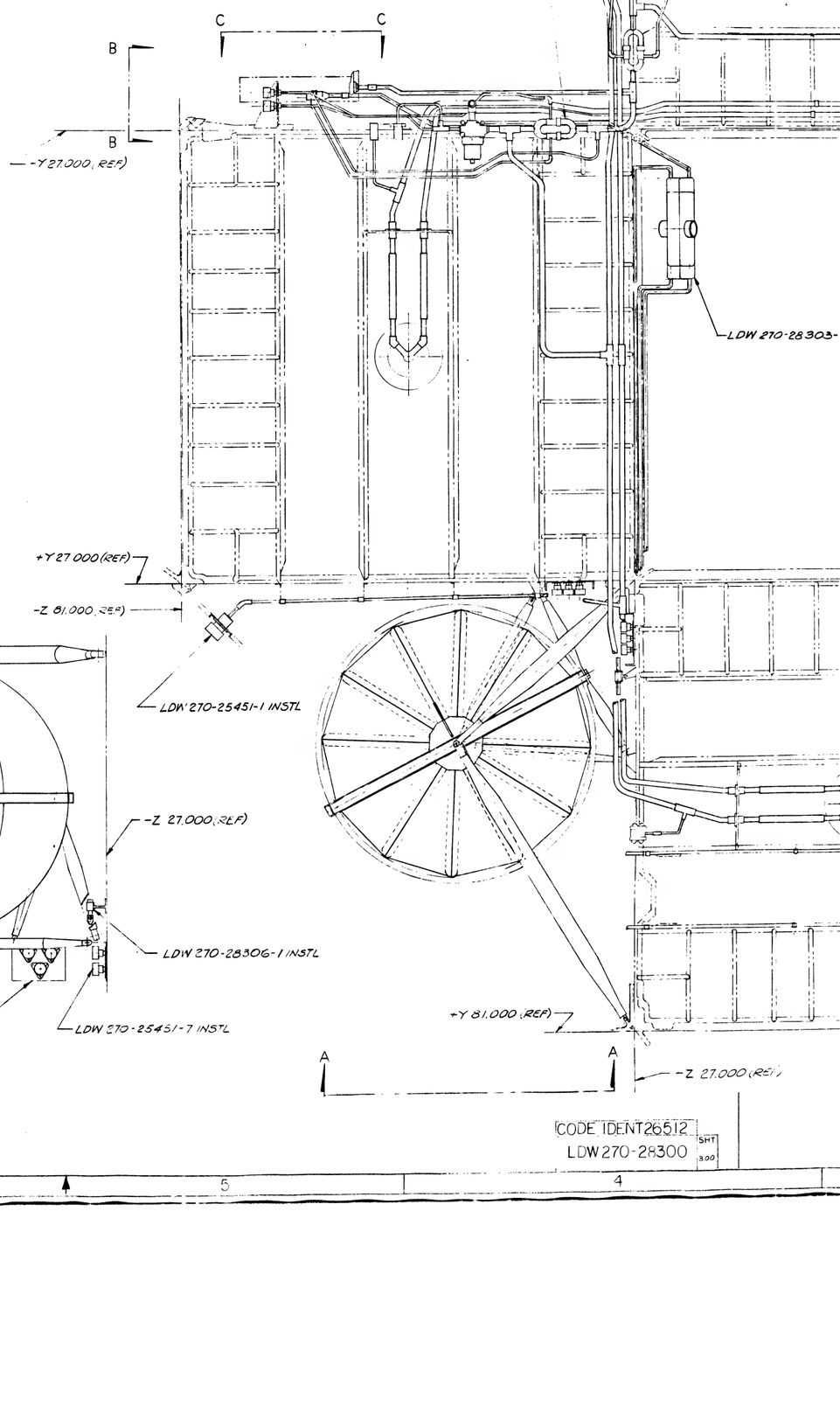
ENG 77.2 5-64

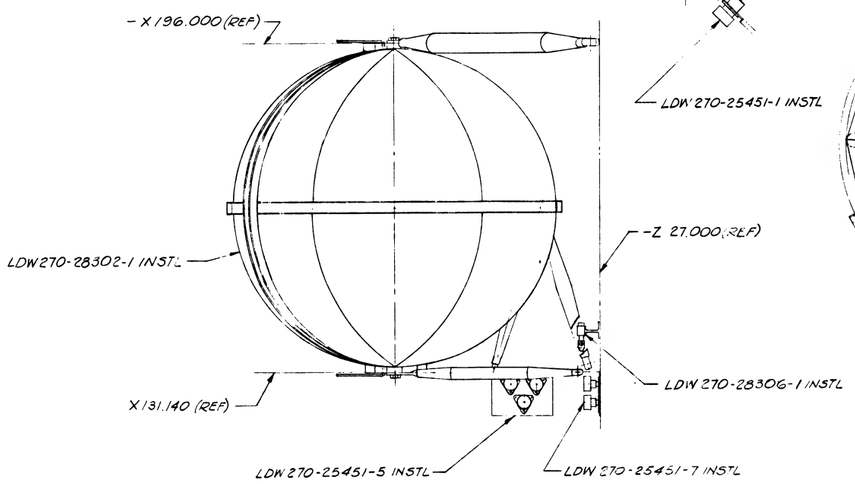
0.1 NAS 9-1100

NAS 9-1100



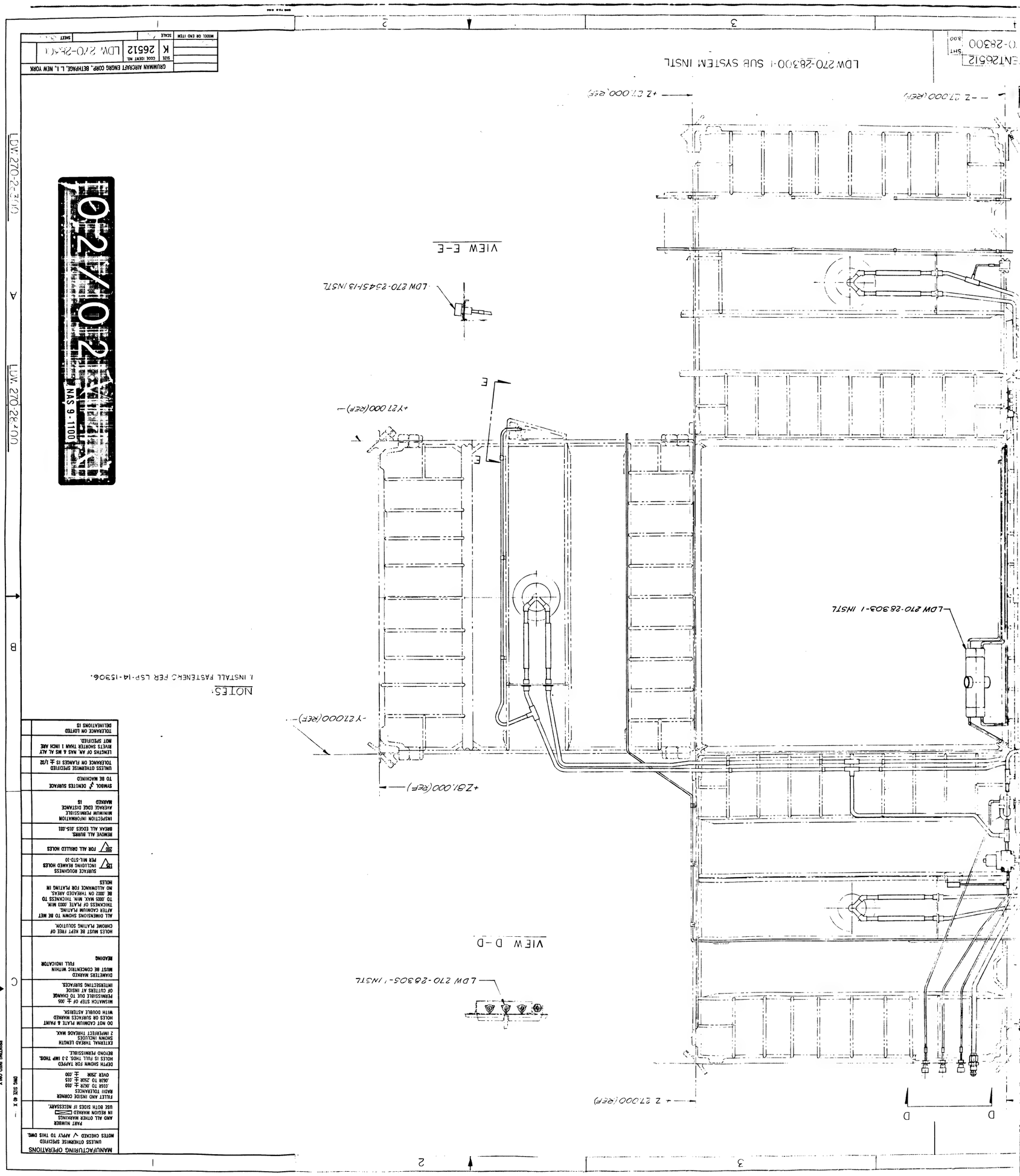
VIEW B-B





VIEW A-A

CODE IDENT 26512
LDW 270-28300
SHT 3.00



NOTES:

1. INSTALL FASTENERS PER LSP-14-15306.

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

PART NUMBER
IN REGION MARKED ▭ AND ALL OTHER MARKINGS USE BOTH SIDES IF NECESSARY.

FILLET AND INSIDE CORNER RADII TOLERANCES
.0368 TO .0528 ± .010
.0528 TO .2528 ± .015
OVER .2528 ± .020

DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.

EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.

DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.

MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.

DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING

HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.

ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES

SURFACE ROUGHNESS
125 INCLUDING REAMED HOLES PER MIL-STD-10

250 FOR ALL DRILLED HOLES

REMOVE ALL BURRS
BREAK ALL EDGES .015-.031

INSPECTION INFORMATION
MINIMUM PERMISSIBLE AEMAGE EDGE DISTANCE MARKED IS

SYMBOL ⚡ DENOTES SURFACE TO BE MACHINED

UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32

LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.

TOLERANCE ON LOFTED DELINEATIONS IS

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L.I., NEW YORK			
	SIZE K	CODE IDENT NO. 26512	LDW 270-2840	
	MODEL OR END ITEM	SCALE	SHEET	

LDW 270-2840

LDW 270-2845

LDW 270-2850

DWG SIZE A 4

FULL SIZE SHEET AREA 9 1/2 x 14 1/4

PRINT TRIM LINE

PRINTING CONTROL

FULL SIZE 1/2

TOL

02/02/20
GRUMMAN AIRCRAFT ENGINEERING CORP.
SYN 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 22.1 REV 3-65

DWG NO. LDW270-28300 | EO NO. B1
CONTROL INFO NO. LM270-1238

IN B/M & F/D FOR -1 INSTALLATION:

REMOVE LDW270-28304-1 CHECK & RELIEF VALVE INSTL

REMOVE LDW270-28305-1 & -3 DISCONNECT COUPLING INSTL

LFM

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓	LCD 1071-33	LCRP 270-01 (5)

REASON FOR EO: TO PERMIT INSTALLATION OF BLAST DEFLECTOR SHIELD

DESCRIPTION OF EO: IN B/M & F/D FOR -1 INSTL: REMOVED LDW270-28304-1 AND LDW270-28305-1 & -3.

GAEC EO RELEASE: VK 4/11/68

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: -1 REWORK	SCRAP	APPROVED BY	DATE		SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
LM	LFM #126	LTA-8 (18)		✓		-1			4/4/68	PROP			4/4/68			4/4/68	

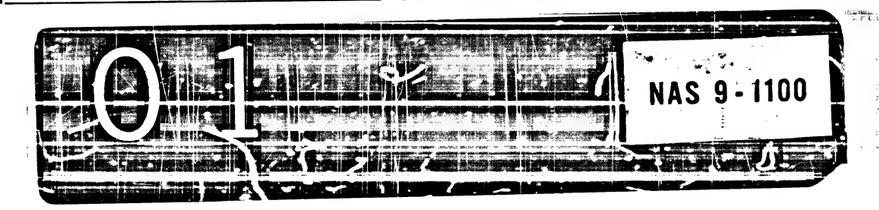
PRIORITY: C

DRAWING TITLE: INSTALLATION – PROP HELIUM PRESSURIZATION DESCENT STAGE – SUB SYSTEM

DRAWING NO.: LDW270-28300

EO NO.: B1

ISSUED BY J. REBHOLZ 4-4-68 X1471 SECTION PROPULSION GROUP NO. 345 PL 25



ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENGINEERING ORDER

DWG NO.	EO NO.
LDW270-28300	B2
CONTROL INFO NO. LM270-1314	

*DISSRIPTION OF E.O.

THIS E.O. CANCELS E.O. B1

LFM

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCR 1021-33	LCRP 270-02 (5)

REASON FOR EO: LED 259-2 REV D

DESCRIPTION OF EO: NOTED *

GAEC EO RELEASE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP
LM	LFM 126	LTA-8 (18)		✓		✓	

APPROVED BY								
DATE				8-2-68			8-2-68	8-9-68
	PROP	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	INSTL-PROP HELIUM PRESSURIZATION DESCENT STAGE - SUB-SYSTEM	LDW270-28300	B2

ISSUED BY J. REBHOLZ 8-2-68 x1471 SECTION PROPULSION GROUP NO. 345 PL 25

01

NAS 9-1100

REVISIONS

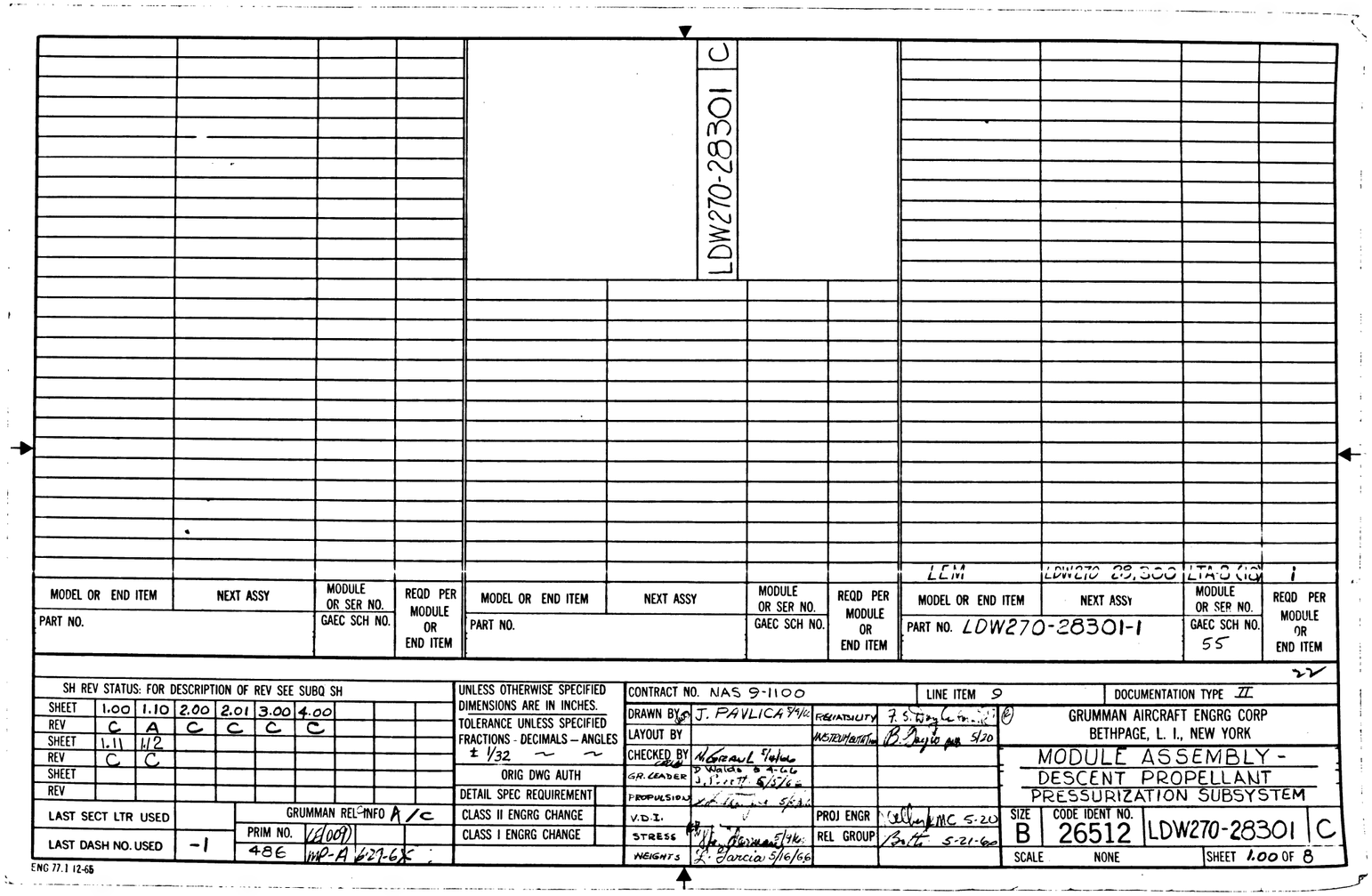
CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A									ON SHEET 1.00 - 1 OF 6 WAS 1 OF 5, ADDED SHEET 1.10					X	X
	1	4.00	7F 7G						REMOVED DIMS.- 1.062 (REF), 5.938 (REF), & 8.250 (REF). DIMS. - 1.926 ±.010, 2.416 ±.010, 1.550 ±.010, 2.450 ±.010, .770 ±.010 & 6.720 ±.010 WAS 1.894 (REF), 2.406 (REF), 1.550 (REF), 2.450 (REF), .770 (REF) & 6.720 (REF).	LTA-8	✓		N. GRAUL 6-25-66		
	2	4.00	5D						ADDED DIM ± TYP.						
	3	4.00	5D						DIM 1 7/16 TYP WAS 11/16 TYP.						
	4	4.00	6C						CALLOUT - REAM .1900-.1920 DIA (LOCATE FROM LDW270-816-11 2 PLACES) WAS LINE REAM (.1900-.1920).						
	5	4.00	5F						REMOVED DIM 1/16.						
	6	4.00	7F						GR500A-4C (7 PLACES) WAS GR500A-4C (8 PLACES) REMOVED - "FINAL HOLE SIZE TO BE .129-.132"						
	7	4.00	6G						GB511J-06-16 WAS GB511J-06-8						
	8	4.00	5G						510790-203 WAS 5107090-203						
	9	4.00	3D						REMOVED DIM 1½ TYP (REF).						
	10	4.00	1E						LDW280-17834-21 WAS LDW280-17834-11						
	11	4.00	2G						CALLOUT - GC12H-16, GB511J-08-3, AN960D8 WAS DRILL #11 (.190-.196), GC12H-16, GB511J-3-3, MS21043-3 & AN960D10						
	12	3.00							REMOVED NOTE "2-" FITTINGS SHALL BE CLEANED PER LSP-14-7072 AND SHALL CONFORM TO LEVEL "L" OF LSP-14-0011". REMOVED FROM NOTE "3-" FITTING THREADS TO BE LUBRICATED WITH DRILUBE TYPE 822 MMSN 306A."						
	13	1.00						Ⓒ	IN MODEL BLOCK FOR-1 REMOVED - LEM, LDW270-51300, LEM 1 (31), 1 REQD	LEM-1					

FOR CONTINUATION OF REVISIONS SEE SHEET 1.11

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28301	A
SCALE NONE		SHEET 1.10	



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		LEM	LDW270 28,300	LTA-8 (10)	1
								PART NO. LDW270-28301-1		GAEC SCH NO. 55	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	1.10	2.00	2.01	3.00	4.00			
REV	C	A	C	C	C	C			
SHEET	1.11	1/2							
REV	C	C							
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO	A/C
LAST DASH NO. USED	-1	PRIM NO.	(4009)
			486 MP-A 627-65

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS — ANGLES ± 1/32 ~ ~	
ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS 9-1100			LINE ITEM 9	DOCUMENTATION TYPE II
DRAWN BY	J. PAVLICA 5/9/66	RELIABILITY	F.S. Day 5-20	GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE, L. I., NEW YORK
LAYOUT BY		INSTRUMENTATION	B. Day for 5/20	
CHECKED BY	H. Graul 5/16/66			MODULE ASSEMBLY - DESCENT PROPELLANT PRESSURIZATION SUBSYSTEM
GR. LEADER	D. Walch 5-17-66 J. Tuttle 5/17/66			
PROPULSION	[illegible] 5/16/66			
V.D.I.		PROJ ENGR	[illegible] MC 5-20	SIZE B | CODE IDENT NO. 26512 | LDW270-28301 | C
STRESS	[illegible] 5/16/66	REL GROUP	Boots 5-21-66	SCALE NONE | SHEET 1.00 OF 8
WEIGHTS	L. Garcia 5/16/66			

ENG 77.1 12-65

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET 1.12

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
B	1	1.11,2,4						LE0270-6	ON -1 LDW280-17388-236DSH-8 WAS LDW280-17388-169 DSH-8, LDW280-17388-245 DSH-8 WAS LDW280-17388-170 DSH-8, LDW280-17388-240DSH-8 WAS LDW280-17388-173 DSH-8. ADDED SH. 1.11	NOTED	✓		GARY KORDES 9-3-66		
	2	1.11,3, 4,2.01					✓	EO B2	REMOVED NOTE 5. IN FIELD # B/M GB511J-3-5 WAS GB511J-4-5 ADDED AN960C10L(2).	LTA-8(18)	✓				
	3	1.11,3, 2,2.01, 4					✓	EO B3	ON-1 1.-REMOVE FROM FIELD # B/M 510790-203 (2 PLACES)(SEE NOTES 6-8); GR500A-4C(7 PLACES), LDW280-17834-15, LDW280-17834-17. 2.-ON -1 IN FIELD # B/M REMOVED DRILL #28(.139-.145), GB511J-06-16, MS21043-06(8PLACES) 3.-REMOVED NOTES 6,7,#8, REVISED NOTE 11 TO REMOVE GR500A-4C INSTL REQ. 4.-ADDED NOTE 12, ADDED(SEE NOTE 12) TO LSC263-381-1 CALLOUT(2)	LTA-8(18)	✓				
	4	1.11,2, 2.01,4					✓	LE0270-9	FOR -1 IN FIELD # B/M- MS28775-011(2)WAS MS28775-C02, LDW280 17388-246 DSH-8 WAS LDW280-17388-240 DSH-8.	LTA-8	✓				
	5	1.11,3						EO B5	ADDED TO NOTE#4 EXCEPT PARA. 4.32 RADIO-GRAPHIC INSPECT NOT REQ'D	LTA-8	✓				
C	1	1.11,2,1 2.01,4						EO C1	REMOVED: LDW280-17176-1,-3,-5,#-7; GC12H-8, GB 511J-3-3, MS21043-3(4 PLACES). IN MOD BLK LDW270-28301-1 WAS LDW280-28301-1	LTA-8	✓				
	2	1.11,2, 3,4					✓	EO C2	IN B/M ADDED "SEE NOTE #13 TO LSC269-380-1, LSC269-381-1 # LSC269-382-1, IN F/D ADDED "SEE NOTE #13" TO CALLOUTS LSC269-380-1, LSC269-381-1, LSC269-382-1. IN NOTES ADDED NOTE #13	LTA-8	✓				

CHG APPROVED	LTR	GROUP LDR	PROP	VEH. DES. INT	STRESS	WEIGHTS	RELIABILITY	INSTRUMENT.
	B							
	C							

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28301	C

SCALE NONE SHEET 1.11

ENG 77.16 3-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
C	3	1.12 2.00 4.00	3B					E.O.C3	SH. 1 OF 8 WAS 1 OF 7. FOR -1 ASSY: LSC270-816-11-100 SIMULATED REDUCING VALVE (WAS) LSC270-816-11-1 REDUCING VALVE.	LTA-8	V		BRODA 9-30-66		

CHG APPROVED	LTR	GROUP LDR	PROP	VEH. DES. INT	STRESS	WEIGHTS	RELIABILITY	INSTRUMENT				
	C											

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28301	C

SCALE NONE SHEET 1.12

ENG 77.18 3-66

01 NAS 9-1100

C.L.	QTY PER ASSEMBLY	PART NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
L	1	LSC 270-816111-100	S		SIMULATED REDUCING VALVE	SEE NOTE #1						
L	1	LSC 270-814-1	S		FILTER	SEE NOTE #1						
L	2	LSC 269-382-1	E		UNION	SEE NOTE #13						
L	2	LSC 269-381-1			TEE	SEE NOTE #13						
L	1	LSC 269-380-1			TEE	SEE NOTE #13						
L	1	LSC 269-218-8	E		UNION	SEE NOTE #1						
L	1	LDW390-28070-3	S		SOLE LATCH VALVE	SEE DWG						
L	1	LDW390-28070-1	S		SOLE. LATCH VALVE							
C	1	LDW280-23681-1	E		PLATE ASSY							
C	1	LDW280-17834-13			TEE							
C	1	LDW280-17834-21			TEE							
C	1	LDW280-17388-246DSH8			TUBE							
C	1	-172V-2			TUBE ASSY							
C	1	-171V-2			TUBE ASSY							
C	1	-245DSH8			TUBE							
C	1	LDW280-17339-236DSH8	E		TUBE	SEE DWG						
L	1	LDW270-28301-1	S		MODULE ASSY							
	-1											

CLEANLINESS LEVEL PER LSP-14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

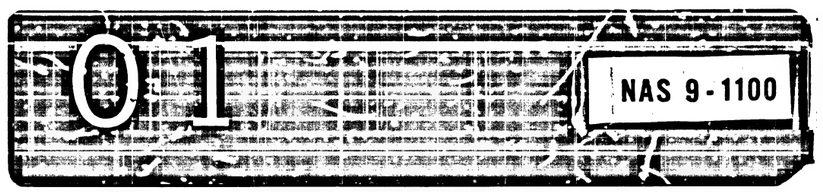
I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH -L PC19-2 (GRUMMAN) LPC19-3 (VENDOR)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28301	C

SCALE NONE SHEET 2.00

ENG 77.2 5-64



C.L	QTY PER ASSEMBLY	PART NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
C	2	MS28775-011	E		PACKING	STD PART						
C	9	MS21043-3			NUT							
C	8	MS21043-06			NUT							
C	24	MS20470AD3			RIVET							
	1	AN960D8			WASHER							
C	6	AN960C10L			WASHER							
C	2	AN815-2C			UNION							
C	2	AN735D31			CLAMP	STD PART						
C	1	GC12H-16			CLAMP	GRUMMAN STD.						
C	3	GB511J-3-5			BOLT							
C	6	GB511J-3-3			BOLT							
	1	GB511J-08-3	E		BOLT	GRUMMAN STD						
///	-1											

CLEANLINESS PER LSP14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH LPC 19-2 (GRUMMAN) LPC 19-3 (VENDOR)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28301	C

SCALE NONE SHEET 2.01

ENG 77.2 5-64

01

NAS 9-1100

NOTES:

1. COMMERCIAL PART SEE SPECIFICATION CONTROL DRAWING LSC270-816, LSC270-814 & LSC269 BEFORE ORDERING.
2.
3. TORQUE MECHANICAL FITTINGS 50-60 INCH-LBS.
4. INDUCTION BRAZING OF FITTINGS SHALL BE IN ACCORDANCE WITH LSP-14-6303, EXCEPT PARAGRAPH 4.3.2. RADIOGRAPHIC INSPECTION NOT REQUIRED.
5. LDW270-28301-1 ~~MODULE ASSEMBLY SHALL BE TESTED IN ACCORDANCE WITH LTP 270-301 "PRE-INSTALLATION TEST PLAN FOR MODULE ASSEMBLY DESCENT HELIUM PROPELLANT PRESSURIZATION SUB-SYSTEM."~~
6. 510790-203 TRANSDUCER SHALL BE PREPARED IN ACCORDANCE WITH LSP-14-17450 PRIOR TO BRAZING INTO SYSTEM.
7. ELECTRICALLY BOND 510790-203 TRANSDUCER IN ACCORDANCE WITH LSP 390-001.
8. ~~FOR~~ ELECTRICAL INTERFACE REFER TO INTERFACE CONTROL DOCUMENT LID 360-20001. FOR MECHANICAL INTERFACE REFER TO LID 360-20210.
9. TUBE STUBS SHALL BE CAPPED PER LSP14-009 FOR SHIPMENT AND STORAGE. REMOVE CAPS PRIOR TO BRAZING INTO SYSTEM.
10. INSTALL AN960C10L WASHER ON BOTH SIDES OF TEE BRACKET BETWEEN BRACKET AND AN735D31 CLAMP.
11. INSTALL MS20470AD3 RIVETS IN ACCORDANCE WITH LSP 14-15302 ~~INSTALL CR500A-4C BLIND RIVETS IN ACCORDANCE WITH LSP14-15303~~
12. -4 LEG OF LSC 269-381-1 TEE MAY BE LEFT OPEN TO PREVENT PRESSURIZATION.
13. LSC269-228-8 MAY BE USED AS ALT FOR LSC 269-380-1, LSC269-258-7 MAY BE USED AS ALT FOR LSC 269-381-1, LSC269-224-8 MAY BE USED AS ALT FOR LSC269-382-1

ENG 72.1 6-64

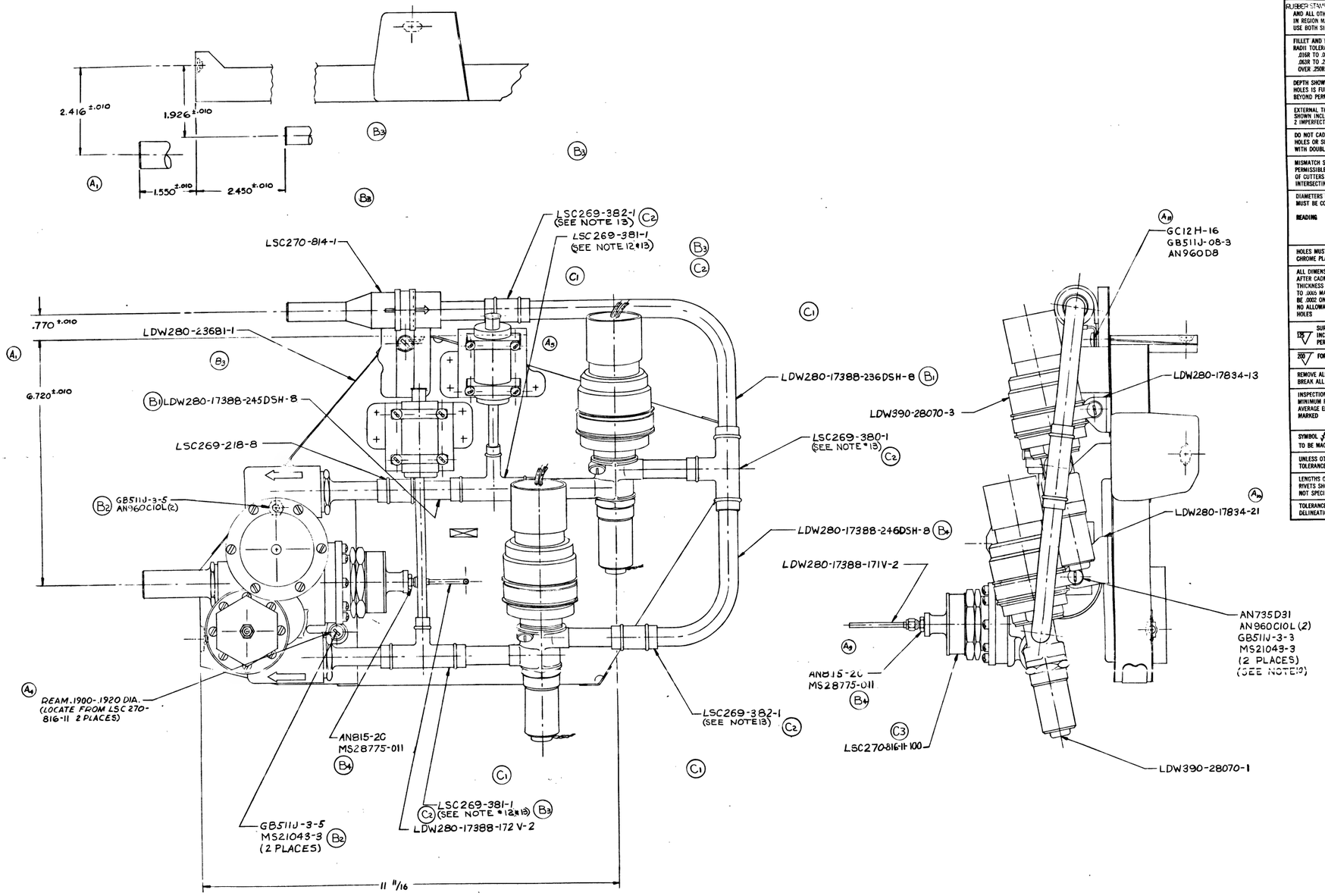
GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28301	C

SCALE NONE | SHEET 3.00

01

NAS 9-1100



LDW270-28301-1 HELIUM MODULE ASSEMBLY

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010; .063R TO .250R ± .015; OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	√
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	√
TOLERANCE ON LOFTED DELINEATIONS IS	

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LEM	SIZE E	CODE IDENT NO. 26512	LDW270-28301 C
MODEL OR ERD ITEM	SCALE FULL		SHEET 4-00

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG. NO. LDW270-28301 | EO NO. B5
CONTROL INFO NO. LEM-2-2589

A.G.

ADD TO NOTE 4
4. INDUCTION BRAZING------PER LSP 14-6303, EXCEPT PARAGRAPH 4.3.2. RADIOGRAPHIC INSPECTION NOT REQUIRED.

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG

REASON FOR E.O.: RADIOGRAPHIC INSPECTION NOT REQ'D

DESCRIPTION OF E.O.: ADDED TO NOTE 4 "EXCEPT PARA. 4.3.2 RADIOGRAPHIC INSPECT. NOT REQ'D"

GAEC E.O. RELEASE: ID | FR

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LTA-8(1B)	

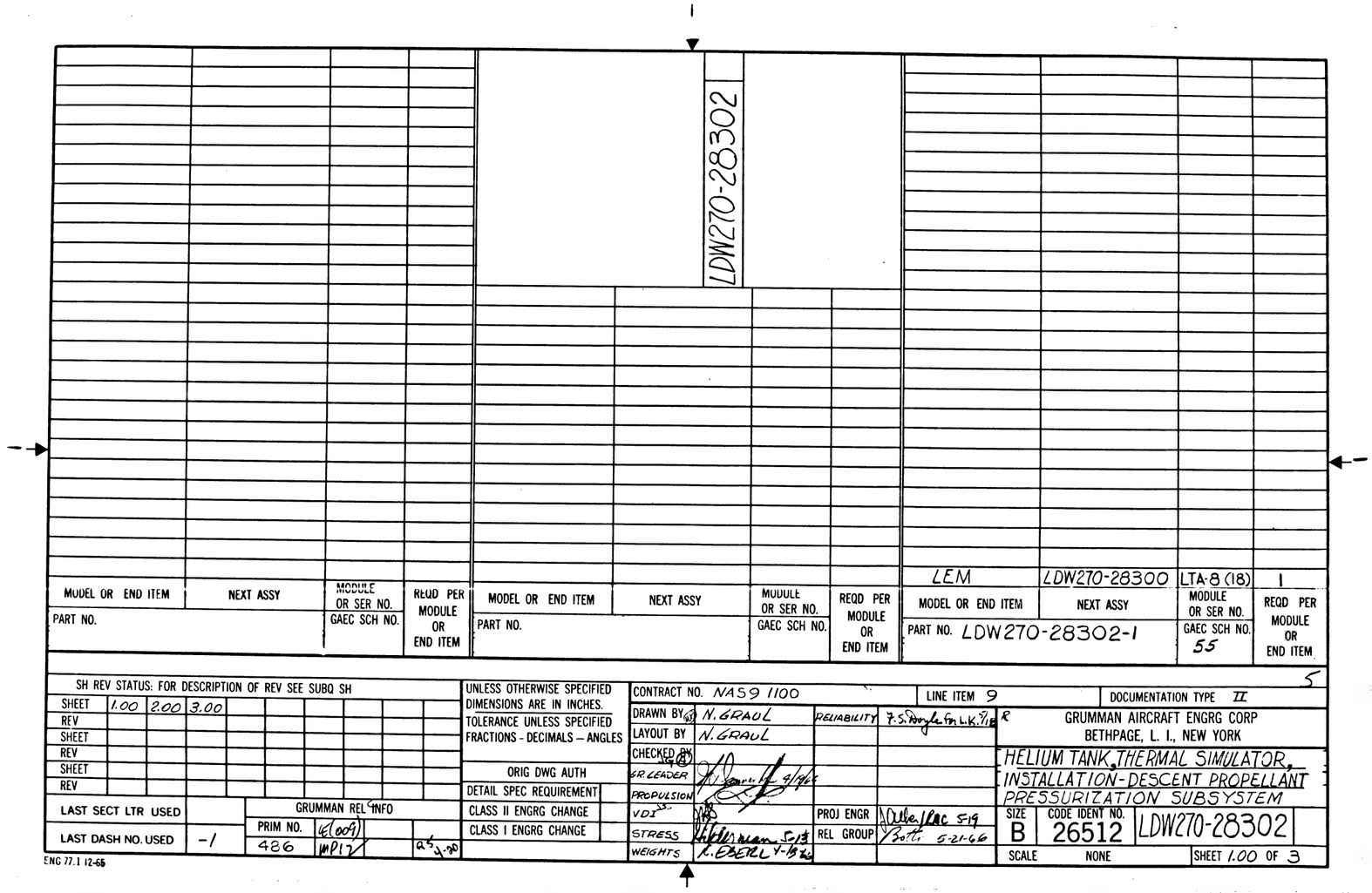
DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD E.O.
DISPOSITION OF PARTS: REWORK ✓ | SCRAP
PRIORITY: C2
DRAWING TITLE: MODULE ASSEMBLY-DESCENT PROPELLANT-PRESSURIZATION SUBSYST.
DRAWING NO.: LDW270-28301
EO NO.: B5

	APPROVED BY	DATE	SUPPORT	RELIAB GROUP	MOCR MANAGER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
	[illegible]	8/19/66		[illegible]	[illegible]	CAW	CAW	[illegible]	
		8-12-66	WTS			9/13/66	8/13/66	8-16-66	8-15-66

ISSUED BY LIAISON J.CHIN x3604 SECTION V.D.I. GROUP NO. 357 PL. 35

01

NAS 9-1100



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW270-28300	LTA-8 (18)	1
PART NO. LDW270-28302-1		GAEC SCH NO. 55	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00	2.00	3.00							
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED	
LAST DASH NO. USED	-1

GRUMMAN REL INFO
PRIM NO. 486 (E(009) MP17) a5 3-20

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS9 1100 LINE ITEM 9 DOCUMENTATION TYPE II

DRAWN BY	N. GRAUL	RELIABILITY	J.S. Douglas for L.K. 5/18
LAYOUT BY	N. GRAUL		
CHECKED BY			
SR. LEADER			
PROPULSION			
VDI		PROJ ENGR	5-19
STRESS	5-13	REL GROUP	5-21-66
WEIGHTS	L. EBERL 4-18-66		

R GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

HELIUM TANK THERMAL SIMULATOR, INSTALLATION-DESCENT PROPELLANT PRESSURIZATION SUBSYSTEM

SIZE	CODE IDENT NO.	
B	26512	LDW270-28302

SCALE NONE SHEET 1.00 OF 3

ENG 77.1 12-65

01 A

NAS 9-1100

LEVEL	QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
A	✓		MS20995NC40	E	SAFETY WIRE	STD PART						
A	1		LDW270-28351-1	E	TANK-THERM. SIMUL.	SEE DWG						
A	1		LDW280M17360-7	E	BOLT	SEE DWG						
A	2		LDW280M17360-5	E	BOLT	SEE DWG						
A			LDW270-28302-1	E	TANK INST'L							
///	-1											

CLEANLINESS PER LSP-14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

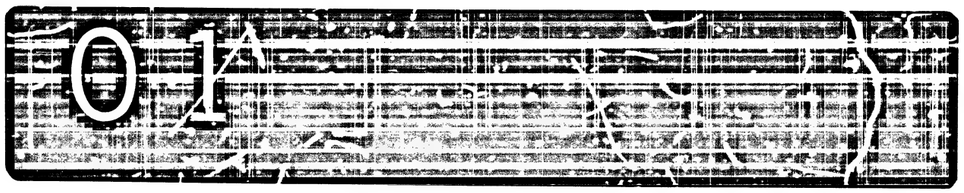
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

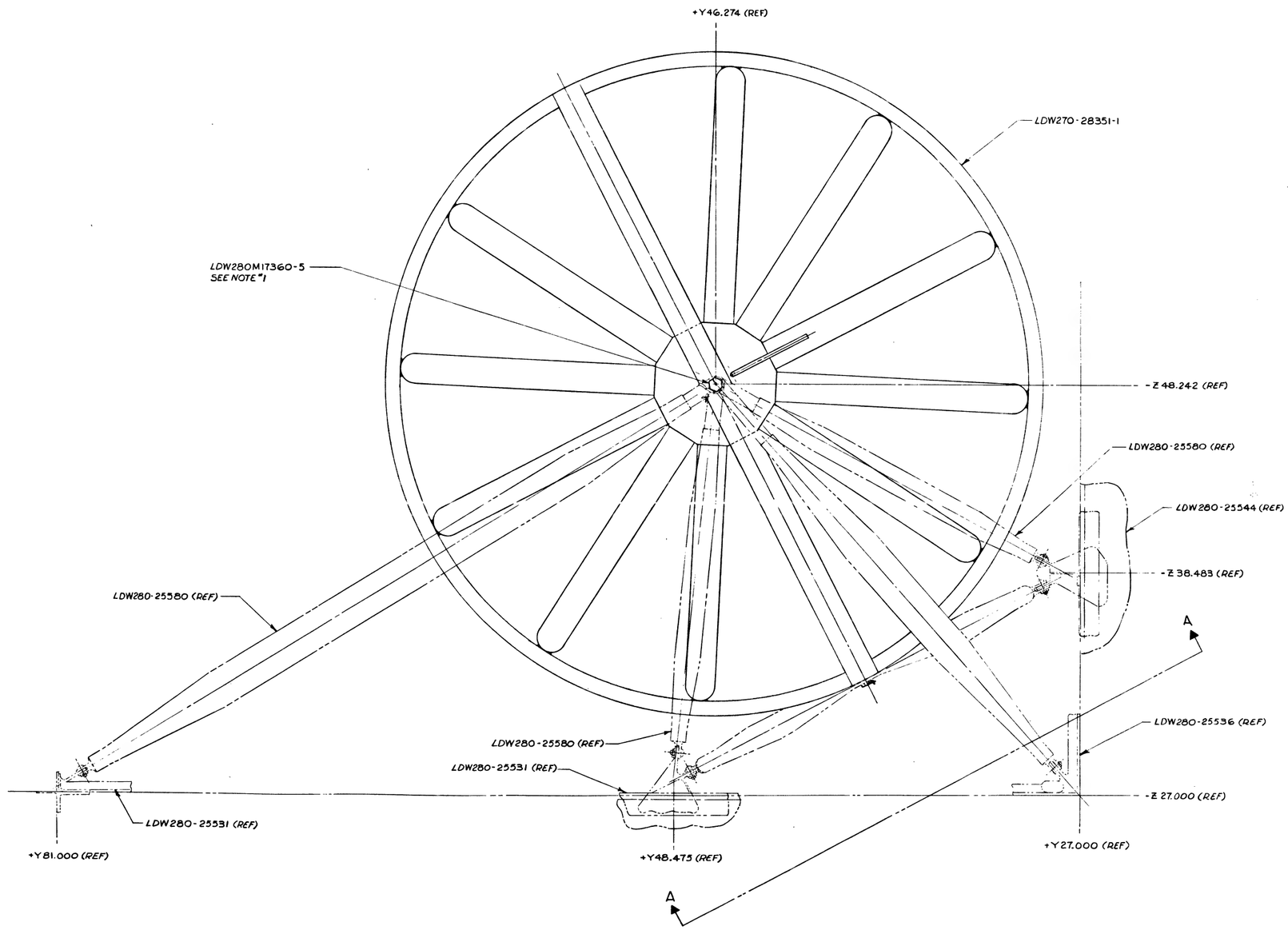
SIZE	CODE IDENT NO.	
B	26512	LDW270-28302

SCALE NONE SHEET 2.00

ENG 77.2 7-65



NAS 9-1100

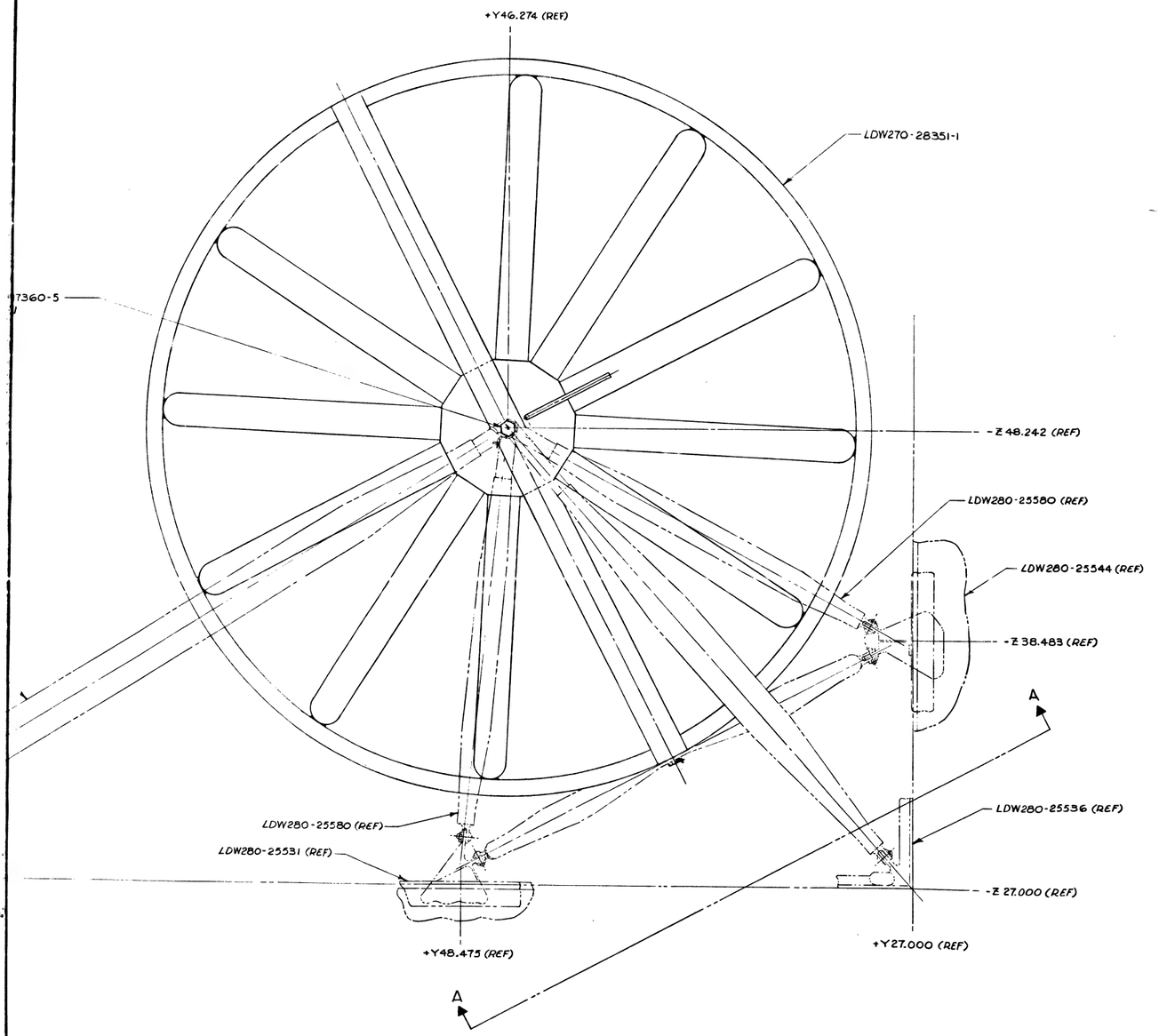


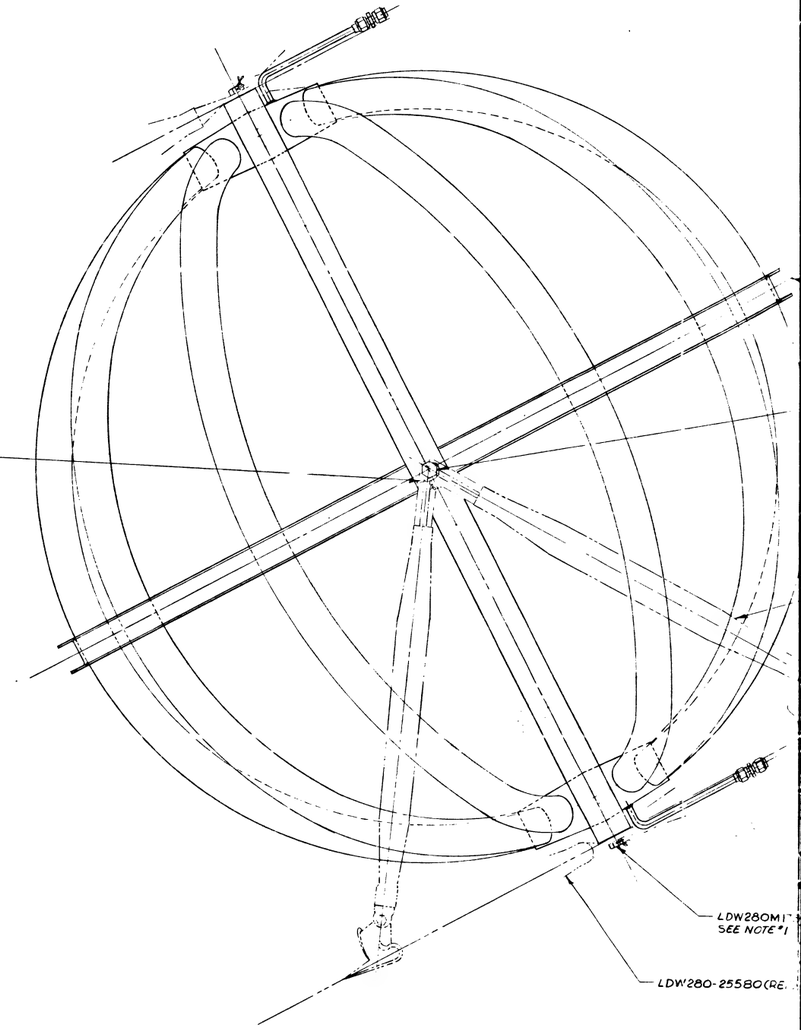
SAFETY WIRE
MS20995NC40
(3 PLACES)

01703 NAS 9-1100

LDW270-2830 TANK

CODE IDENT 26512
LDW270-28302 SHEET 300



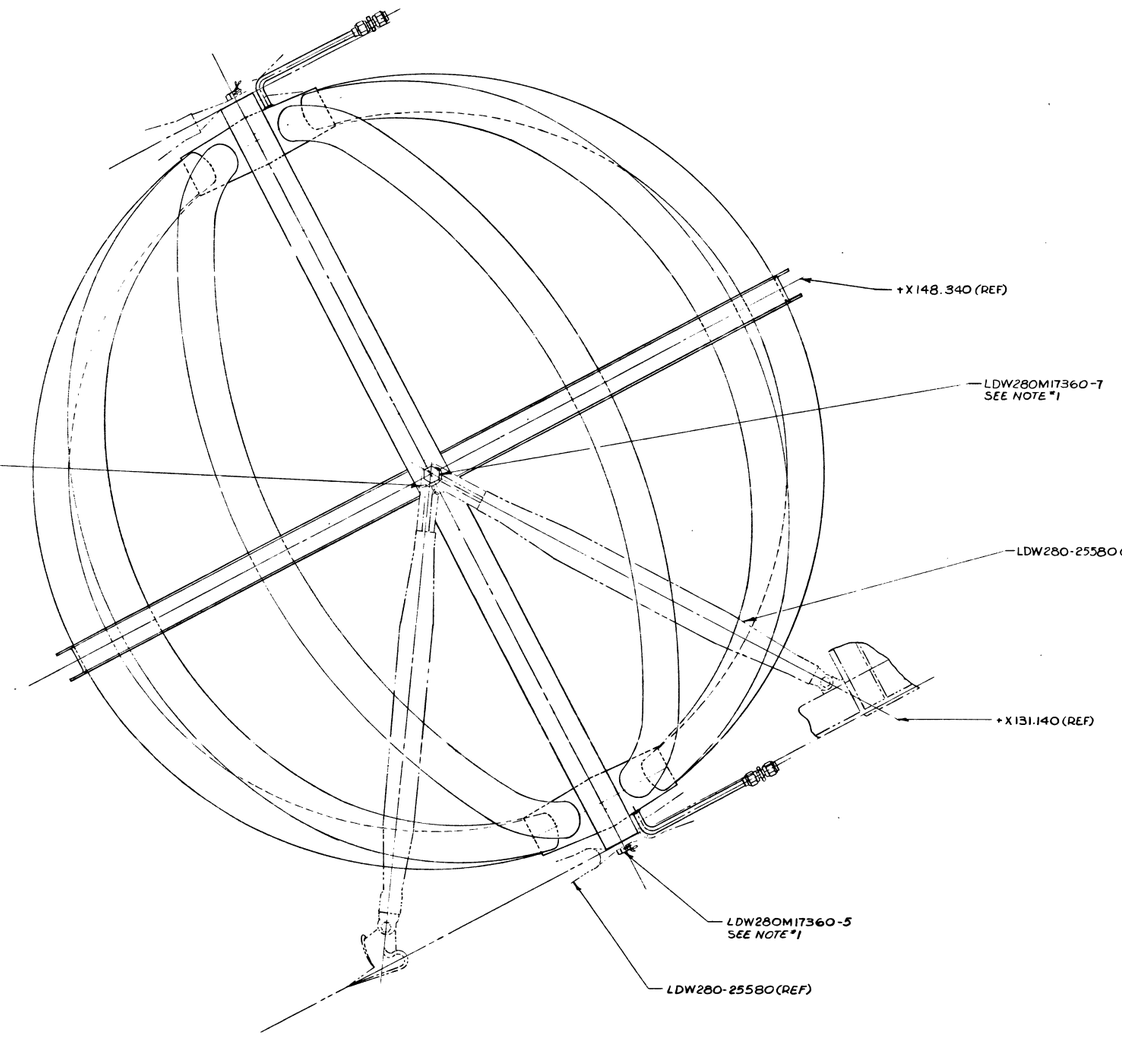


VIEW "A-A"

02103 NAS 9-1100

LDW270-28302-1 TANK-THERMAL SIMULATOR-INSTALLATION

CODE IDENT 26512
LDW270-28302 SHEET 300



48.242 (REF)

0-25580 (REF)

LDW280-25544 (REF)

-Z 38.483 (REF)

A

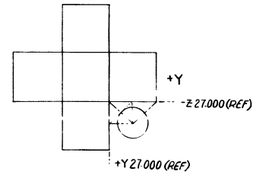
LDW280-25536 (REF)

27.300 (REF)

VIEW "A-A"

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
MISM ↕TCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
200 FOR ALL DRILLED HOLES
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
SYMBOL ↑ DENOTES SURFACE TO BE MACHINED
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
LENGTHS OF AM, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
TOLERANCE ON LOFTED DELINEATIONS IS

DWG SIZE 34 X
PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X)=
1/2 SIZE SHEET AREA (1/4 OF FULL)=
SQ. FT.
SQ. FT.
PRINT TRIM LINE



NOTES:

1. TORQUE VALUE ON BOLTS TO BE 30 TO 40 INCH LBS.

LDW270-28302-1 TANK-THERMAL SIMULATOR-INSTALLATION

03703 NAS 9-1100

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK		
LEM MODEL OR END ITEM	SIZE J	CODE IDENT NO. 26512	LDW270-28302
	SCALE 1/2		SHEET 3.00

26512
28302 SHEET 3.00

LDW270-28302

LDW270-28302

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO.	EO NO.
LDW270-28302	A1
CONTROL INFO NO. LEM 270-616	

SHEET 2.00 & 3.00 IN B/M & F/D :- FOR-1

REMOVE - LDW270-28351-1 TANK-THERM. SIMUL.

ADD - LDW270-28351-3 TANK-THERM. SIMUL.

5

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG

REASON FOR EO: PART NO. CHANGE DUE TO REDESIGN OF TANK SIMULATOR.

DESCRIPTION OF EO: FOR-1 IN B/M & F/D, REMOVED - LDW 270-28351-1, ADDED LDW 270-28351-3 TANK-THERM. SIMUL.

GAEC EO RELEASE: 16 9.M

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LTA-8 (18)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
		✓	

APPROVED BY					NM			
DATE	8/12/66	8/29/66	9/8		8-18-66		8-21-66	8-22-66
	PROP	~~PROPULSION~~ HTS	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY: C

DRAWING TITLE: HELIUM TANK, THERMAL SIMULATOR INSTL DESCENT PROP. PRESS. SUBSYSTEM

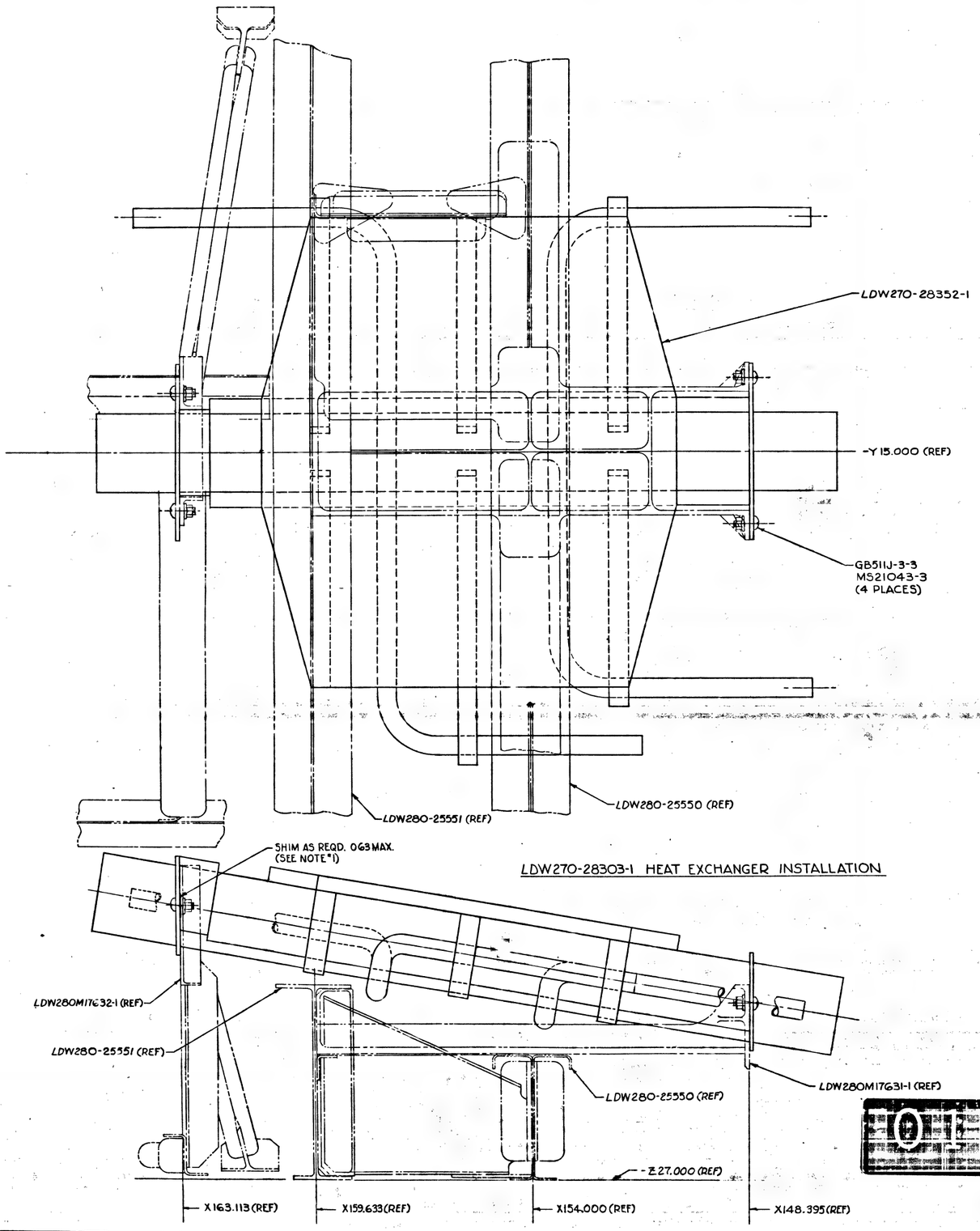
DRAWING NO.: LDW270-28302

EO NO.: A1

ISSUED BY N. GRAUL x1471 SECTION PROPULSION GROUP NO. 357 PL 35

01

NAS 9-1100

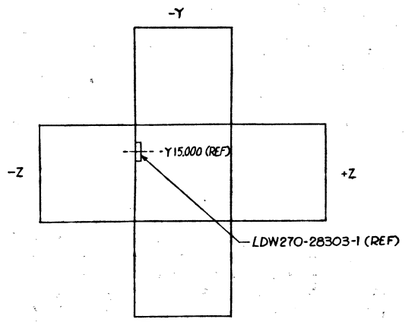


LDW270-28303-1 HEAT EXCHANGER INSTALLATION

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0015 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
250 FOR ALL DRILLED HOLES
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
SYMBOL √ DENOTES SURFACE TO BE MACHINED
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
TOLERANCE ON LOFTED DELINEATIONS IS

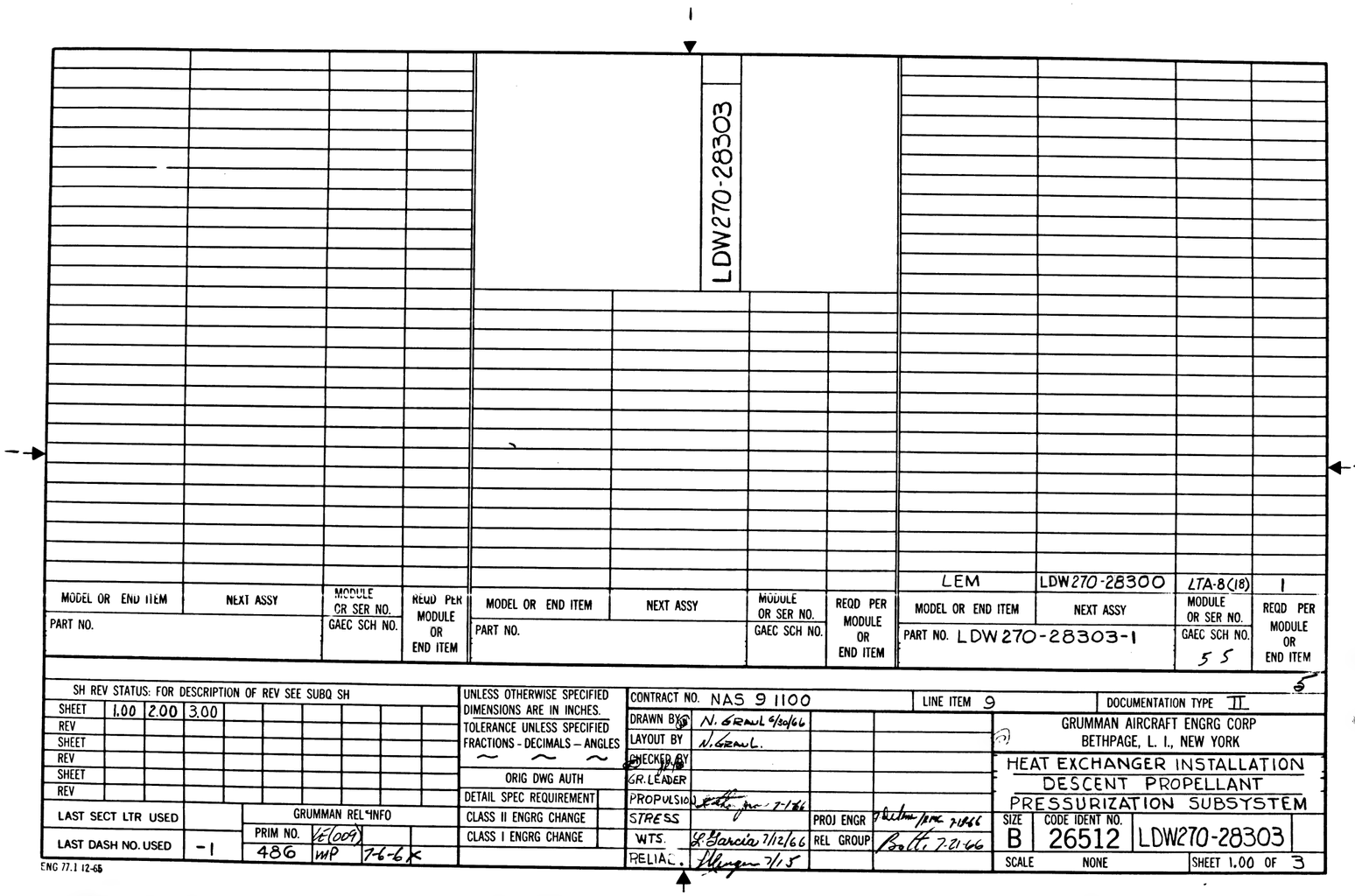
NOTES:

1. SHIM AS REQ'D USING ALUM LAMINATED SHIM .003 LAMINATIONS, 5052-H39, WHICH MAY BE PURCHASED FROM LAMINATED SHIM CO., INC, GLENBROOK, CONN (CODE IDENT 75495).



		GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK	
LEM	SIZE E	CODE IDENT NO. 26512	LDW270-28303
MODEL OR END ITEM	SCALE FULL		SHEET 3.00

NAS 9-1100



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW270-28303-1		GAEC SCH NO. 55	
								LEM	LDW270-28300	LTA-8(18)	1

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00	2.00	3.00							
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED	
LAST DASH NO. USED	-1

GRUMMAN REL INFO
PRIM NO. VE(009) 486 WP 76-6-K

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES ~ ~ ~

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS 9 1100 LINE ITEM 9 DOCUMENTATION TYPE II

DRAWN BY	N. Graul 6/30/66		
LAYOUT BY	N. Graul.		
CHECKED BY			
GR. LEADER			
PROPULSION		PROJ ENGR	
STRESS			
WTS.	L. Garcia 7/12/66	REL GROUP	
RELIAB.			

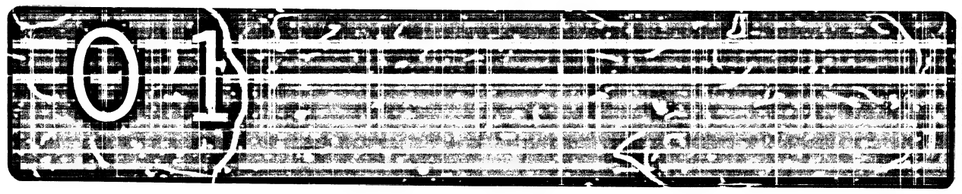
GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

HEAT EXCHANGER INSTALLATION
DESCENT PROPELLANT
PRESSURIZATION SUBSYSTEM

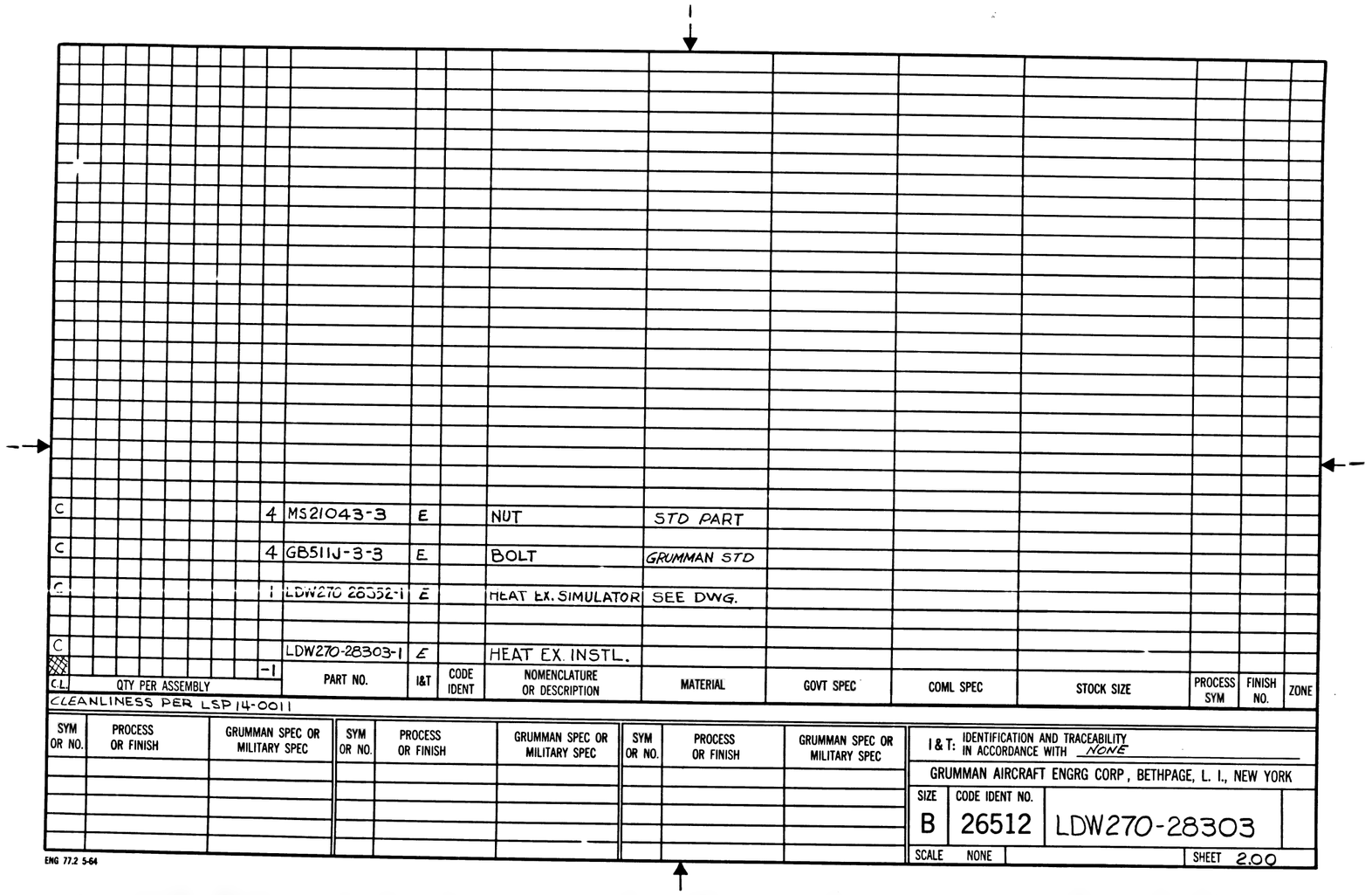
SIZE	CODE IDENT NO.	
B	26512	LDW270-28303

SCALE NONE SHEET 1.00 OF 3

ENG 77.1 12-65



NAS 9-1100



C.L.	QTY PER ASSEMBLY	PART NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
C	4	MS21043-3	E		NUT	STD PART						
C	4	GB511J-3-3	E		BOLT	GRUMMAN STD						
C	1	LDW270 26552-1	E		HEAT EX. SIMULATOR	SEE DWG.						
C		LDW270-28303-1	E		HEAT EX. INSTL.							
	-1											

CLEANLINESS PER LSP14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

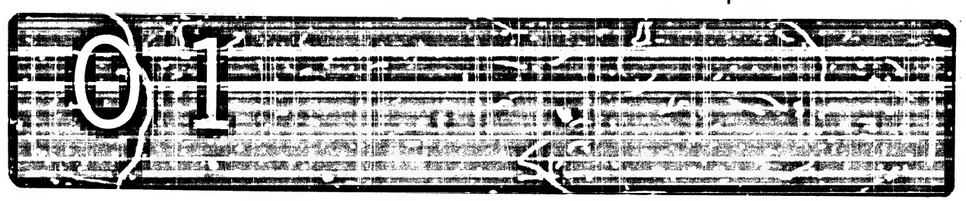
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

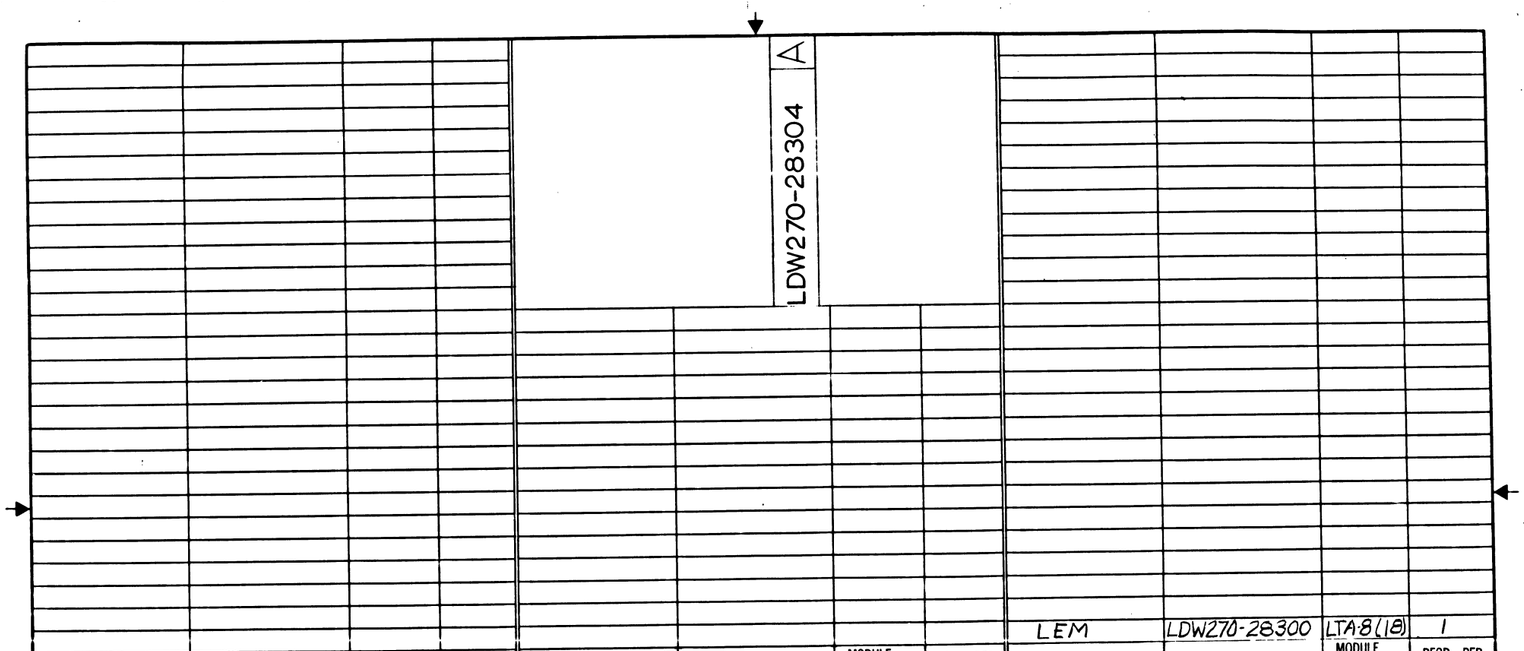
SIZE	CODE IDENT NO.	
B	26512	LDW270-28303

SCALE NONE SHEET 2.00

ENG 77.2 5-64



NAS 9-1100



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW270-28300	LTA-8(18)	1
PART NO. LDW270-28304-1		GAEC SCH NO. 55	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	C	C	C	C					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	D
LAST DASH NO. USED	-1

GRUMMAN REL INFO C
PRIM NO. [illegible]
4E6 [illegible]

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES ~

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100 | LINE ITEM 9 | DOCUMENTATION TYPE II

DRAWN BY	N. SRAUL 421-66	WEIGHT	L. Garcia 9/28/66	
LAYOUT BY				
CHECKED BY				
PROP	[illegible]			
VDI	[illegible]			
STRESS	[illegible]	PROJ ENGR	[illegible] 9-28	
STRUCDES	[illegible] 9/26	REL GROUP	[illegible]	
RELIABILITY	[illegible]			

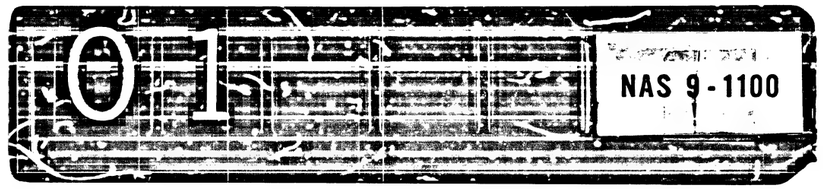
GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CHECK VA & RELIEF VA INSTL-
DESCENT PROPELLANT
PRESSURIZATION SUB-SYSTEM

SIZE	CODE IDENT NO.		
B	26512	LDW270-28304	C

SCALE NONE | SHEET 1.00 OF 4

ENG 77.1 12-65



REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00, 1.10 2.00, 3.00						E.O. A1	SH. 1 OF 4 WAS 1 OF 3 ADDED SH. 1.10. IN B/M & FLD. DWG. FOR -1 REMOVED LSC270-817-1 & -2, ADDED LSC270-817-5 & -6.	LTA-8	✓		BRODA 9-2-66 WW		
B	1	1.00, 1.10 2.00, 3.00		DCRF 323-1674 LFM #126		✓		LCR NO 1021-33	CANCELLED DWG PER DCRF 323-1674. NO REPLACEMENT.	LTA-8		✓			
C	1	1.00, 1.10, 2.00, 3.00		LFM #126 (6)		✓		LCR NO 1021-33	REINSTATE DWG PREVIOUSLY CANCELLED PER DCRF 323-1674. (REF: LED 259-2 REV'D)	LTA-8	NOT REQD		REINSTATE 8-26-68 DWG 8-26-68	DWG 8-26-68	

CHG APPROVED	LTR	GROUP LDR	PROP	VDI	STRUCTURES	RELIABILITY	WEIGHTS
	A						

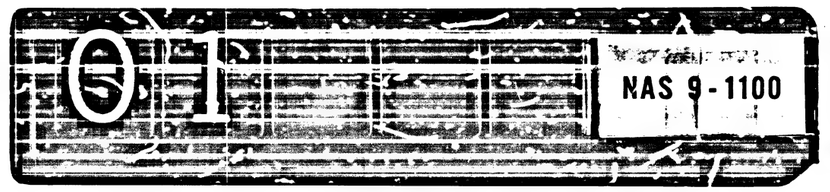
GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28304	C

SCALE NONE SHEET 1.10

ENG 77.16 3-66

(6)



CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
C	AN960C10	E	WASHER	STD PART						
C	GB511J-3-23	E	BOLT	GRUMMAN STD						
C	GB511J-3-1	E	BOLT	GRUMMAN STD						
L	LSC270-818-2	S	RELIEF VALVE	SEE NOTE 1						
L	LSC270-818-1	S	RELIEF VALVE	↕						
L	LSC270-817-6	S	CHECK VALVE							
L	LSC270-817-5	S	CHECK VALVE	SEE NOTE 1						
K	LDW270-28304-1	E	CHECK & RELIEF VA INSTL							

C.L — QTY PER ASSEMBLY: 10, 6, 4, 1, 1, 1, 1, -1

CLEANLINESS PER LSP-14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

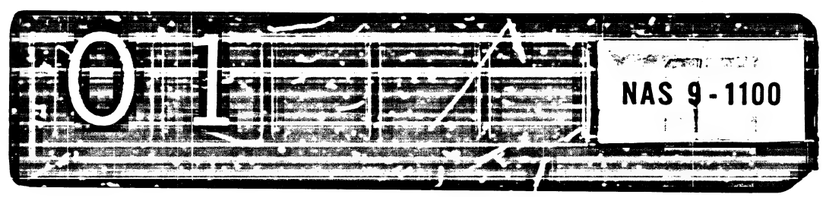
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : LPC-19-2 (GRUMMAN) LPC-19-3 (VENDOR)

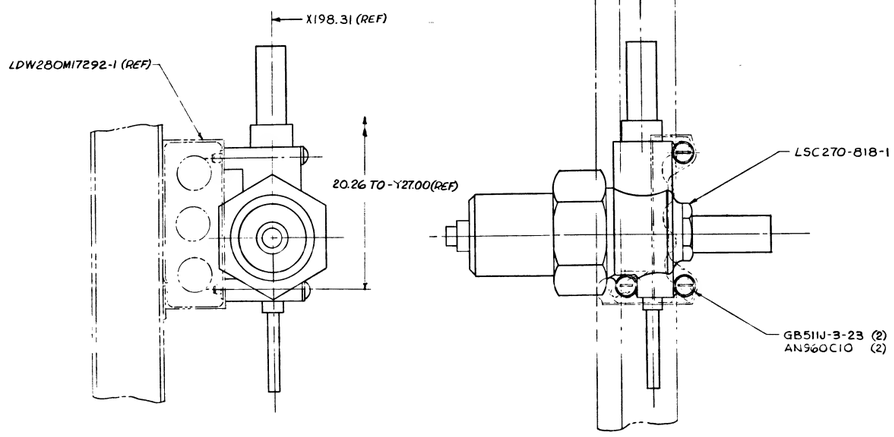
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28304	C

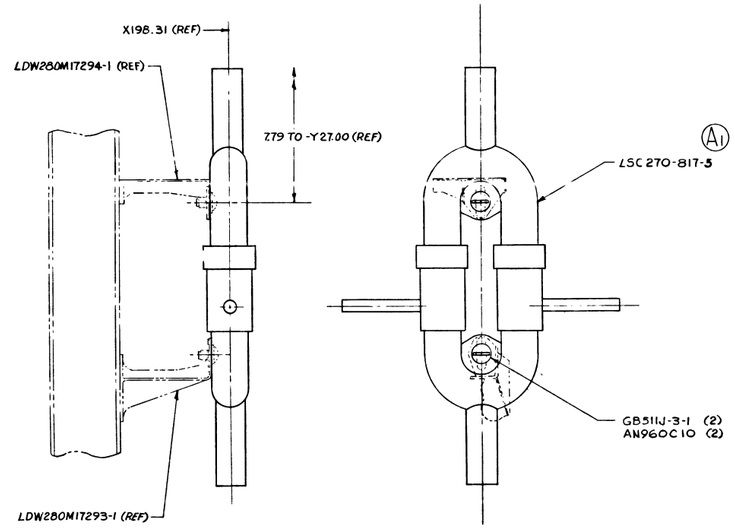
SCALE NONE — SHEET 2.00

ENG 77.2 7-65

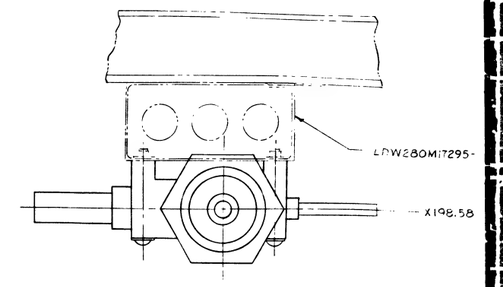


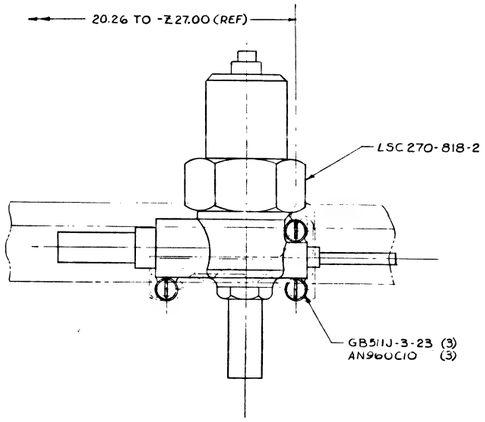


DETAIL A

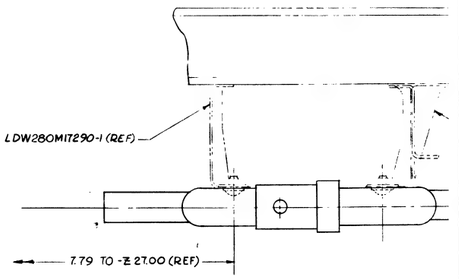


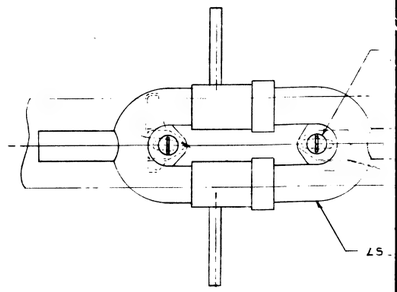
DETAIL B





DETAIL D

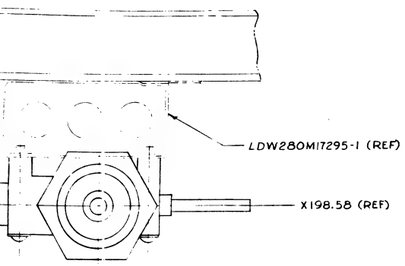




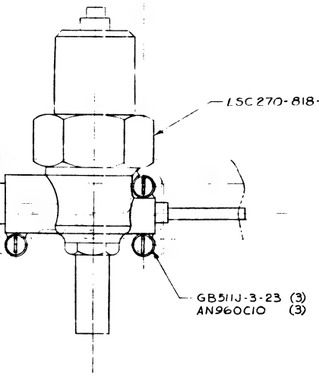
DETAIL C

CODE IDENT 26512	
LDW270-28304	SHT 3.00

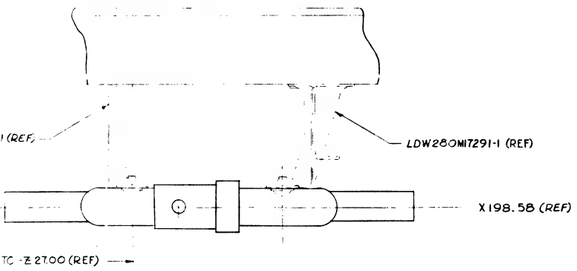
01702 NAS 9-1100

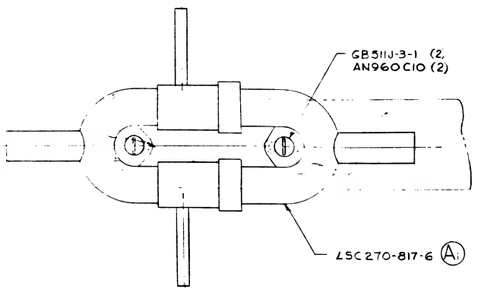


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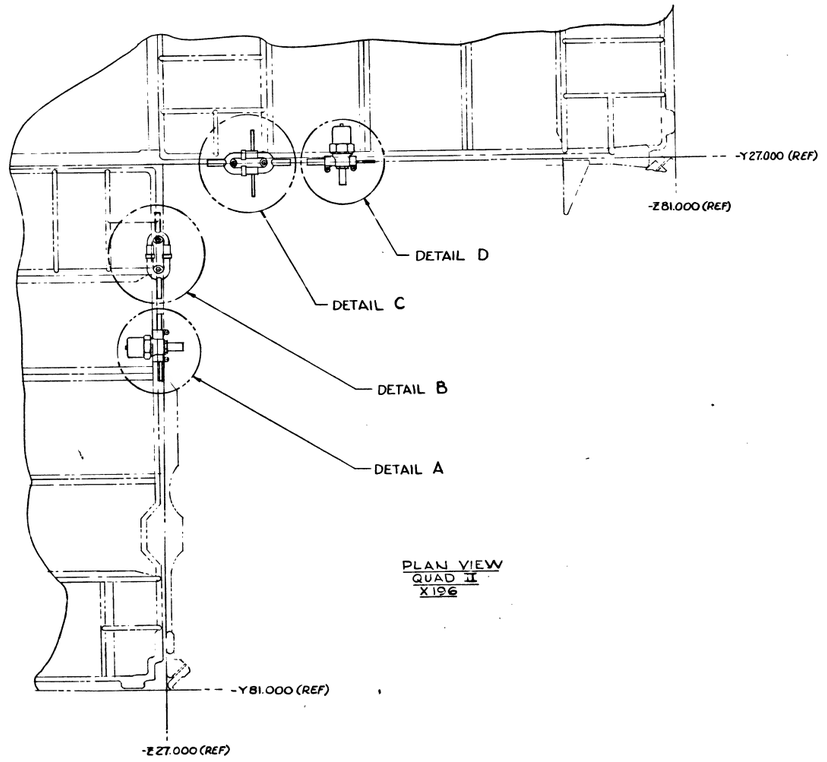


DETAIL D





DETAIL C



PLAN VIEW
QUAD II
X196

LDW270-28304-1 VALVE INSTALLATION

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.	
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

DWG SIZE 34 X 44

PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X 44) = 2.5 SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL) = 6 1/4 SQ. FT.

PRINT TRIM LINE

NOTES:
1. COMMERCIAL PART. SEE SPECIFICATION CONTROL DRAWING LSC270-817 & LSC270-818 BEFORE ORDERING
2. FOR MOCK UP OF THIS INSTALLATION USE LMU270-80008 & LMU270-80009 M/U CHECK VM & M/U RELIEF VA.

LDW270-28304 C

LDW270-28304 A

LDW270-28304 C

LDW270-28304 C

NAS 9-1100

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LEM	SIZE J	CODE IDENT NO. 26512	LDW270-28304	C
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

CODE IDENT 26512
LDW270-28304
SHT 3.00

LDW270-28305 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.					
								I F M	LDW270-28300	LTA-8(18)	1 EA.
								PART NO. LDW270-28305-1,-3,-5		GAEC SCH NO. 55	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	
LAST DASH NO. USED	-5

GRUMMAN REL INFO A
PRIM NO. A5(0097)
486 MP17

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES
~ ~ ~

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS9 1100 LINE ITEM 9 DOCUMENTATION TYPE II

DRAWN BY	N. GRAUL 4/27/66	RELIABILITY	J. Kemper 5/5
LAYOUT BY	N. GRAUL		
CHECKED BY	D. Waldo 4-29-66		
SR. LEADER			
PRODUCTION			
V.D.I		PROJ ENGR	
STRESS		REL GROUP	
WEIGHTS	L. Garcia, 5/4/66.		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

DISCONNECT COUPLING INSTL
DESCENT PROPELLANT
PRESSURIZATION SUBSYSTEM

SIZE	CODE IDENT NO.		
B	26512	LDW270-28305	A

SCALE NONE SHEET 1.00 OF 4

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1, 1.10, 2, 3						EO A1	IN FIELD & B/M FOR -1 INSTL REMOVED LSC 270-813-5 & ADDED LSC270-813-25 DISC.CPLG. FOR-3 INSTL REMOVED LSC 270-813-3 &-4, ADDED LSC 270-813-23&-24 DISC.CPLG. SH 1 OF 4 WAS SH 1 OF 3. ADDED SH 1.10	LTA-8	✓		S. AUGELLO 8-15-66 P. CARTSELOS 10-23-66		
	2	1.10 & 2					✓	EO A2	IN B/M REVISED CLEANLINESS LEVEL OF-1 &-3 INSTL. "L" WAS "A".		NOT	REQD			
	3	1.00, 1.10 2.00 & 3	3A					EO.-A3	IN FLD/DWG & B/M ADDED -5 DISCONNECT CPLG INSTL & (1) LSC 270-813, (2) GB511J-08-1, (1) GB511J-08-2	LTA-8 (18)	NOT	REQD (W/O)			

CHG APPROVED	LTR	GRJUP LDR	PROPULSION	ST RESS	WEIGHTS	RELIABILITY	VEH-DES. INT.
	A						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28305	A

SCALE NONE SHEET 1.10

ENG 77.16 3-65

01 NAS 9-1100

				3				GB511J-08-2	E	BOLT-PAN HEAD	GRUMMAN STD						
C				2	12	9		GB511J-08-1	E	BOLT-PAN HEAD	GRUMMAN STD						
L						3		LSC270-813-25	S	DISC. CPLG.	SEE NOTE #2						
L					3			LSC270-813-24	S	DISC. CPLG	SEE NOTE #2						
L				1	1			LSC270 813-23	S	DISC. CPLG	SEE NOTE #2						
								LDW270-28305-5	E	DISC. CPLG. INSTL							
L								LDW270-28305-3	E	DISC. CPLG. INST'L.							
L								LDW270-28305-1	E	DISC. CPLG. INST'L.							
C.L.				-5	-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
				QTY PER ASSEMBLY													

CLEANLINESS LEVEL PER LSP-14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

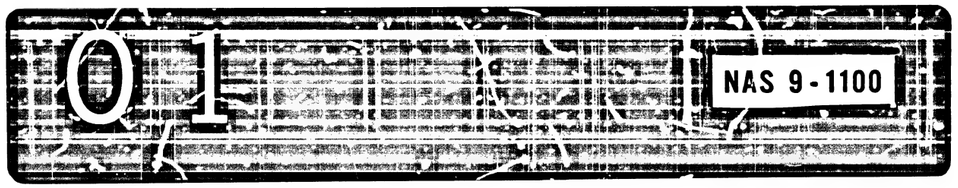
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

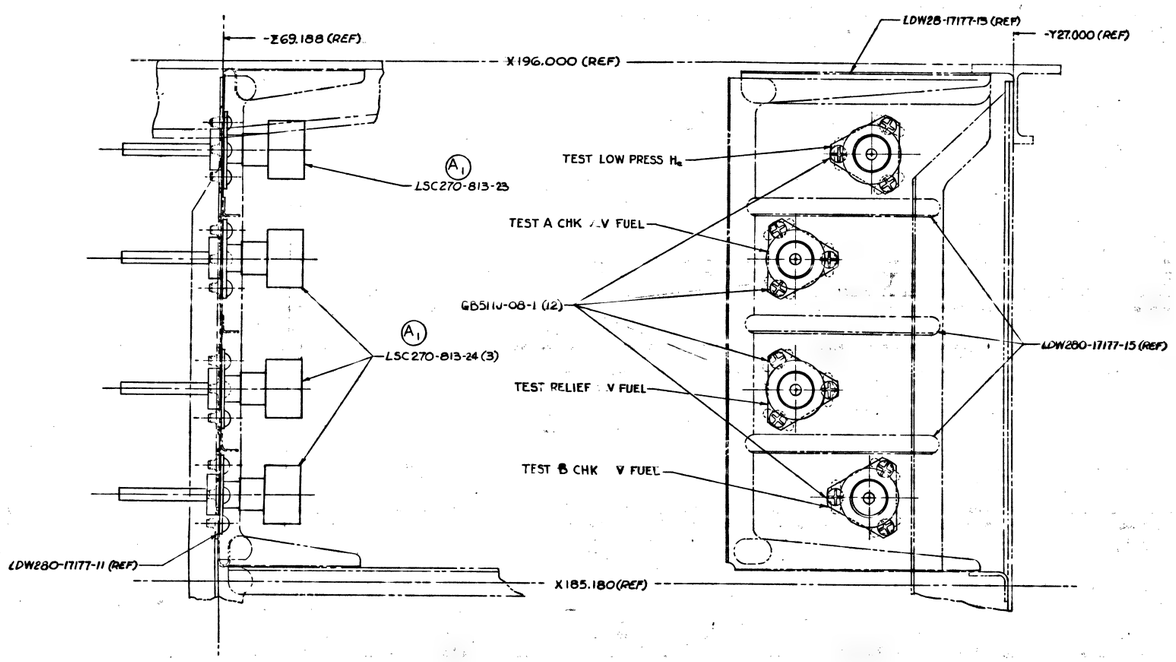
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28305	A

SCALE NONE SHEET 2.00

ENG 77.2 7-65



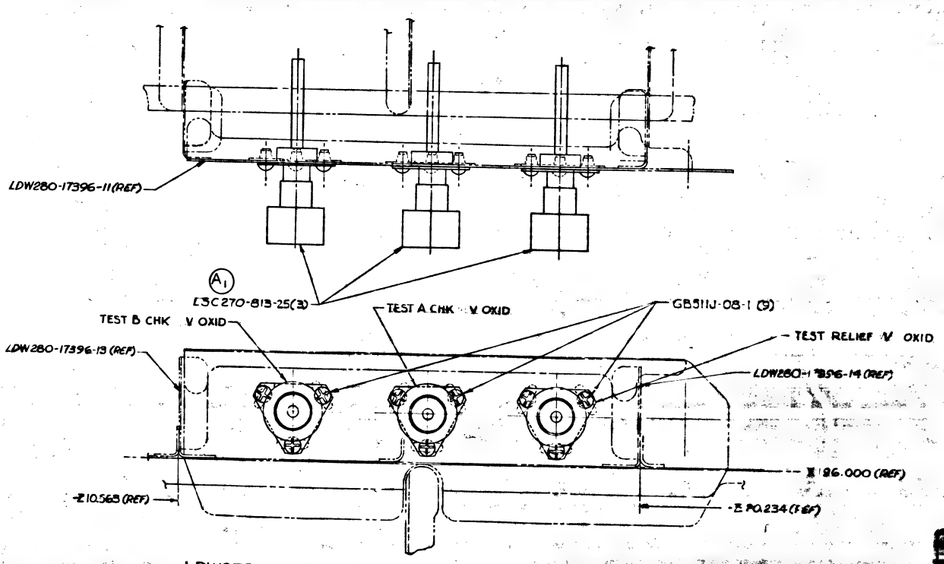


NOTES:

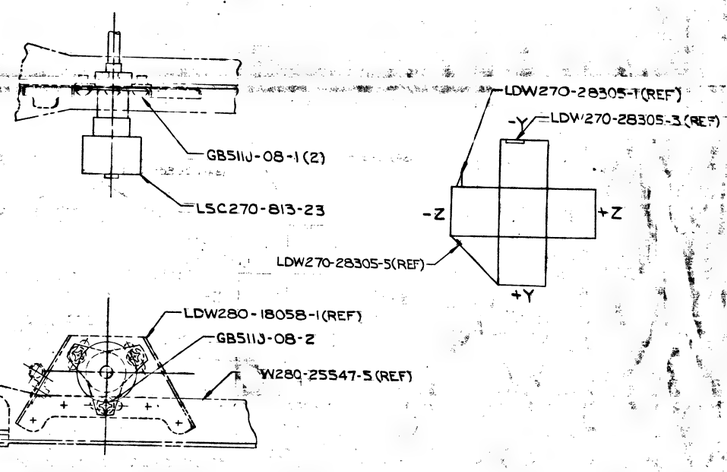
1. FOR MOCKUP OF THIS INSTALLATION USE MOCKUP DISCONNECT COUPLING LWU 270-80010-1.
2. BEFORE ORDERING SEE SPECIFICATION CONTROL DRAWING LSC270-813.

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .249R ± .015 OVER .250R ± .030
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 XWP THDS. BEYOND PERMISSIBLE
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0001 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
250 FOR ALL DRILLED HOLES
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
SYMBOL ∿ DENOTES SURFACE TO BE MACHINED
IF NOT OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
LENGTHS OF AN, MS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
TOLERANCE ON LOFTED DELINEATIONS IS

LDW270-28305-3 DISCONNECT COUPLING INSTALLATION



LDW270-28305-1 DISCONNECT COUPLING INSTALLATION



A3 LDW270-28305-5 DISCONNECT COUPLING INSTALLATION

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LEM	SIZE E	CODE IDENT NO. 26512	LDW270-28305	A
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65 LIAISON ENGINEERING ~~#5~~ ENGINEERING ORDER

DWG. NO. LDW270-28305 | EO NO. B1

CONTROL INFO NO. LEM-5-9037

ADD NOTE *:

SUBSTITUTION OF NAS1132-V-1 SCREWS FOR GB5IIJ-08-1 BOLTS IS PERMISSIBLE.

* - NEXT AVAILABLE NUMBER

5

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
GB5IIJ-08-1 BOLTS ARE NOT AVAILABLE	ADDED NOTE *.	16

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP	APPROVED BY	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	QUAL
LEM		LTA-3(1B)		✓		✓		9-30-66				9-30	9-30	9-30	9-30-66

PRIORITY: C

DRAWING TITLE: DISCONNECT COUPLING MSTL. W/S PROPELLANT PRESS. SUBSYSTEM

DRAWING NO.: LDW270-28305

EO NO.: B1

ISSUED BY [illegible] SECTION [illegible] GROUP NO. ____ PL. ____

289

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENGINEERING ORDER

DWG NO LDW270-28305 | EO NO. B2

CONTROL INFO NO. LM 270-1237

IN B/M, F/D & M/B: REMOVE -1 AND -3 DISCONNECT COUPLING INSTL.

LFM

DETAIL SPEC REQ	CL 'I' ENGRG CHG	CL 'T' ENGRG CHG	LCR 1021-33	LCRP 270-01 (5)

REASON FOR EO: TO PERMIT INSTALLATION OF BLAST DEFLECTOR SHIELD

DESCRIPTION OF EO: IN B/M, F/D & M/B: REMOVED -1 & -3 INSTL.

GAEC EO RELEASE: VK 4/4/68

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM#126	LTA-8 (18)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
		✓	

APPROVED BY	J. Rebholz			M. Dembrosky		M. Dembrosky
DATE	4/4/68			4/4/68		4/4/68 4-11-68
	PROP	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY: C

DRAWING TITLE: DISCONNECT COUPLING INSTL - DESCENT PROPELLANT PRESSURIZATION SUBSYSTEM

DRAWING NO.: LDW270-28305

EO NO.: B2

ISSUED BY J. REBHOLZ 4-4-68 X1471 SECTION PROPULSION GROUP NO. 345 PL 25

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG NO. LDW270-28305		EO NO. B3
CONTROL INFO NO. LM 270-1313		

* DISCRIPTION OF E.O.

THIS E.O. CANCELS E.O. B2

LFM

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	√ LCR 1021-33	LCRP 270-02	(5)

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
LED 259-2 REV D	NOTED *	

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP
LM	LFM 126	LTA-8 (18)		√		√	

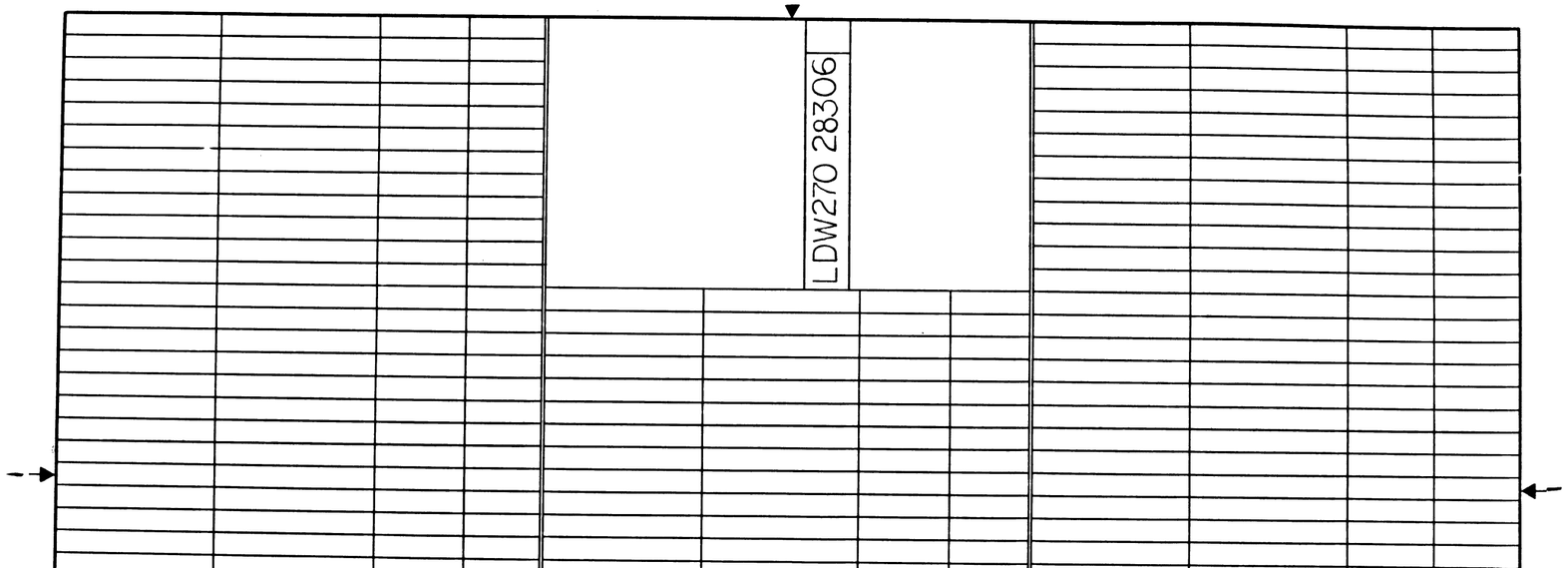
APPROVED BY								
DATE				8-2-68			8-2-68	8-7-68
	PROP	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	DISCONNECT COUPLING INSTL-DESCENT PROPELLANT PRESSURIZATION SUB-SYSTEM	LDW270-28305	B3

ISSUED BY J. REBHOLZ 8-2-68 X1471 SECTION PROPULSION GROUP NO. 345 PL 25

01

NAS 9-1100



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LEM	LDW270-28300	LTA-8(18)	1
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW270-28306-1		GAEC SCH NO. 55	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00	2.00	3.00							
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED		GRUMMAN REL INFO	
LAST DASH NO. USED	-1	PRIM NO.	486

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9 1100 | LINE ITEM 9 | DOCUMENTATION TYPE II

DRAWN BY	N. GRAUL 4/29/66	RELIABILITY		
LAYOUT BY	N. GRAUL			
CHECKED BY	D. Waldo 4-29-66			
GE LEADER				
PROPULSION				
V.D.I.		PROJ ENGR		5-9-66
STRESS		REL GROUP		5-11-66
WEIGHTS	P. Garcia 5/9/66			

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

EXPLOSIVE VALVE INSTALLATION
DESCENT PROPELLANT
PRESSURIZATION SUBSYSTEM

SIZE	CODE IDENT NO.	
B	26512	LDW270-28306

SCALE NONE | SHEET 1.00 OF 3

ENG 77.1 12-65

01

NAS 9-1100

C.L.	QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
C	2		MS28775-003	E	PACKING	STD PART						
C	1		MS21043-3	E	NUT	STD PART						
C	1		MS21043-08	E	NUT	STD PART						
C	2		AN814-3C	E	PLUG	STD PART						
C	1		GB511J-3-14	E	BOLT	GRUMMAN STD						
C	1		GB511J-08-14	E	BOLT	GRUMMAN STD						
L	1		LSC270-714-5	S	EXPLOSIVE VALVE	SEE NOTE 2						
C			LDW270-28306-1	E	VALVE INSTL.							
	-1											

CLEANLINESS LEVEL PER LSP-14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

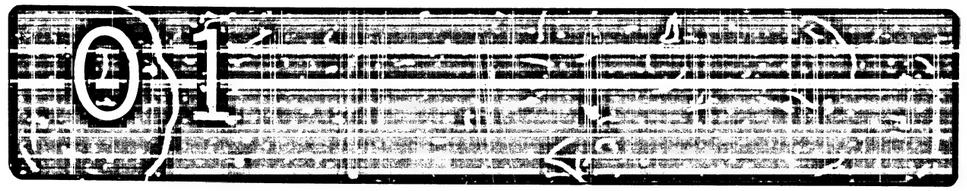
I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW270-28306

SCALE NONE SHEET 2.00

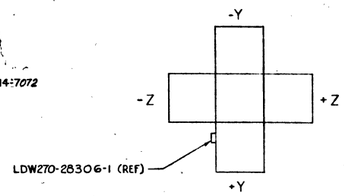
ENG 77.2 7-65

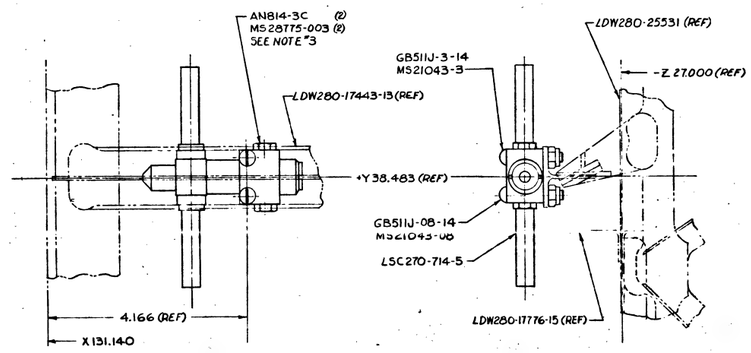


NAS 9-1100

NOTES:

1. FOR MOCKUP OF THIS INSTALLATION USE MOCKUP VALVE LMU270-80014-1.
2. BEFORE ORDERING SEE SPECIFICATION CONTROL DRAWING LSC270-714.
3. PLUG PORTS USING AN814-3C PLUG AND MS28775-003 O-RING PRIOR TO INSTALLING THE VALVE.
4. PARTS SHALL BE CLEANED IN ACCORDANCE WITH LSP-14-7072 AND SHALL CONFORM TO LSP-14-0011 LEVEL 'C'.
5. INSTALL FASTENERS PER LSP-14-15306.





LDW270-28306-1 VALVE INSTALLATION

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

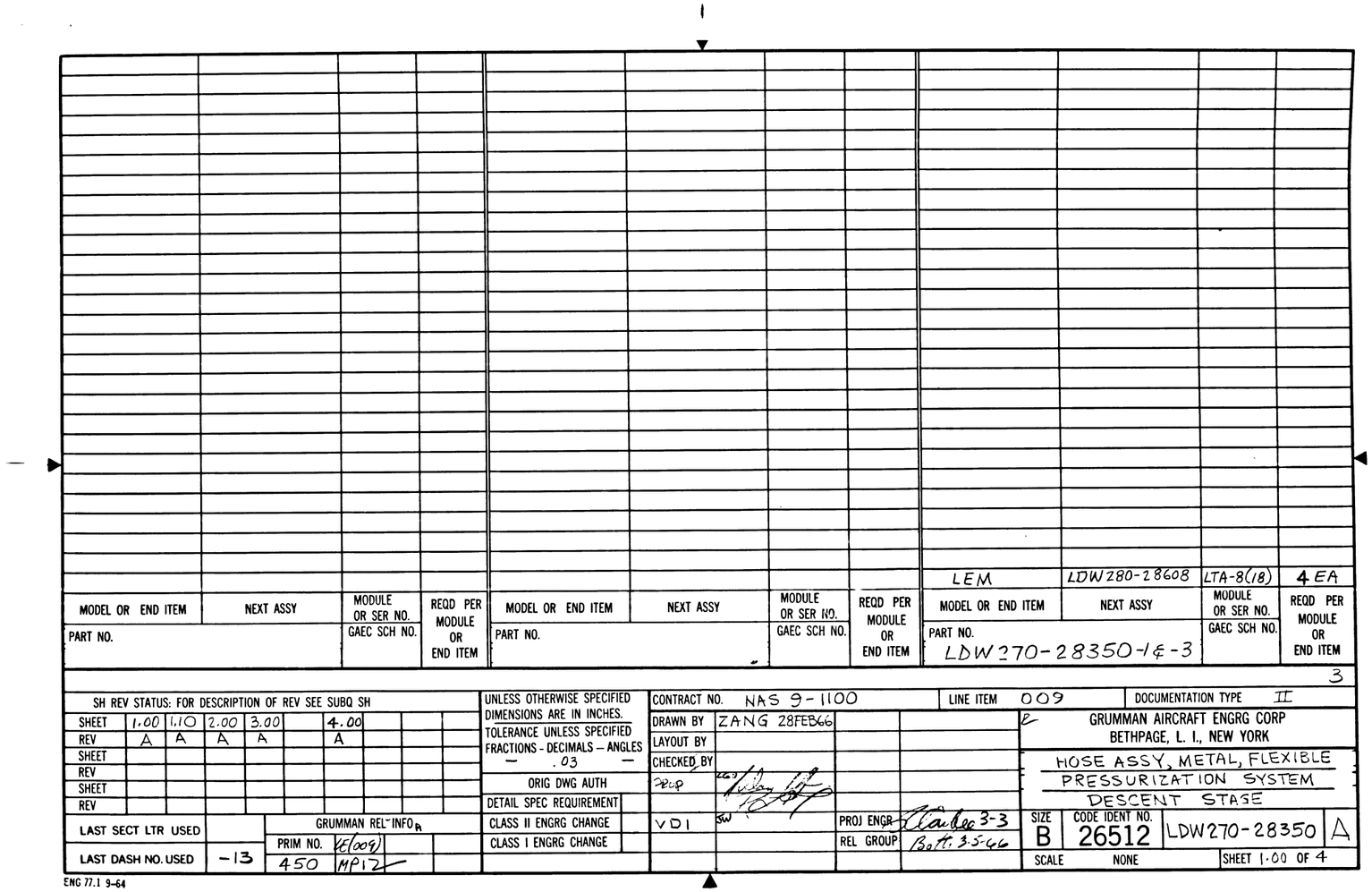
- PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.
- FILLET AND INSIDE CORNER RADII TOLERANCES .010R TO .062R ± .010; .063R TO .249R ± .015; OVER .250R ± .030
- DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS 2-3 IMP THDS. BEYOND PERMISSIBLE.
- EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
- DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
- MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
- DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING 1
- HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
- ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
- 125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
- 250 √ FOR ALL DRILLED HOLES
- REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
- [illegible] MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED 15
- SYMBOL ⌐ DENOTES SURFACE TO BE MACHINED
- UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
- LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
- TOLERANCE ON LOFTED DELINEATIONS IS

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK			
LEM	SIZE C	CODE IDENT NO. 26512	LDW270-28306
MODEL OR END ITEM	SCALE FULL		SHEET 3.00

THIS IS AN ORIGINAL DWG.

LDW270-28306

NAS 9-1100



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LEM	LDW280-28608	LTA-8(18)	4 EA
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW270-28350-1&-3		GAEC SCH NO.	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	1.10	2.00	3.00		4.00			
REV	A	A	A	A		A			
SHEET									
REV									
SHEET									
REV									

		GRUMMAN REL INFO R	
LAST SECT LTR USED		PRIM NO.	E(009)
LAST DASH NO. USED	-13	450	MP12

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS — ANGLES
— .03 —

ORIG DWG AUTH			
DETAIL SPEC REQUIREMENT			
CLASS II ENGRG CHANGE			
CLASS I ENGRG CHANGE			

CONTRACT NO. NAS 9-1100 LINE ITEM 009 DOCUMENTATION TYPE II

DRAWN BY	ZANG 28FEB66		
LAYOUT BY			
CHECKED BY			
	VDI	PROJ ENGR	Claube 3-3
		REL GROUP	Both. 3-5-66

E GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

HOSE ASSY, METAL, FLEXIBLE
PRESSURIZATION SYSTEM
DESCENT STAGE

SIZE	CODE IDENT NO.		
B	26512	LDW270-28350	A

SCALE NONE SHEET 1.00 OF 4

ENG 77.1 9-64

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00, 1.10, 2.00, 3.00						EO A1	IN NOTE #5. CLEAN TO LEVEL "G" WAS "C" IN B/M -11 STOCK SIZE 2 1/4 WAS 12 1/4	LTA-8(18)	✓		R. KLUGE 8-8-66		
	2	1.00, 1.10, 2.00, 4.00						EO A2	FOR -1 & -3 : 12.87 FREE LENGTH (WAS) 12.00 FREE LENGTH ADDED -13 TUBE, REMOVE -11 TUBE			+11 ✓			
	3	1.10, 3.00						EO A3	ON SH 3.00 REMOVED NOTE NO 3. IN NOTE 6: -13 TUBE (WAS) -11 TUBE	LTA-8(18)	NOT	REQD	T. FLEGEL 6-27-66 WN		

CHG APPROVED	LTR	GROUP LDR	PROP.	VEH. DES. INT.
	A			

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28350	A

SCALE NONE SHEET 1.10

ENG 77.15 3-66

01

NAS 9-1100

QTY PER ASSEMBLY				CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
		-3	-1											
		1	1		LDW270-28350-13	E	TUBE (SEE NOTE 6)	304 L CRES.		LSM-14-1001	.016 x 5/8 x 3 1/8			
		1			LSC270-809-4	E	HOSE ASSY	(SEE NOTE 1)						
			1		LSC270-809-2	E	HOSE ASSY	(SEE NOTE 1)						
					LDW 270-28350-3	E	HOSE ASSY	(OXIDIZER)				SW	NONE	
					LDW 270-28350-1	E	HOSE ASSY	(FUEL)				SW	NONE	

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
SW	FUS. WELD - STEEL	MIL-W-8611

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW 270-28350	A

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTES:

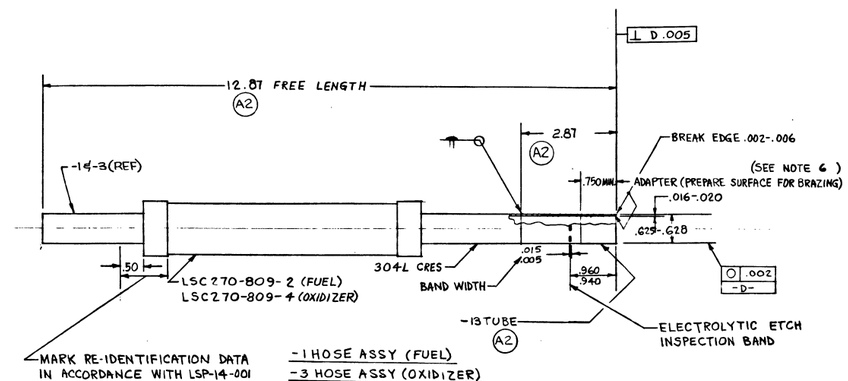
1. COMMERCIAL PART SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING.
2. 100 % RADIO GRAPHIC INSPECTION REQUIRED ON WELDS.
3. PROOF PRESSURE TEST HOSE ASSY TO 540 PSIG WITHOUT LEAKAGE, PERMANENT DEFORMATION OR FAILURE.
4. BUTT WELD SHALL HAVE 100 PERCENT PENETRATION & FUSION FOR 100 PERCENT OF THE LINEAL LENGTH OF WELD.
5. THE HOSE ASSY SHALL BE CLEAN TO LEVEL G, TABLE I OF LSP-14-0011.
6. DASH 13 TUBE ENDS SHALL BE CLEANED, GLASS BEAD PEENED AND MARKED IN ACCORDANCE WITH PARAGRAPHS 3.4, 3.4.1 & 3.5 OF LSP-14-7062A AMENDMENT 3. THE TUBE END SHALL BE PEENED TO A LENGTH OF 3/4 INCHES MINIMUM. AN INSPECTION LINE SHALL BE APPLIED TO THE TUBE IN ACCORDANCE WITH PARAGRAPH 3.3.7 OF LSP-14-4708, AMENDMENT #1.
7. ALL MARKINGS TO BE ELECTROLYTIC-ETCHED IN ACCORDANCE WITH LSP-14-4706.

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-28350	A
SCALE NONE		SHEET 3.00	

ENG 73.1 6-64

01

NAS 9-1100



	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK		
LEM	SIZE C	CODE IDENT NO. 26512	LDW270-28350 A
MODEL OR END ITEM	SCALE FULL		SHEET 4.00

DWG 73-2 644

NAS 9-1100

LDW270-28351 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW270-28302	LTA-8(18)	1
PART NO. LDW270-28351 -1 -3		GAEC SCH NO.	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00					
REV	B	B	B	B					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	B-B	GRUMMAN REL INFO	
LAST DASH NO. USED	-3	PRIM NO.	486

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100		LINE ITEM 9	DOCUMENTATION TYPE II
DRAWN BY S. NEVIN 4/16/66	RELIABILITY		GRUMMAN AIRCRAFT ENGRG CORP
LAYOUT BY S. NEVIN 4/16/66			BETHPAGE, L. I., NEW YORK
CHECKED BY			TANK-THERMAL SIMULATOR,
GP. LEADER			DESCENT PROPELLANT
PROPULSION			PRESSURIZATION SUB-SYSTEM
VDI	PROJ ENGR		SIZE B / CODE IDENT NO. 26512 / LDW270-28351 / B
STRESS	REL GROUP		SCALE NONE / SHEET 1.00 OF 4
WEIGHTS R. Ebert 5/13/66			

ENG 77.1 12-65

0.1
NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00							SHEET 1.00 OF 4 WAS SHEET 1.00 OF 3. ADDED SHEET 1.10	NOTED	✓		T. FREDA 5-11-66		
	2	2.00							ADDED LDW270-10017-1, 24 REQ'D., 810-6-4-316 REDUCER WAS A800-6 UNION						
	3	3.00	A1 A4 B4 B8						REVISED NOTES 3 & 4 REDUCING UNION 810-6-4-316 WAS UNION A 800-6 ADDED: LDW 270-10017-1 LDW 270 M10013-1 WAS LDW 270M10014-1						
B	1	1.00, 1.10, 2.00, 3.00	6B					EO B1	FOR -1 ASSY: ADDED (2) LSC270-821-29 TRANSDUCERS, (4) AN520-10-22 SCREWS & (4) MS21043-3 NUTS.	LTA-8(18)	✓		T. FREDA 9-6-66		
	2	1.10, 2.00, 3.00.	2C					EO B2	FOR -1 ASSY: ADDED 40 INCHES OF GT835M-8 TAPE TO EACH OF 24 PANELS.	LTA-8(18)	✓				
	3	1.00, 1.10, 2.00, 3.00						EO B3	IN FLD & B/M LDW270M10012-3 WAS -1. NOTE #3 WAS PROOF PRESSURE: 500 PSI. USE CLEAN DRY AIR OR NITROGEN. NO LEAKAGE ALLOWED.	LTA-8(18)	✓				
	4	1.00, 1.10, 2.00, 3.00.						EO B4	REF EO B3 CREATED -3 SAME AS -1 EXCEPT LDW270M10012-3 WAS -1. NOTE #3 WAS PROOF PRESSURE: 500 PSI USE CLEAN DRY AIR OR NITROGEN. NO LEAKAGE ALLOWED.	LTA-8(18)		-1			
	5	1.10, 3.00						EO B5	REVISE PICTURE & CALLOUT. CALLOUT WAS LDW270-10017-1 TACK WELD 24 SECTIONS.	LTA-8(18)	✓				

FOR CONTINUATION OF REVISIONS SEE SHEET _____

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28351	B
SCALE NONE		SHEET 1.10	

01 NAS 9-1100

								GT835M-8	E	TAPE	GRUMMAN STD			1" WIDE x 960" LONG			
					2	2	02570	810-6-4-316		REDUCER	COML PART						
					4	4		AN520-10-22		SCREW	STD PART						
					4	4		MS21043-3		NUT	STD PART						
A					2	2		LSC270-821-29		TRANSDUCER	SEE DWG						
					24	24		LDW270-10017-1		SKIN	SEE DWG						
A					4	4		LDW270-10015-7		GUSSET							
A					4	4		LDW270-10015-5		GUSSET							
A					2	2		LDW270-10015-3		WAIST BAND							
A					1	1		LDW270-10015-1		GIRTH RING							
A					2	2		LDW270-10014-3		TUBE							
A					12	12		LDW270-10014-1		TUBE							
A					3	3		LDW270M10013-1		BLOCK							
A						2		LDW270M10012-1		HEADER	SEE DWG						
					2			LDW270M10012-3		HEADER	SEE DWG						
								LDW270-28351-3	J	TANK ASSY					AW		
A								LDW270-28351-1	E	TANK ASSY					AW		
					-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
QTY PER ASSEMBLY																		

CLEANLINESS PER LSP-19-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
AW	FUSION WELDING	MIL-W-8604						

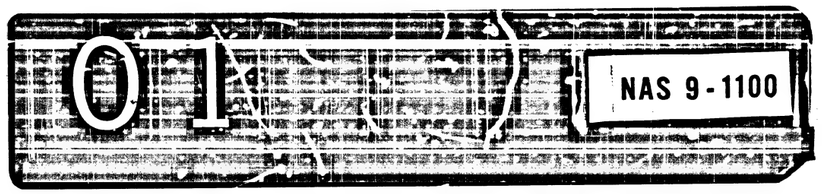
I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

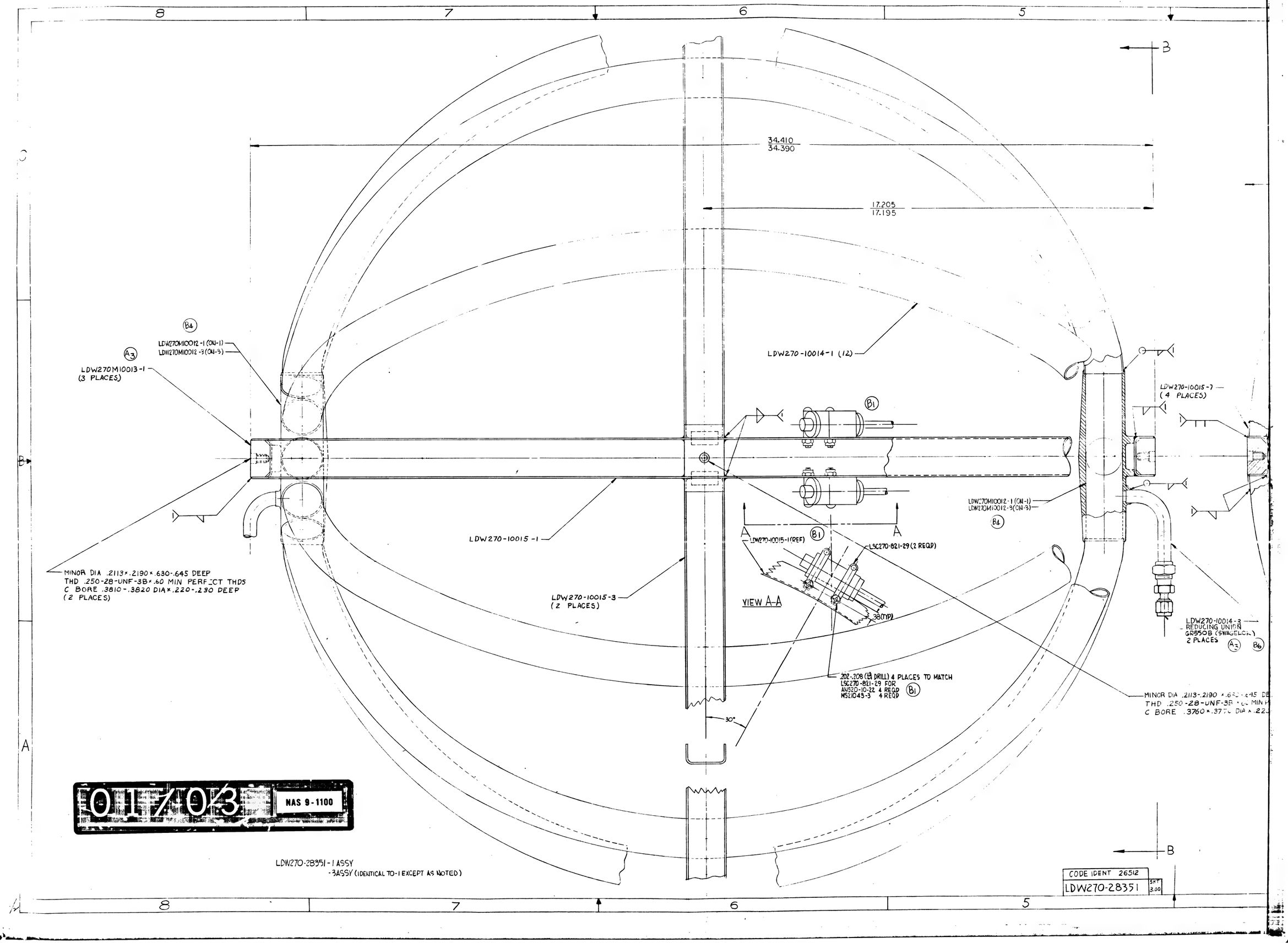
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28351	B

SCALE NONE SHEET 2.00

ENG 77.2 7-65



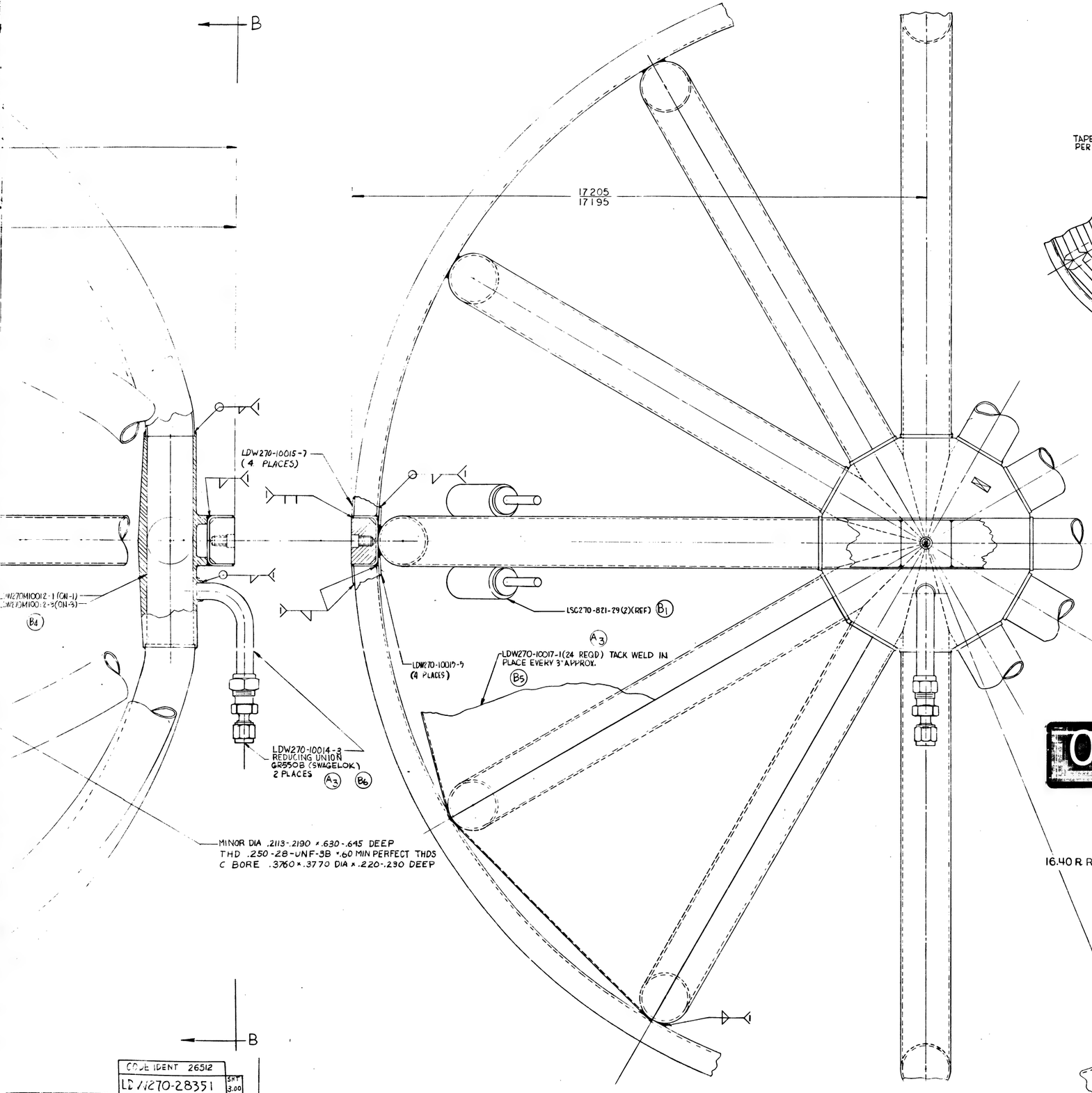


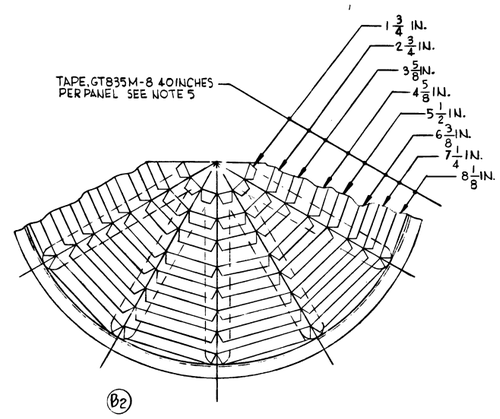
01 / 03

NAS 9-1100

LDW270-28351-1 ASSY
-3ASSY (IDENTICAL TO-1 EXCEPT AS NOTED)

CODE IDENT 26512	
LDW270-28351	SHT 3.00





PARTIAL VIEW B-B
(NO SCALE)

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOCATED DELINEATIONS IS	

02703 NAS 9-1100

NOTES:

1. ARC WELD ALL JOINTS
2. ANNEALED AREA ADJACENT TO WELD PERMISSIBLE.
3. PROOF PRESSURE: 450 PSI. USE CLEAN, DRY AIR OR NITROGEN. NO LEAKAGE ALLOWED. TEST WITH ASSEMBLY SUBMERGED IN WATER.
4. CLEAN & PURGE ASSEMBLY REMOVING ALL SCALE, FLUX & LOOSE MATTER. CAP OPENINGS TO PREVENT CONTAMINATION. EXTERIOR SURFACES SHALL BE KEPT FREE OF ORGANIC CONTAMINANTS.
5. APPLY 40 INCHES OF TAPE TO EACH OF 24 PANELS, CUT INTO 8 LENGTHS ± 1/16 PLACED AS SHOWN IN PARTIAL VIEW B-B

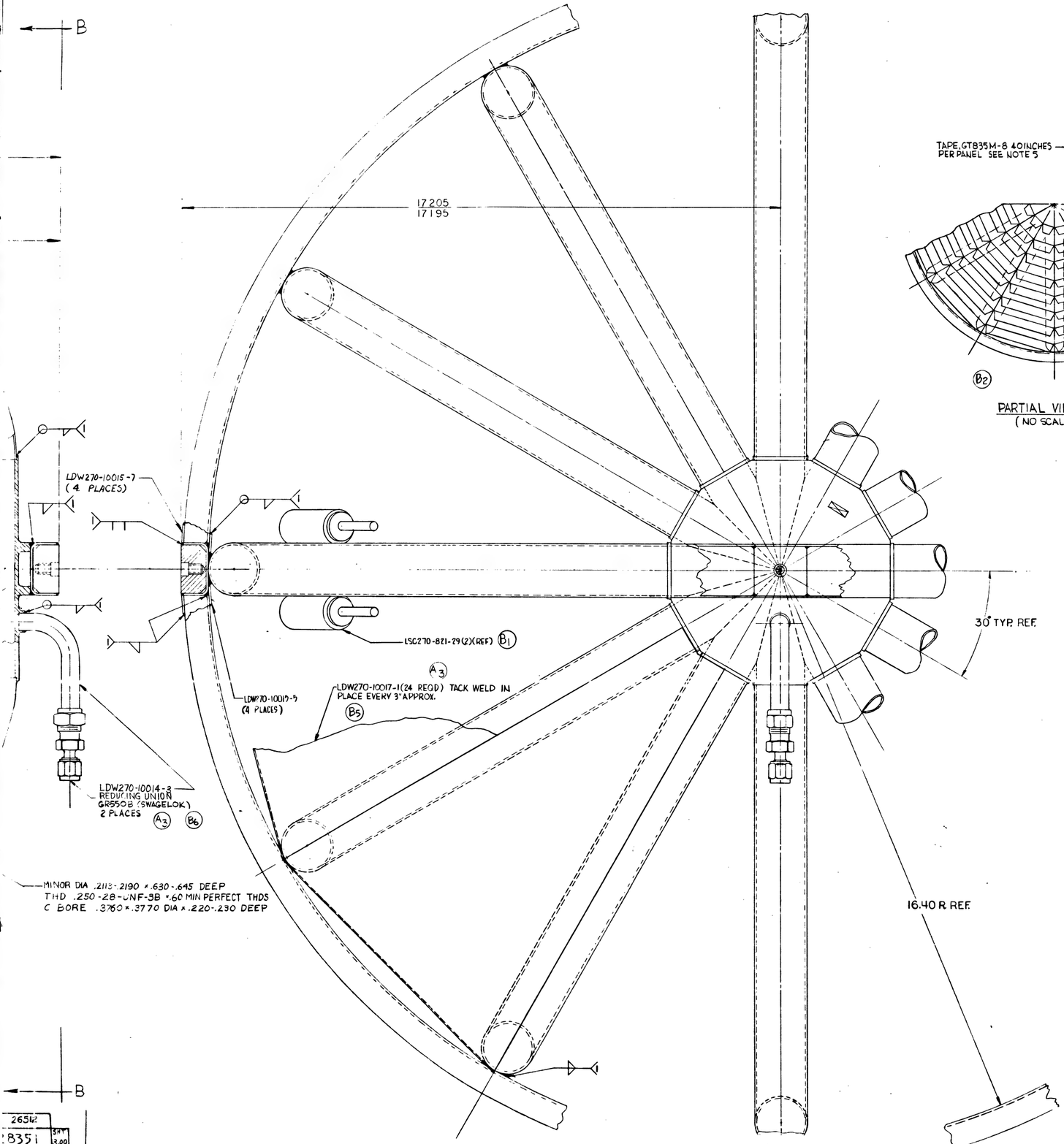
CODE IDENT 26512	SHT 3.00
LDW270-28351	

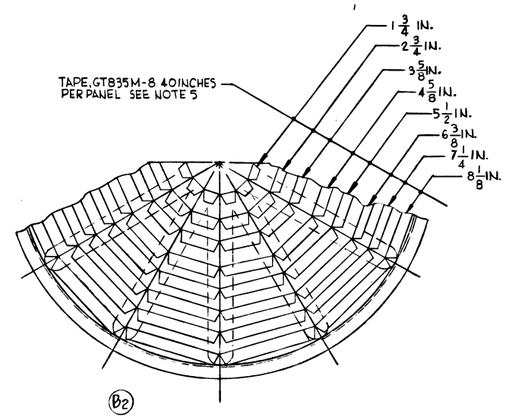
GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L.I., NEW YORK			
SIZE J	CODE IDENT NO. 26512	LDW270-28351	B
LEM	SCALE FULL	SHEET 3 OF	
MODEL OR END ITEM			

PRINTING INFO ONLY DWG SIZE 34 X 22

LDW270-28351 B

LDW270-28351 A





PARTIAL VIEW B-B
(NO SCALE)

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .020	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
250 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ∿ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

DWG SIZE 34 X 88
PRINTING INFO ONLY
FULL SIZE SHEET AREA (88 X 34)= 22 SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL)= SQ. FT.
PRINT TRIM LINE

NOTES:

1. ARC WELD ALL JOINTS
2. ANNEALED AREA ADJACENT TO WELD PERMISSIBLE.
3. PROOF PRESSURE: 1450 PSI. USE CLEAN, DRY AIR OR NITROGEN. NO LEAKAGE ALLOWED. TEST WITH ASSEMBLY SUBMERGED IN WATER.
4. CLEAN & PURGE ASSEMBLY REMOVING ALL SCALE, FLUX & LOOSE MATTER. CAP OPENINGS TO PREVENT CONTAMINATION. EXTERIOR SURFACES SHALL BE KEPT FREE OF ORGANIC CONTAMINANTS.
5. APPLY 40 INCHES OF TAPE TO EACH OF 24 PANELS, CUT INTO 8 LENGTHS = 1/16 PLACED AS SHOWN IN PARTIAL VIEW B-B

03/03 NAS 9-1100

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK		
LEM	SIZE J	CODE IDENT NO. 26512	LDW270-28351 B
MODEL OR END ITEM	SCALE FULL		SHEET 3.0C

26512
8351
SH 1
3.00

LDW270-28351 B
LDW270-28351 B
A
C
B

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

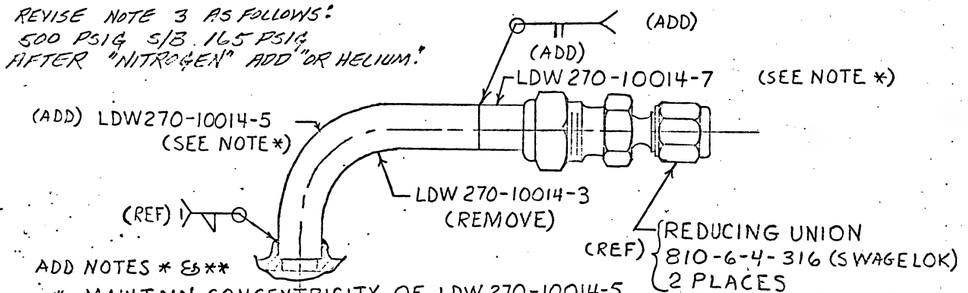
ENG 32.1 REV 3-65 LIAISON ENGINEERING #5 — ENGINEERING ORDER

DWG. NO. LDW270-28351 | EO NO. C1
CONTROL INFO NO. LM 5 - 0994

ON-3 F/D & B/M ZONE 5B REMOVE LDW270-10014-3(2) AND ADD -5 & -7 INPLACE (2 EACH) AS SHOWN

*,** NEXT AVAIL NO'S

REVISE NOTE 3 AS FOLLOWS:
500 PSIG S/B 165 PSIG
AFTER "NITROGEN" ADD "OR HELIUM."



ADD NOTES * & **

* MAINTAIN CONCENTRICITY OF LDW 270-10014-5 & -7 TO WITHIN ±.010

** IN ASSEMBLING SWAGELOK TO TUBE MAKE SURE THE TUBING RESTS FIRMLY ON THE SHOULDER OF THE FITTING. FINGER TIGHTEN THE NUT. THEN TIGHTEN THE NUT ONE AND ONE QUARTER TURNS.

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG

REASON FOR EO: NO CALLOUT FOR PROPER INSTL OF SWAGELOK RESULTING IN LEAK

DESCRIPTION OF EO: ON-3 LDW270-10014-5 & -7 REPLACED LDW 270-10014-3. ADDED BUTT WELD, NOTES * & ** IN NOTE 3 HELIUM WAS SCRATCHED & "OR HELIUM" ADDED

GAEC & EO RELEASE: 5Z

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY: DATE	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	COST
LM		LTA-8(1)		✓		✓		9-13-66				9-14-66	9-15-66	9-16-66	
✓															

PRIORITY: C

DRAWING TITLE: TANK THERMAL SIMULATOR DESCENT PROP PRESS SUB SYSTEM

DRAWING NO.: LDW270-28351

EC NO.: C1

ISSUED BY LIAISON J. GRASSIANO X6[illegible] SECTION PROP GROUP NO. 270 PL 35

LDW270-28352 B

										LEM	LDW270-28303	LTA8(18)	1
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW270-28352-1		GAEC SCH NO. 55	

2

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00	1.10	2.00	3.00						
REV	B	B	B	B						
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED	C-C	GRUMMAN REL INFO B	
LAST DASH NO. USED	-3	PRIM NO.	F5(6011)
		486	MP-B 9-23-6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 ±.020 ±1/2°

ORIG DWG AUTH				
DETAIL SPEC REQUIREMENT				
CLASS II ENGRG CHANGE				
CLASS I ENGRG CHANGE				

CONTRACT NO. NAS 9-1100			LINE ITEM I	DOCUMENTATION TYPE II
DRAWN BY	C. Castellano 6-1-66	RELIABILITY		GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE, L. I., NEW YORK
LAYOUT BY	A. GIMSON			
CHECKED BY	J.S. 6-15-66			ASSEMBLY
GR LEADER				HEAT EXCHANGER SIMULATOR
VEH DES INT				DESCENT PROPULSION
STRUCTU.	6/21/66	PROJ ENGR	Plunkett 28 June	SIZE B | CODE IDENT NO. 26512 | LDW270-28352 | B
STRUCTURES		REL GROUP	Booth 6-30-66	SCALE NONE | SHEET 1.00 OF 4
WEIGHTS	L. Garcia 6/24/66			

ENG 77.1 12-65

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1, 1.10, 2 & 3						EO A1	AFTER FOURTH LINE, NOTE WAS "(2 PLACES IN LDW270M10019-1) ON-1. LOCATE FROM LDW270M10018-1." MS 20074-03-03 WAS NAS1351-3-6. SH 1 OF 4 WAS 1 OF 3, ADDED SH 1.10	LTA-8	NOT	REQ'D	J. ZALETEL 9-6-66		
	2							EO A2	ZONE A7: .31-.34 WAS .312, B2: .50-.56 WAS .500, B5: .37-43 WAS .375, MS 20074-03-06 WAS NAS1351-3-12.		✓				
	3							EO A3	CANCELLED BY EO A5.	NOT REQ'D	NOT	REQ'D			
	4							EO A4	FOR-1 REMOVED DIMS: 17.70 / 17.67, 3.18 / 3.14 & 1.23 / 1.19	NOT REQ'D					
	5							EO A5	THIS EO CANCELS EO A3. FOR-3 ADDED DIMS. 1.00 & 2.00.	LTA-8	✓				
B	1	1, 1.10, 2 & 3						EO B1	FOR-1 ADDED DIM .25. IN SECTION A-A & B/M NAS 1352-03-6 (2) (WAS)(4). FOR-3 DIMS: 3.12 (WAS) 2.00.	LTA-8	✓				
	2							EO B2	ON-1 ADDED NOTE NO.5. -3 DIM 1.25 WAS 1.00		NOT	REQ'D			
	3							EO B3	-1 ASSY, ADDED .125 FILLET WELDS ON LDW270M10017-1 & LDW 270M10018-1. REMOVED 1/16 FILLET WELDS ON (6) LDW 270M10016-1. ADDED NOTE NO. 6. IN SECT. A-A REMOVED (4) NAS 1352-03-6 SCREWS. REMOVED FROM NOTE 3 "WELD CLAMPS AS SHOWN."		✓				
	4	1, 1.10							REF. EO A2 IN FLD. OF EO (#1), 3-24 SHOULD BE 3-48 TAP. "MS 20074-03-03 WAS NAS 1351-3-6 NOT APPLICABLE PREVIOUSLY INC. ON E O-A1."	NOT REQ'D	NOT	REQ'D RL			

CHG APPROVED	LTR	GROUP LDR	VEH. DES. INT.	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY					
	A											
	B											

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28352	B

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY								CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
						6			MS 20074-03-06	E	BOLT	STD PART						
						6			MS 20074-03-03		BOLT	STD PART						
					1				LDW270M10021-3		SUPPORT	SEE DWG						
					3				LDW270M10021-1		SUPPORT							
					1				LDW270M10020-1		PLATE							
					1				LDW270M10019-1		COLLAR							
						1			LDW270M10018-1		FLANGE							
						1			LDW270M10017-1		FLANGE							
						6			LDW270M10016-1		CLAMP							
					2				LDW270-10022-13		SUPPORT							
					2				LDW270-10022-11		SUPPORT							
					1				LDW270-10019-17		TUBE							
					1				LDW270-10019-15		TUBE							
						1			LDW270-10019-13		TUBE	SEE DWG						
						1			LDW270-28352-3		TUBE ASS'Y (WELDED)					AW	NONE	4A
									LDW270-28352-1	E	TUBE ASSY					T	NONE	4A
					-3	-1												

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
T	SCREW THREADS	MIL-S-7742

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
AW	FUSION WELD	MIL-W-8604 SEE NOTE #4

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

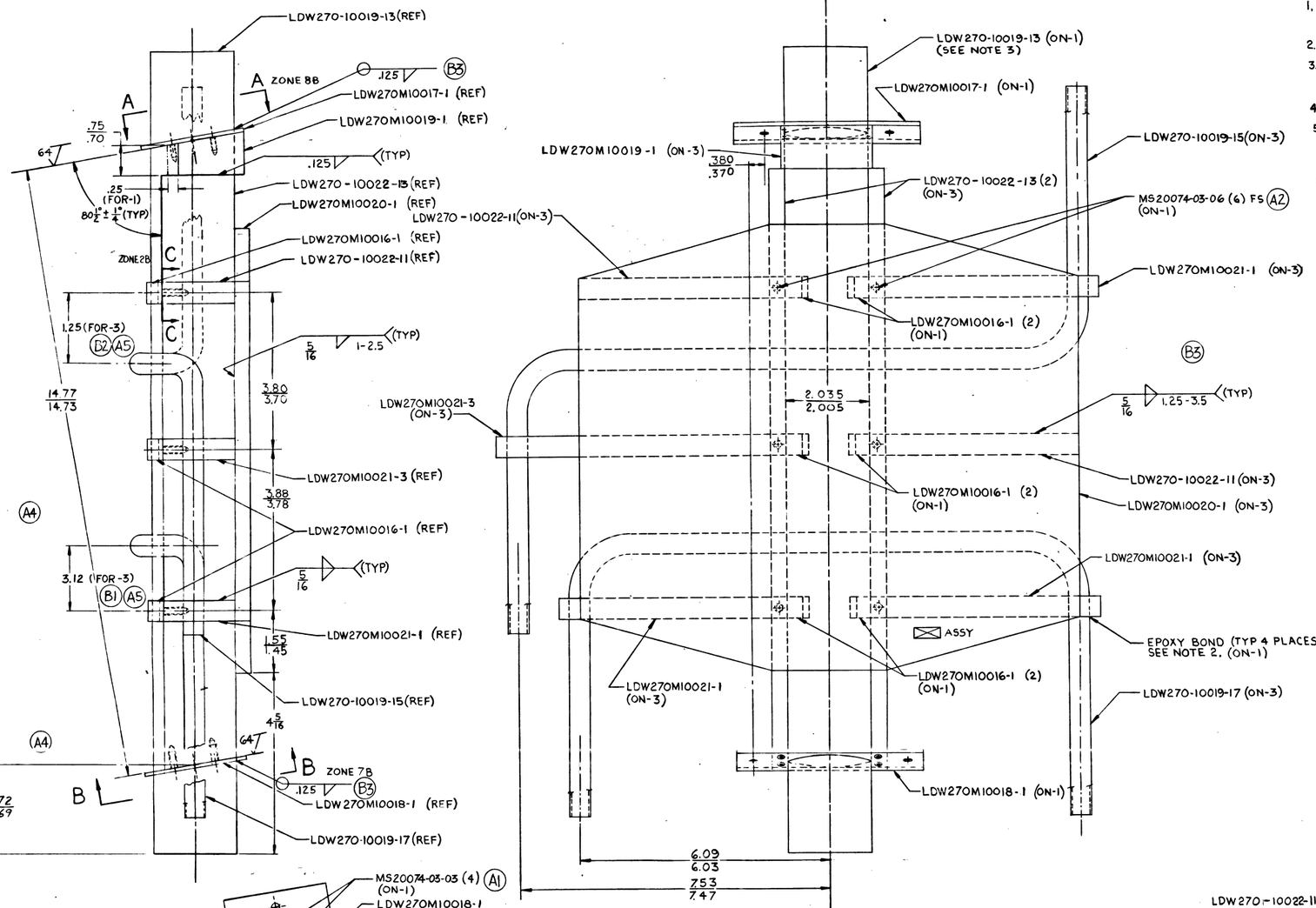
SIZE	CODE IDENT NO.		
B	26512	LDW270-28352	B

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



NOTES

1. WELD ALL JOINTS BETWEEN ALUM. ALLOY PARTS AS SHOWN. INTERMITTENT WELDS AND ANNEALING ADJACENT TO WELDS ARE PERMISSIBLE.
2. APPLY EPON 934-A OR EQUIVALENT TO ENTIRE LENGTH OF CLEARANCE.
3. LDW270-10019-13 MUST BE RIGIDLY CLAMPED SHIM (CRES SHEET 304 L MIL-S-4043) O.D IF REQUIRED. ~~WELD CLAMPS AS SHOWN.~~
4. NO XRAY REQUIRED. VISUAL INSPECTION ONLY
5. CLEAN PER LSP 14-7072 TO LEVEL G OF LSP 14-0011. ALL TUBE ENDS SHALL BE GLASS BEAD PEENED, ELECTRO ETCH BRAZING INSERTION MARK PER LSP 14-4708 FIG. 3.
6. AFTER ASSY, LDW270-10019-13 TUBE TO BE PROOF PRESSURE TESTED TO 165 P.S.I.

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.	√
FILLET AND INSIDE CORNER RADII TOLERANCES .018R TO .062R ± .010; .063R TO .250R ± .015; OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	√
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
250 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ∿ DENOTES SURFACE TO BE MACHINED	√
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

LDW 270-28352-1 ASSY
-3 ASSY (WELDED)

01 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

	SIZE	CODE IDENT NO.		
LEM	E	26512	LDW270-28352	B
MODEL OR END ITEM	SCALE FULL		SHEET 3.00	

LDW270-28352 B

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

LIAISON ENGINEERING #5

ENGINEERING ORDER

DWG. NO. LDW272-28352 | EO NO. C1

CONTROL INFO NO. LEM-5-9057

-1 ASSY, SECT. B-B & B/M REMOVE (4) NAS1351-3-6

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG

REASON FOR EO: SCREWS INTERFERE WITH WELDING AROUND TUBE

DESCRIPTION OF EO: -1 ASSY, IN SECT. B-B & B/M REMOVED (4) NAS1351-3-6.

GAEC EO RELEASE: LK | TB

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
LEM		LTA-8(1B)		✓		✓	

PRIORITY: C

DRAWING TITLE: ASSEMBLY, HEAT EXCHANGER SUBCRITICAL REFRIGERANT

DRAWING NO.: LDW272-28352

EO NO.: C1

APPROVED BY											
DATE	9-2-66							9-6-66	9-6-66	9-13	9/15/66
		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG				

ISSUED BY: LIAISON - J. McGILL X-6452 SECTION: ECS/THERMAL GROUP NO. _____ PL 3.5

303

LDW270-28401 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		LEM	LDW280-28001	LTA-8 (18)	1
								PART NO. LDW270-28401-1,-3,-5,-7,-9,-11		GAEC SCH NO. 45	5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00	1.10	2.00	3.00						
REV	A	A	A	A						
SHEET										
REV										
SHEET										
REV										

		GRUMMAN REL'D INFO	
LAST SECT LTR USED	F	PRIM NO.	VE(009)
LAST DASH NO. USED	-11	450	IMP 17

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. 9-1100 LINE ITEM 9 DOCUMENTATION TYPE II

DRAWN BY	E. BALSON	4-15-66		
LAYOUT BY	~	4/15/66	J. Garcia	4/4/66
CHECKED BY		4/15/66	F. Hunger	4/18
GR LDR				
PROP		4/15/66		
STRUCT		4/15/66		
VEH. DES		4/19/66		
PROJ ENGR			Plunkett	9 June 66
REL GROUP			Botti	6-13-66

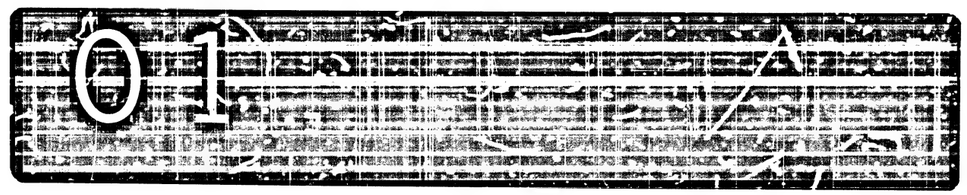
GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

DISCONNECT INSTL. ASCENT PROPULSION FEED SYSTEM - LTA-8

SIZE	CODE IDENT NO.		
B	26512	LDW270-28401	A

SCALE NONE SHEET 1.00 OF 4

ENG 77.1 12-65



NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	CONT APPD
A	1.	3.00 1.00	7-F 7-G						IN F/D ADD VIEW E-E, F-F, REF CALLOUTS LSC270-813-6 & LSC270-813-7. ADDED SHEET 1.10. SHEET 1.00 OF 4 WAS 1.00 OF 3.	LTA-8 A/S	NOT REQD.		E. BALSON 5-17-66		
	2.	1.00, 2.00 & 3.00	5-E B/M						IN VIEW A-A, -5 INSTL:- LDW280-28001(REF) WAS LDW280-28350 (REF). REMOVED AN960D10L(3) & ADDED MS21043-3(3).		✓				
	3.	1.00, 2.00 3.00	3-E B/M						IN VIEW B-B, -1 INSTL:- ADDED LDW280-28478(REF) & REMOVED LDW280-28530(REF). NAS1133V-2(6) WAS NAS1133V-4(6). REMOVED AN960D10L(6) & ADDED MS21043-3(6). ADDED PICTURE OF SUPPORTING STRUCTURE.						
	4.	1.00, 2.00 3.00	7-A B/M						IN VIEW C-C, -3 INSTL:- REMOVED LDW280-28350(REF) & ADDED LDW280-28346(REF). NAS1133V-2(3) WAS NAS1133V-4(3). REMOVED AN960D10L(3) & ADDED MS21043-3(3). ORDINATE -Z 28.75(REF WAS -Z31.00(REF), +Y37.25(REF) WAS +Y35.00(REF); +X214.85(REF) WAS +X215.05(REF). OXID HIGH POINT BLEED WAS OX HIGH POINT BLEED. ADD PICTURE OF SUPPORTING STRUCTURE						
	5.	1.00, 2.00 3.00	5-A B/M						IN VIEW D-D, -7 INSTL: REMOVED LDW280-28530(REF) & ADDED LDW280-28001(REF). NAS1133V-3(3) WAS NAS1133V-4(3). REMOVED AN960D10L & ADDED MS21043-3(3). ADDED ORDINATES +Z 28.406 (REF) & +Y 59.638(REF); REMOVED +Z 30.280(REF) & +Y55.50(REF). OXID FILL & OVERBOARD DRAIN WAS OX FILL & OVERBOARD DRAIN.						
	6.	1.00, 2.00 3.00	3-B B/M						ADDED -9 & -11 INSTL.		NOT REQD.				
	7.	2.00							REMOVED I&T REQTS:- LPC-19-2(GRUMMAN) LPC-19-3(VENDOR) ADDED "NONE". (R)						

FOR CONTINUATION OF REVISIONS SEE SHEET _____

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28401	A

SCALE NONE SHEET 1.10

01

NAS 9-1100

	3	3	3	3	3	6		MS21043-3	E	NUT	STD PART							
			3	3				NAS1133V-3	E	SCREW	STD PART							
	3	3			3	6		NAS1133V-2	E	SCREW	STD PART							
L		1			1			LSC270-813-7	S	COUPLING ASSY	SEE NOTE 1							
L	1					2		LSC270-813-6	↕	↕	↕							
J			1					LSC270-702-1	↕	↕	↕							
J				1				LSC270-701-1	S	COUPLING ASSY	SEE NOTE 1							
								LDW270-28401-11	E	DISCONNECT INSTL								
A								-9	↕	↕								
								-7	↕	↕								
								-5	↕	↕								
A								-3	↕	↕								
								LDW270-28401-1	E	DISCONNECT INSTL								
C.L.	-11	-9	-7	-5	-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE	
	QTY PER ASSEMBLY																	

CL - CLEANLINESS LEVEL PER LSP14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28401	A

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG NO. LDW 270-28401 | EO NO. B1
CONTROL INFO NO. LEM 270-647

IN M/B, B/M & F/D:
REMOVE -5 INSTALLATION (FUEL FILL & DRAIN DISCONNECT)

5

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG

REASON FOR EO: DUE TO STRUCTURAL REDESIGN, THIS DISCON. IS NOW INSTALLED ON VDI LINES INSIDE DWG.

DESCRIPTION OF EO: IN M/B, B/M & F/D: REMOVED -5 INSTALLATION (FUEL FILL & DRAIN DISCONNECT)

GAEC C EO RELEASE: 9-9

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP
LEM		LTA-8 (1B)		✓			✓

APPROVED BY	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
DATE: 9/8/66	PROP	SUPPORT	9/14	9/8	9-9-66	9/8/66

PRIORITY: C

DRAWING TITLE: DISCONNECT INSTL - ASCENT PROPULSION FEED SYSTEM

DRAWING NO.: LDW270-28401

EO NO.: B1

ISSUED BY: J. REBHOLZ 9-8-66

SECTION: PROPULSION x1471

GROUP NO.: 270

PL: 35

01

NAS 9-1100

B

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER EMF-A

DWG. NO. LEO 270		EO NO. 40
CONTROL INFO NO. LM-5-15086		

IN VIEW B-B FUEL TEST POINT 3/B
FUEL HIGH POINT BLEED & FUEL HIGH POINT BLEED
3/B FUEL TEST POINT.

RELEASED BY LIAISON

DWG. NO. **	TITLE	CHG NO.	EFF.
LDW 270-28401-1;3;5;7;9-11	DISCONNECT INSTL.	B2	* LTA-8(8)
LDW 270-51401-1;3;5;7;9-11	"	B3	*LM-1(31) THRU *LM-15(45)

5

DETAIL SPEC REQ | CL II ENGRG CHG | ✓ CL I ENGRG CHG |

REASON FOR EO: COUPLING CALLOUTS REVERSED

DESCRIPTION OF EO: IN VIEW B-B FUEL TEST POINT WAS FUEL HIGH POINT BLEED AND FUEL HIGH POINT BLEED WAS FUEL TEST POINT. FOR **

GAEC EO RELEASE: JE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	*	NOTED ABOVE	

DRAWING CHANGE REQD: REVISE DWG ↘ | RECORD EO
DISPOSITION OF PARTS: REWORK ↘ | SCRAP
PRIORITY: C

APPROVED BY										
DATE	1			SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	-GOVT-
						RB	—	CH	DAM	
						5-10-67	5-12-67	5-11-67		

DRAWING TITLE: DISCONNECT INSTL. W/S-PROP FEED SYS.
DRAWING NO.: LEO 270
EO NO.: 40

ISSUED BY LIAISON J. JARVIS SECTION PROPULSION GROUP NO. 270 PL 25

01

NAS 9-1100

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LEM	LDW280-28950	LTA-8 (18)	1 EA
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW270-28402-1 & -3		GAEC SCH NO. 31-18-1 SH 1	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH											
SHEET	1.00		2.00	3.00							
REV											
SHEET											
REV											
SHEET											
REV											

LAST SECT LTR USED	B
LAST DASH NO. USED	3

GRUMMAN RELINFO

PRIM NO.	VE1009		
450	PD12		

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
— — —

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS 9-1100 LINE ITEM 009 DOCUMENTATION TYPE II

DRAWN BY	B. ZANG 23 FEB 66			
LAYOUT BY				
CHECKED BY	RPC			
GR LDR	[signature] 2/4/66	V.D.I.	[signature] 2/10	
PROP	[signature] 2/25			
R&D	[signature] 2-24	PROJ ENGR	[signature] 2/26	
STRUCT.	[signature] 2/25	REL GROUP	[signature] 2-26	
STRUCT.	[signature] 2/25			

© GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

LEVEL DETECTOR INSTL,
PROPULSION FEED SYSTEM
PROPELLANT TANK- ASCENT

SIZE	CODE IDENT NO.	
B	26512	LDW270-28402

SCALE NONE SHEET 1.00 OF 3

ENG 77.1 9-64

01

NAS 9-1100

QTY PER ASSEMBLY			CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
AR	AR			MS20995C32		LOCKWIRE	STD PART		SEE NOTE 1				
8	8			AN960D10		WASHER	STD PART		"				
8	8		92215	VS-2864-3H2		BOLT (VOI-SHAN)			SEE NOTE 1				
1	1		05939	11596-1.624	E	SEAL (RACO)							
		1		LSC270-801-6	S	DETECTOR, OXIDIZER SEE NOTE 2							
			1	LSC270-801-5	S	DETECTOR, FUEL SEE NOTE 2							
				LDW270-28402-3	E	LEVEL DETECTOR INSTL, OXIDIZER							
				LDW270-28402-1	E	LEVEL DETECTOR INSTL, FUEL							
		-3	-1										

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

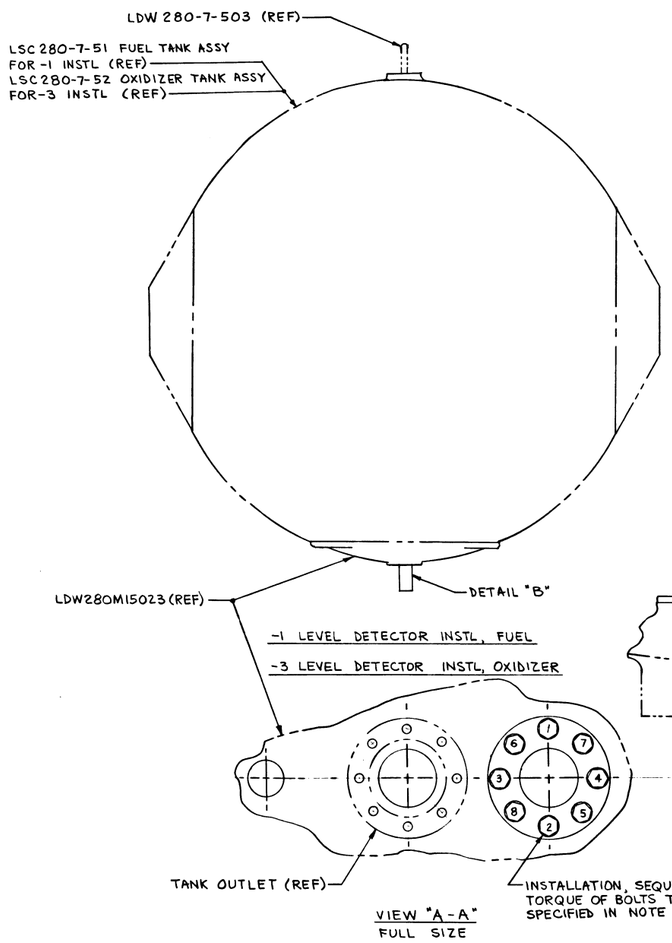
SIZE	CODE IDENT NO.	
B	26512	LDW270-28402

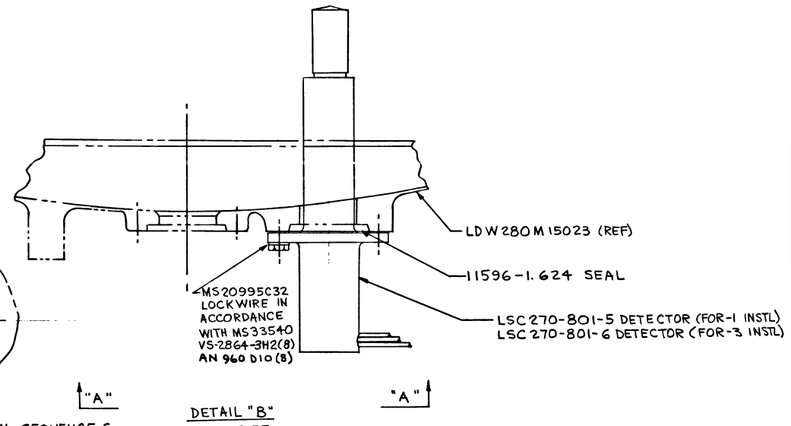
SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100





NOTES:

1. INSTALL 8 BOLTS FINGER TIGHT THEN TORQUE IN SEQUENCE AS FOLLOWS:
   (a.) PHYSICAL LOCATION FOR START OF SEQUENCE (BOLT #1) IS OPTIONAL.
   (b.) TORQUE ALL BOLTS PER SEQUENCE TO 10 INCH POUNDS & REPEAT THE SEQUENCE UNTIL BOLTS NO LONGER WILL TURN WHEN 10 INCH LBS. IS APPLIED.
   (c.) REPEAT STEP (b.) APPLYING 20 INCH POUNDS.
   (d.) REPEAT STEP (b.) APPLYING 32-35 INCH POUNDS FOR FINAL TORQUE.
2. COMMERCIAL PART SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING.

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY.	
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010; .063R TO .250R ± .015; OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
250 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ⚡ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK		
LTA-8 (18)	SIZE D	CODE IDENT NO. 26512	LDW270-28402
MODEL OR END ITEM	SCALE 1/5 NOTED		SHEET 3.00

LDW270-28402

NAS 9-1100

01

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LDW270-28402 | EO NO. A1

CONTROL INFO NO. LM270-739

ENG 22.1 REV 3-65

REVISE DWG AS FOLLOWS:

ON -1 & -3 IN F/D & B/M

DELETE AN 960 D10 (8)

5

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓

REASON FOR EO: TO PROVIDE ADDITIONAL THREAD ENGAGEMENT LCR-633

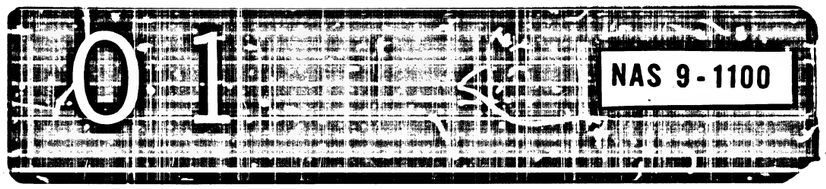
DESCRIPTION OF EO: DELETED AN 960 D10 (8 EACH) FROM -1 & -3

GAEC EO RELEASE

MODEL	EFFECTIVITY			DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY	R4C	—	—	RO				
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	REVISE DWG	RECORD EO	REWORK	SCRAP	DATE	11-21-66	—	—	11/21/66	11/22/66		11-22-66	11/22/66
LM		LTA-8 (18)						1	PROP	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	QUAL

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
A	LEVEL DETECTOR INSTL- PROPULSION FEED SYST-PROPELLANT TK-ASCENT	LDW270-28402	A1

ISSUED BY B.J. ZANG X1472 21 NOV 1966 SECTION PROPULSION DESIGN GROUP NO. 345 PL 35



LDW270-28451 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LEM	LDW280-28508	LTA-8(10)	1 EA
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW270-28451-1 THRU-13		GAEC SCH NO. 55	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET										
REV	1.00	1.10	2.00	3.00						
SHEET	A	A	A	A						
REV										
SHEET										
REV										

LAST SECT LTR USED	G
LAST DASH NO. USED	-13

GRUMMAN REL INFO A
PRIM NO. 470 (009) MP 74-6 K

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS9-1100 LINE ITEM 9 DOCUMENTATION TYPE II

DRAWN BY	BALSON 7/5/66	R.P.V.M.	
LAYOUT BY			
CHECKED BY			
GR LDR			
PROP			
STRUCT		PROJ ENGR	
VEH DES		REL GROUP	
WEIGHTS	L. Garcia 7/12/66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

DISCONNECT INSTL DESCENT PROPULSION FEED SYSTEM

SIZE	CODE IDENT NO.		
B	26512	LDW270-28451	A

SCALE NONE SHEET 1.00 OF 4

F.I 12-65

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00, 1.10, 2.00 & 3.00	6C 7C 9B 9C					EOA1	IN B/M & FLD FOR -3 INSTL: REMOVED LSC270-816-26, NAS1133V-2(3) & MS21043-3(3). IN B/M & FLD FOR -9 INSTL: REMOVED LSC270-816-27, NAS1133V-3(3) & MS21043-3(3). ADDED SH 1.10, SH 1.00 OF 4 WAS SH 1.00 OF 3.	LTA-8(18)	✓		DUERR 9.12.66		
	2	1.10, 2.00 & 3.00	3C 6A 8A					EO-A2 (2)	ON-5, -7 & -11 INSTL, IN B/M & FLD NAS1132V-1 WAS NAS1133V-2 F2	LTA-8(18)	NOT	REQ'D. RL	V. SIBILIA 10-3-66		

CHG APPROVED	LTR	GROUP LDR	PROP.	STRUCT.	VEH DES	WEIGHTS	RELIAB.
	A						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28451	A

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01 NAS 9-1100

	3		2			2			MS21043-3	E	NUT	STD PART						
	3		3			3			NAS1133V-3	E	SCREW	STD PART						
		9		9	12		3		NAS1132V-1	E	SCREW	STD PART						
L		3							LSC270-813-27		COUPLING ASSY	SEE NOTE 1						
L				1	2				LSC270-813-26									
L				2	2				LSC270-813-21									
J	1								LSC270-805-1									
J							1		LSC270-804-1									
J			1						LSC270-803-1									
J						1			LSC270-802-1		COUPLING ASSY	SEE NOTE 1						
J									LDW270-28451 13	E	DISCONNECT INSTL							4A
									-11									3B
									-9									5B
									-7									6A
									-5									8A
									-3									7B
J									LDW270-28451-1	E	DISCONNECT INSTL							9A
-13	-11	-9	-7	-5	-3	-1	CODE IDENT		PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
CL	QTY PER ASSEMBLY																	

CLEANLINESS LEVEL PER LSP 14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

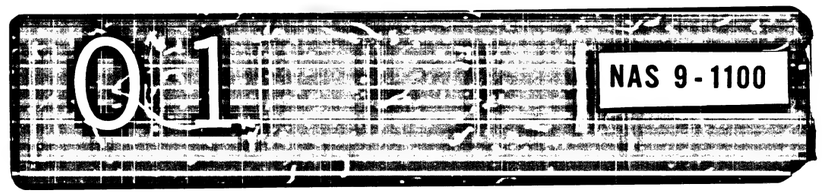
I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

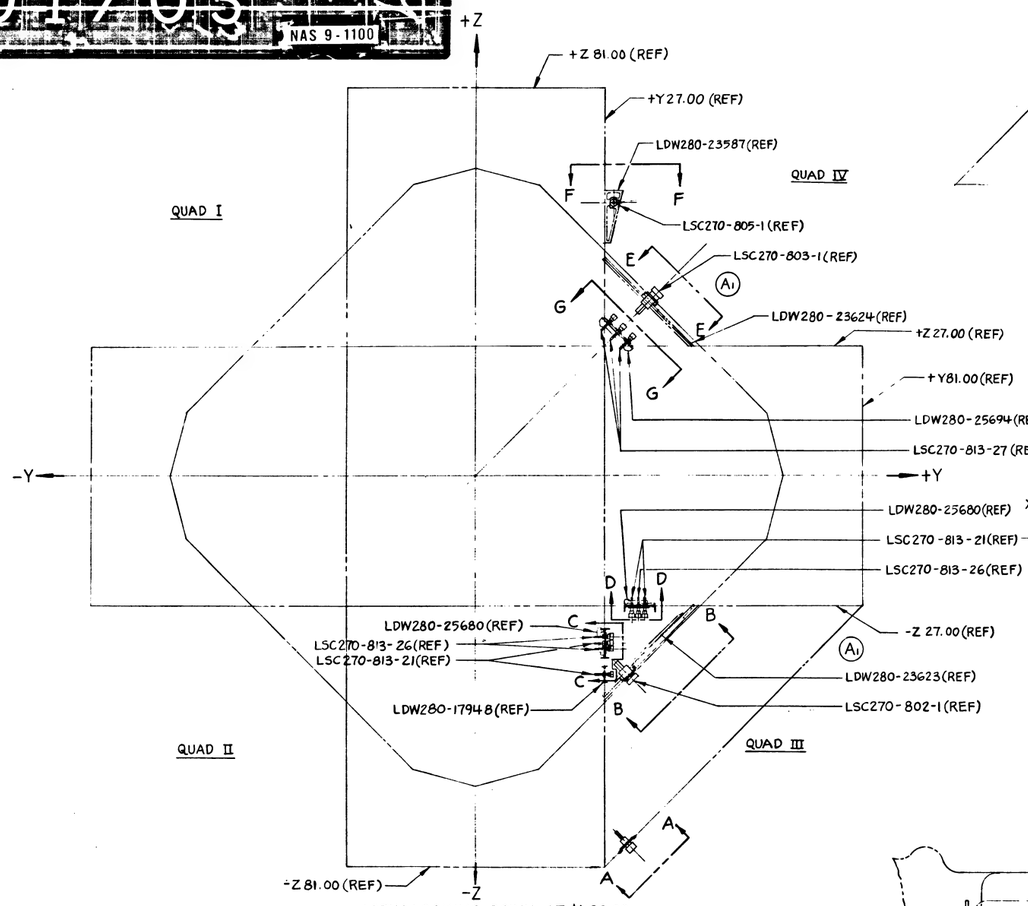
SIZE	CODE IDENT NO.		
B	26512	LDW270-28451	A

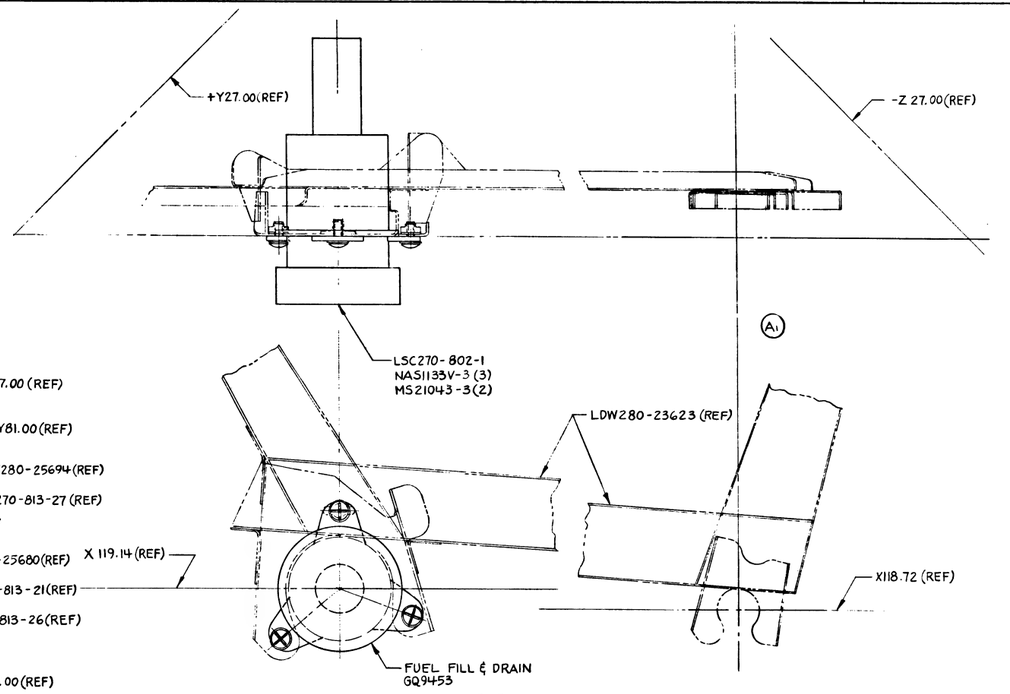
SCALE NONE SHEET 2.00

ENG 77.2 7-65

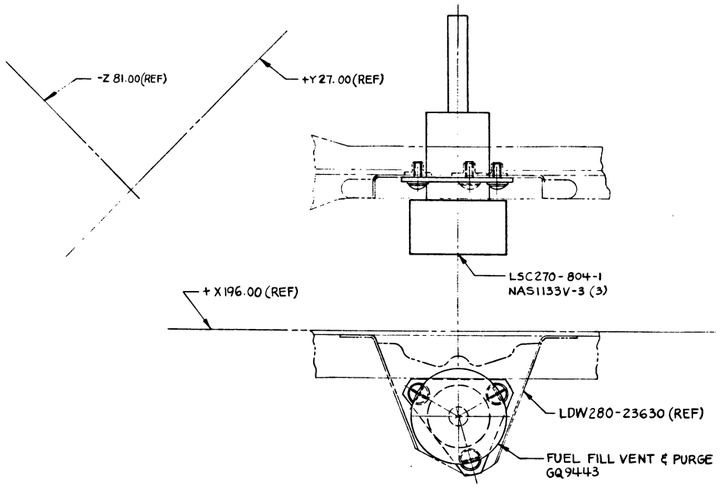


01/03 NAS 9-1100

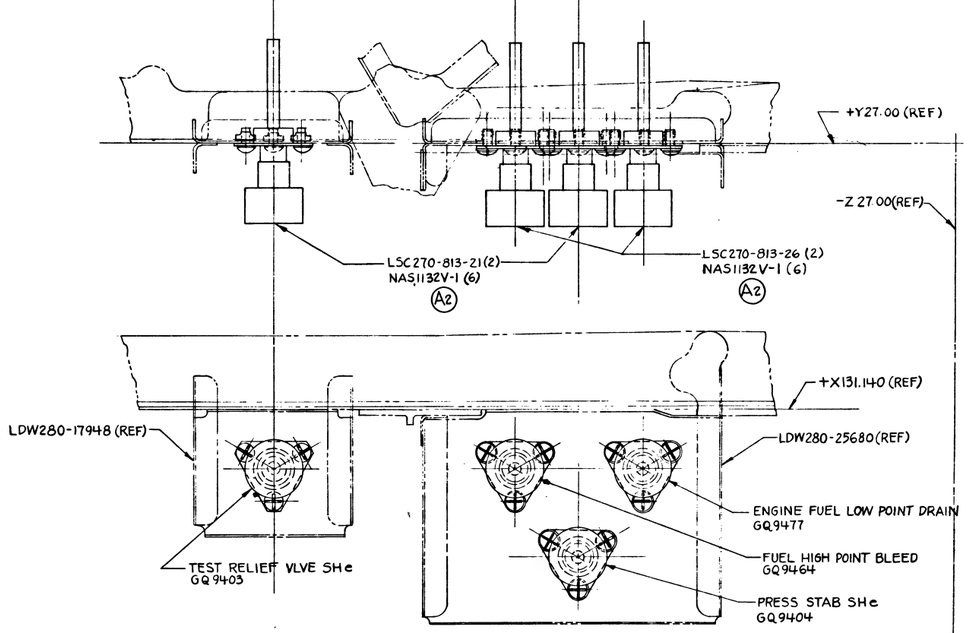




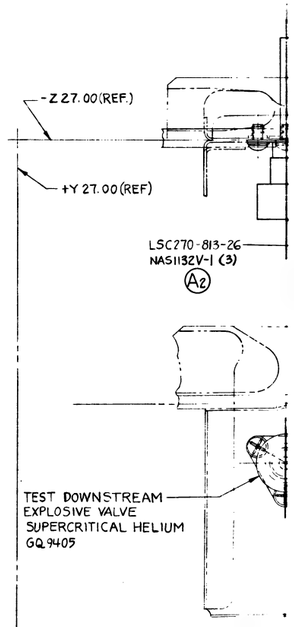
VIEW B-B LOOKING INBOARD (ROTATED 45°)
(FULL SCALE)
(ZONE 9B SHEET NO. 3)
LDW270-28451-3 INSTL.



VIEW A-A LOOKING INBOARD (ROTATED 45°)
(FULL SCALE)
(ZONE 9B SHEET NO.3)
LDW270-28451-1 INSTL



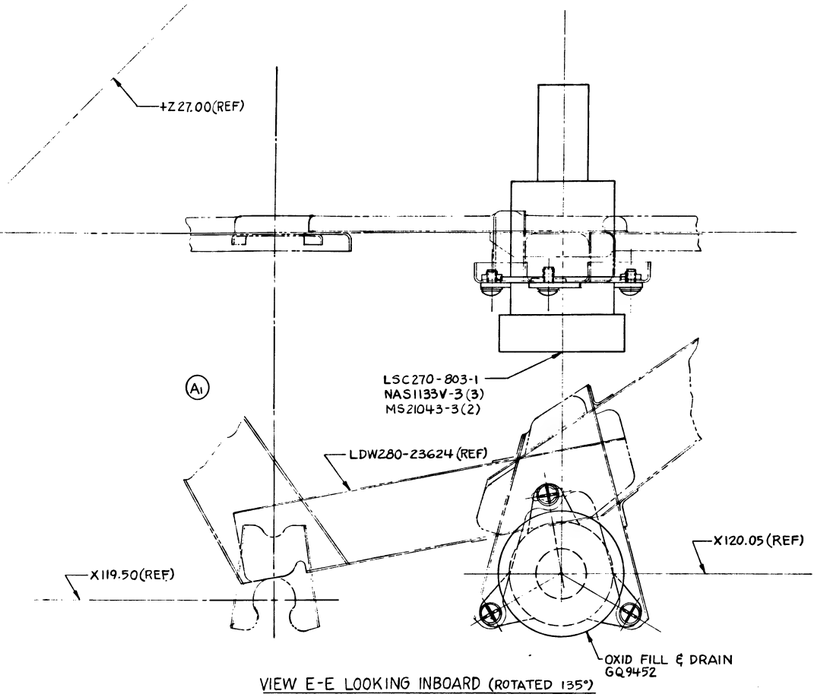
VIEW C-C LOOKING LEFT (ROTATED 90°)
(FULL SCALE)
(ZONE 9B SHEET NO.3)
LDW270-28451-5 INSTL



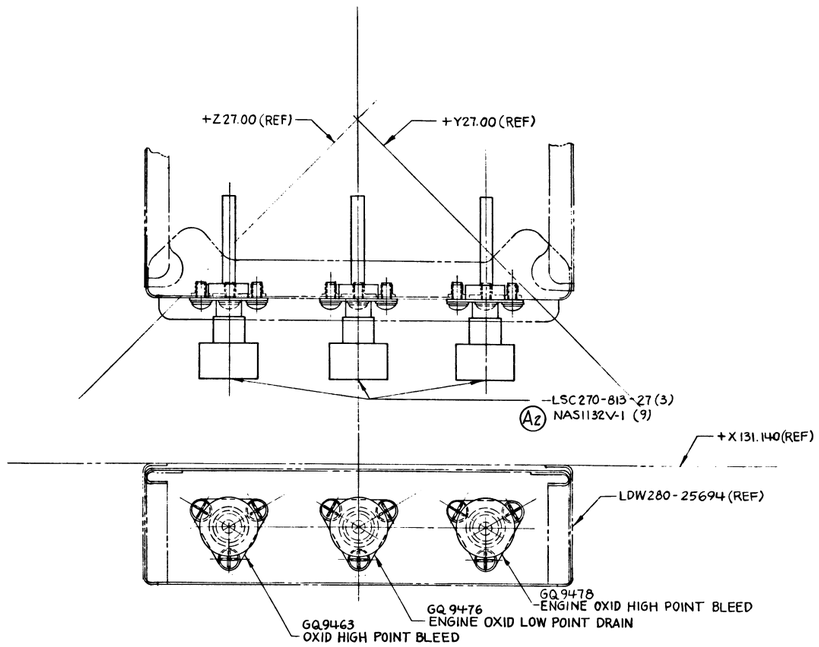
VIEW
(ZO
LDW

CODE IDENT 26512
LDW270-28451 SHT 3.00

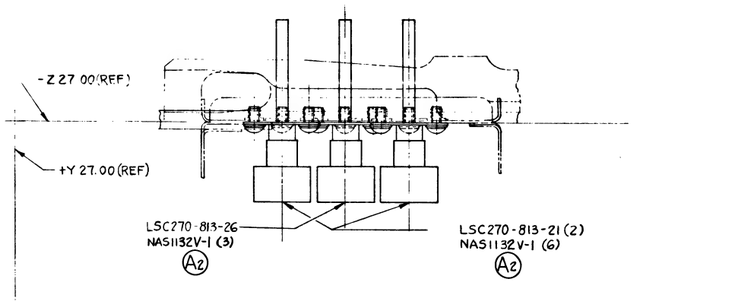
3/3

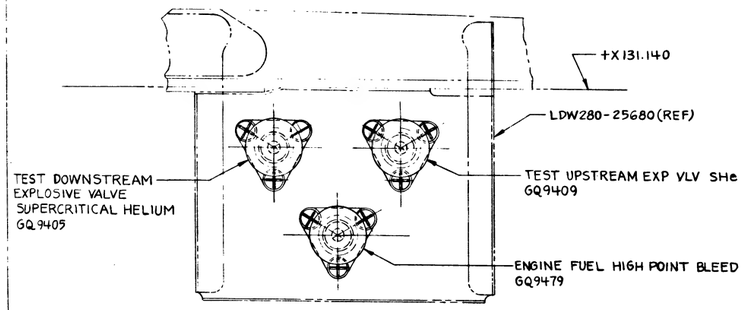


VIEW E-E LOOKING INBOARD (ROTATED 135°)
(FULL SCALE)
(ZONE 9C SHEET NO.3)
LDW270-28451-9 INSTL.

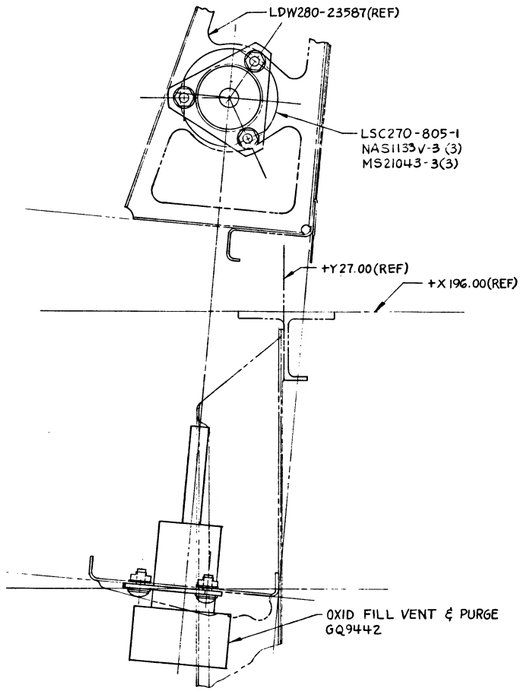


VIEW G-G LOOKING INBOARD (ROTATED 135°)
(FULL SCALE)
(ZONE 9C SHEET NO.3)
LDW270-28451-11 INSTL.





VIEW D-D LOOKING FWD
(FULL SCALE)
(ZONE 9B SHEET NO. 3)
LDW270-28451-7 INSTL.



VIEW F-F LOOKING AFT (ROTATED 180°)
(FULL SCALE)
(ZONE 9C SHEET NO. 3)
LDW270-28451-13 INSTL.

NOTES:
1. COMMERCIAL PART-SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING.

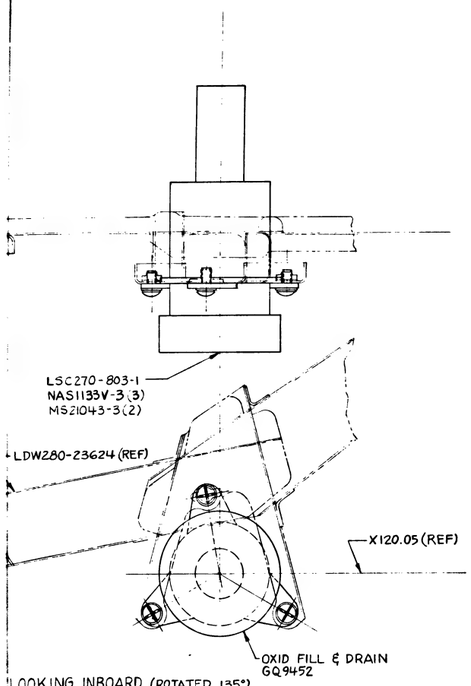
027703

NAS 9-1100

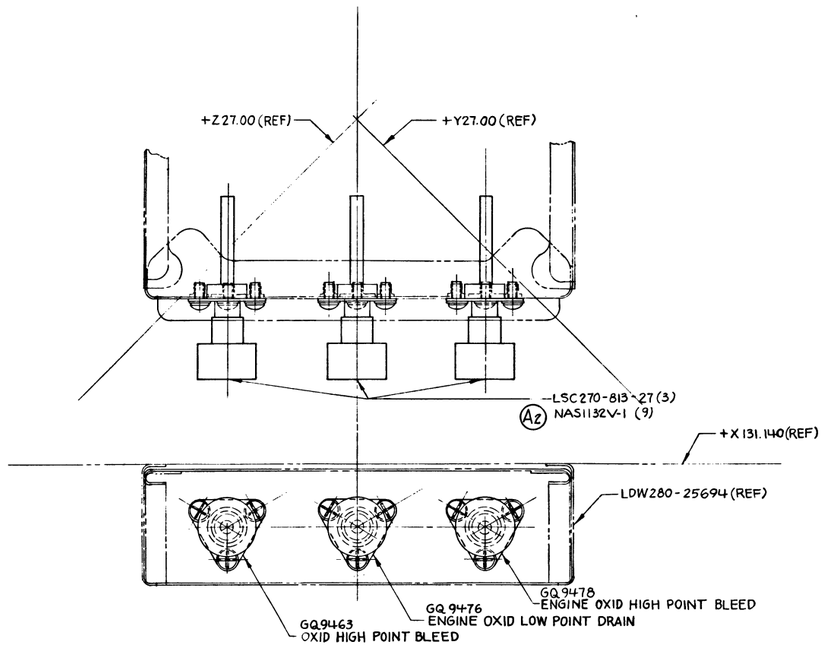
CODE IDENT 26512
LDW270-28451 SHT 3.00

6 5 4 3 2

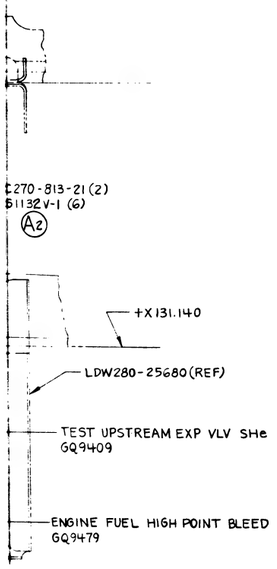
CODE IDENT 26512
LDW270-28451 SHT 3.00

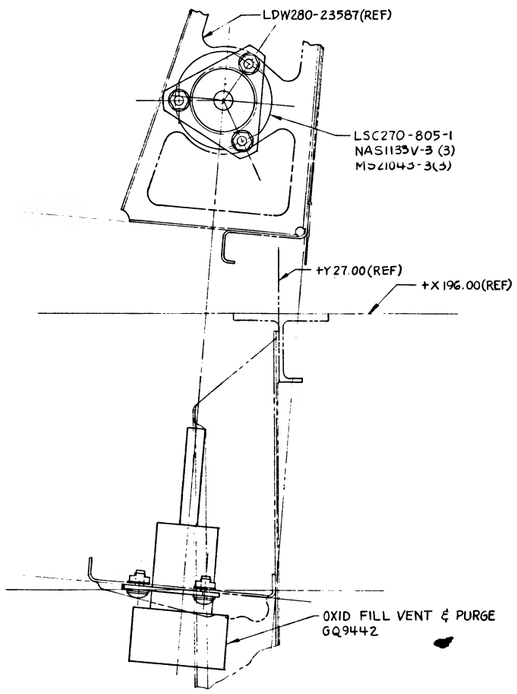


LOOKING INBOARD (ROTATED 135°)
(FULL SCALE)
(ZONE 9C SHEET NO 3)
W270-28451-9 INSTL.



VIEW G-G LOOKING INBOARD (ROTATED 135°)
(FULL SCALE)
(ZONE 9C SHEET NO.3)
LDW270-28451-11 INSTL.





VIEW F-F LOOKING AFT (ROTATED 180°)
(FULL SCALE)
(ZONE 9C SHEET NO.3)
LDW270-28451-13 INSTL.

NOTES:
1. COMMERCIAL PART-SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING.

03/A03
NAS 9-1100

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
250 FOR ALL DRILLED HOLES
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
SYMBOL ↑ DENOTES SURFACE TO BE MACHINED
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
TOLERANCE ON LOFTED DELINEATIONS IS

DWG SIZE 34 X 44
PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X 44) = 9.9 SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL) = 4.95 SQ. FT.
PRINT TRIM LINE

LDW270-28451 A

CODE IDENT 26512	LDW270-28451	SHT 3.00

LEM	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
	SIZE J	CODE IDENT NO. 26512	LDW270-28451	A
MODEL OR END ITEM	SCALE		SHEET 3.00	

LDW270-28454 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LEM	LDW280-28350	LTA-8(18)	1 EA
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW270-28454-5 & -7		GAEC SCH NO. 5C	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	1.10	2.00	3.00		4.00			
REV	B	B	B	B		B			
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	
LAST DASH NO. USED	-17

GRUMMAN REL INFO A/B
PRIM NO. E/009 IMPI2 A Sq.3A
450

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
— .03 —

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100 LINE ITEM 009 DOCUMENTATION TYPE II

DRAWN BY	B ZANG 20APR66		
LAYOUT BY		V.D.I.	
CHECKED BY			
GR. LDR.			
PROP.			
REL.		PROJ ENGR	
STRUCT.		REL GROUP	
STRUCT.			

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

HOSE ASSY, METAL, FLEXIBLE
PROPELLANT LINES
ASCENT STAGE LTA-8

SIZE	CODE IDENT NO.		
B	26512	LDW270-28454	B

SCALE NONE SHEET 1.00 OF 5

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	CHANGE LTR	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	QUALITY APPD
A	1	1.00 4.00								ADDED SH 1.10 SHEET 1 OF 5, WAS 1 OF 4 ON -3 5.50 WAS 6.00 & 15.50 WAS 16.00	LTA-8(18)	✓		ZANG 4-28-66		
B	1	1.00, 1.10, 2, 3, 4							EO B1	REMOVED -11 FROM -3 ASSY AND ADDED -13	LTA-8(18)		-11	FREDA 6-22-66		
	2	1.00, 1.10, 3, 4							EO-B2	REMOVED -1 & -3, -11 & -13 & LSC269-200-20 ADDED -5 & -7, -15 & -17 & LSC269-206-20	LTA-8(18)	✓	✓	SIBILLA 7-13-66		
	3	1.10 & 3							EO-B3	DELETED NOTE #2	LTA8(18)	NOT REQ				

FOR CONTINUATION OF REVISIONS SEE SHEET

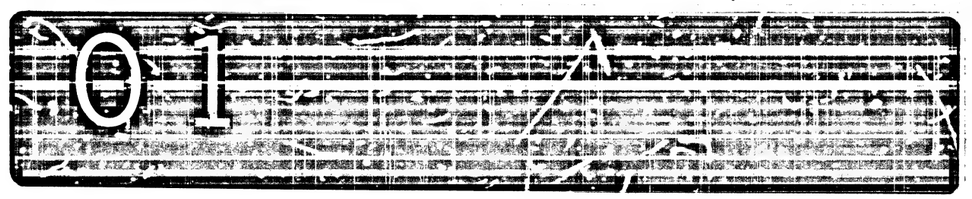
ENG 77.3 5-64

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28454	B

SCALE NONE — SHEET 1.10

NAS 9-1100



C				1	1		LSC269-2066-20	E	UNION	(SEE NOTE 1)									
G				1			LDW270-28454-17	E	TUBE (SEE NOTE 3)	304L CRES		LSM-14-1001	.049x1 1/4x G 1/4						
G					1		LDW270-28454-15	E	TUBE (SEE NOTE 3)	304L CRES		LSM-14-1001	.049x1 1/4x G 1/4						
J				1			LSC270-809-12	E	HOSE ASSY	(SEE NOTE 1)									
J					1		LSC270-809-10	E	HOSE ASSY	(SEE NOTE 1)									
G							LDW270-28454-7	E	HOSE ASSY	(OXIDIZER)				NOTE 5	NONE				
G							LDW270-28454-5	E	HOSE ASSY	(FUEL)				NOTE 5	NONE				
C.L.		QTY PER ASSEMBLY		-7	-5	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE			

CLEANLINESS LEVEL PER LSP 14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

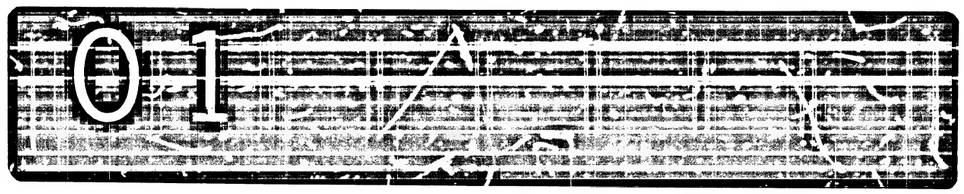
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28454	B

SCALE NONE SHEET 2.00

ENG 77.2 7-65



NAS 9-1100

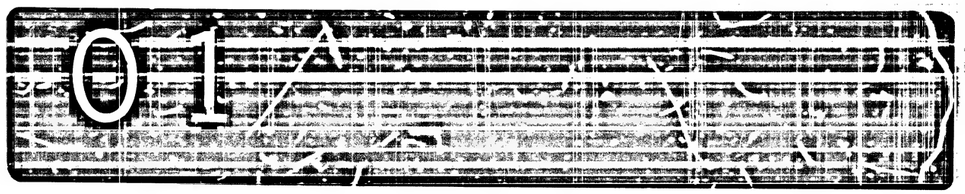
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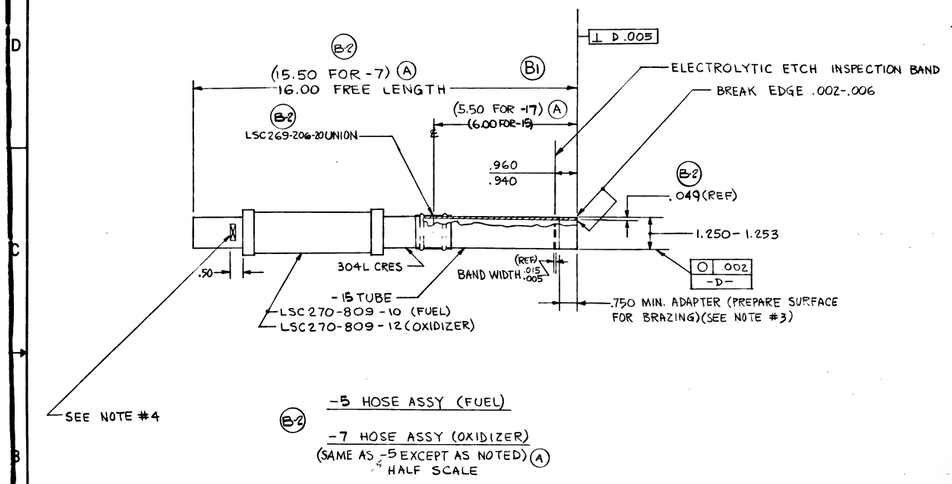
1. COMMERCIAL PART SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING.
2. PROOF PRESSURE TEST HOSE ASSY TO 540 PSIG WITHOUT LEAKAGE, PERMANENT DEFORMATION OR FAILURE.
3. TUBE ENDS SHALL BE MARKED PER LSP-14-4708.
4. PART NUMBER TO BE ELECTROLYTIC-ETCHED PER LSP-14-4706.
5. INDUCTION BRAZE PER LSP-14-6303.

ENG 73.1 6-64

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-28454	B
SCALE NONE		SHEET 3.00	

NAS 9-1100





LEM	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK			
	SIZE	CODE IDENT NO.		
	C	26512	LDW 270-28454	B
MODEL OR END ITEM	SCALE HALF		SHEET 4.00	

EIN 752 644

NAS 9-1100

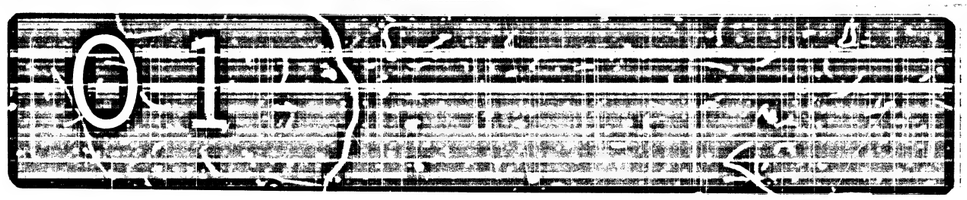
(Q1

NOTES:

1. COMMERCIAL PART SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING.
~~2. THE HOSE ASSY SHALL BE CLEAN TO LEVEL G, TABLE I OF LSP-14-00 1.~~
3. ALL TRIMMED TUBE ENDS SHALL BE CLEANED, GLASS BEAD PEENED & MARKED IN ACCORDANCE WITH PARAGRAPHS 3.4, 3.4.1 & 3.5 OF LSP-14-7062 ~~AMENDMENT 3.~~ THE TUBE END SHALL BE PEENED TO A LENGTH OF 3/4 INCHES MINIMUM. AN INSPECTION LINE SHALL BE APPLIED TO THE TUBE IN ACCORDANCE WITH PARAGRAPH 3.3.7 OF LSP-14-4708 ~~AMENDMENT #1.~~
4. ALL MARKINGS TO BE ELECTROLYTIC-ETCHED IN ACCORDANCE WITH LSP-14-4706.
5. PART NUMBER TO BE ELECTROLYTIC-ETCHED IN ACCORDANCE WITH NOTE #4 ABOVE.

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-28455	A
SCALE NONE		SHEET 3.00	

ENG 72.1 6-64



NAS 9-1100

LDW270-28455 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW270-28456	LTA-8 (18)	1
PART NO. LDW270-28455-1		GAEC SCH NO. 45	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	1.10	2.00		3.00		4.00		
REV	B	B	B		A		B		
SHEET									
REV									
SHEET									
REV									

		GRUMMAN REL INFO
LAST SECT LTR USED		PRIM NO. (E009D)
LAST DASH NO. USED	3	450 MP12A 6-1A

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES
± 1/16 ± .003 —

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100 LINE ITEM 009 DOCUMENTATION TYPE II

DRAWN BY	B. ZANG 6MAY66	REL MB	
LAYOUT BY	—		
CHECKED BY	—	V D I	5.9.66
G.R. LDR		WEIGHTS	6/9/66
PROP			
STRUCT		PROJ ENGR	6.13.66
STRUCT		REL GROUP	

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

HOSE ASSY, METAL, FLEXIBLE
PROPELLANT LINES
ASCENT STAGE

SIZE	CODE IDENT NO.	
B	26512	LDW270-28455 B

SCALE NONE SHEET 1.00 OF 5

ENG 77.1 12-65

01 NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	QUAL APPD
A	1	3.00 1.00							DELETED NOTE #2. ADDED SH. 1.10 SH 1.00 OF 5 WAS OF 4.	NOTED	NOT	REQD	ZANG 1 JUN 66		
	2	9.00							REVISED NOTE #3 BY DELETING "AMENDMENTS 1 & 3."						
	3	1.00 4.00							DIM 1/2 WAS .50, ADDED ± 1/16 TOLERANCE TO DWG						
	4	1.00							FOR -1 N/A LDW 270-28456 FOR LTA-8, LEM-1 & LEM-2 (WAS) LDW 280-28350						
	5	1.00							FOR -1 ADDED EFF FOR LTA-3, LEM-3 THRU LEM-6						
B	1	1,10,2,4						EO B1 (R)	DELETED -3 FROM LEM-1 & LEM-2. DELETED -1 FROM LEM-1 THRU LEM-6 & LTA-3	LEM-1 THRU-6 LTA-3		✓	LeCuu 8/15/66		

FOR CONTINUATION OF REVISIONS SEE SHEET _____

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28455	B

SCALE NONE — SHEET 1.10

OFFICIAL NAS 9-1100

J							1		LSC270-809-12	E	HOSE ASSY	(SEE NOTE 1)								
G									LDW270-28455-1	E	HOSE ASSY	(OXIDIZER)						NONE	NONE	
							-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE			PROCESS SYM	FINISH NO.	ZONE
C...	QTY PER ASSEMBLY																			

CLEANLINESS LEVEL PER LSP14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

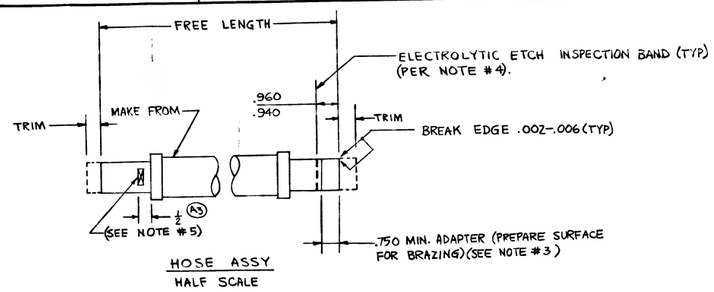
SIZE	CODE IDENT NO.		
B	26512	LDW270-28455	B

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



HOSE ASSY
HALF SCALE

	HOSE ASSY	PROPELLANT	MAKE FROM	FREE LENGTH	TRIM
B1	- 1	OXIDIZER	LSC270-809-12	9.25	.375

LDW270-28455 B

LEM	GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L I, NEW YORK			
	SIZE C	CODE IDENT NO. 26512	LDW270-28455	B
MODEL OR END ITEM	SCALE HALF		SHEET 4.3	

DRG 752 644

NAS 9-1100

LDW270-28456 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW290-28350	LTA-8 (18)	1
PART NO. LDW270-28456-3		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-28350	LTA-8(18)	1
PART NO. LDW270-28456-1		GAEC SCH NO. 30	

(22)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH								
SHEET	1.00	1.10	2.00		3.00		4.00	
REV	A	A	A		A		A	
SHEET								
REV								
SHEET								
REV								

LAST SECT LTR USED	
LAST DASH NO. USED	3

GRUMMAN REL'G INFO ▽

PRIM NO.	16009	
450	MP-14	A-11-25-6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS — ANGLES
± 1/16 ±.003 —

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100		LINE ITEM 009	DOCUMENTATION TYPE II
DRAWN BY	B.ZANG 27MAY66		
LAYOUT BY			
CHECKED BY			
GR. LDR			
PROP			
		PROJ ENGR	
STRUCT		REL GROUP	
STRUCT			

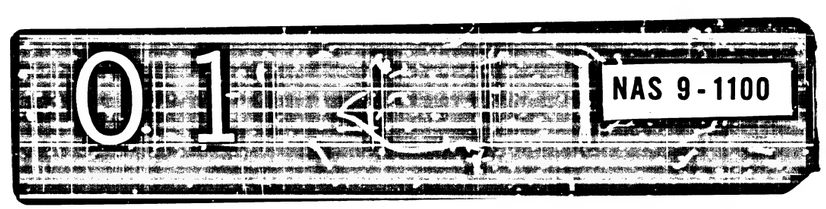
GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

HOSE ASSY, METAL, FLEXIBLE, FLANGED
PROPELLANT LINES
ASCENT STAGE

SIZE	CODE IDENT NO.		
B	26512	LDW270-28456	A

SCALE NONE SHEET 1.00 OF 5

ENG 77.1 12-65



REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00, 1.10, 3.00						A-1	ADDED NOTE 8, DELETED NOTE 3, RESTRICTED -1 & -3 TO LTA-8 ONLY	NOTED	✓	✓	ZANG 14NOV66		
	2	1.00, 1.10						(R)	SH 1.00 OF 5 (WAS) 1 OF 4						

FOR CONTINUATION OF REVISIONS SEE SHEET _____

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW 270-28456	A

SCALE NONE | SHEET 1.10

ENG 77.3 5-66

Q-1

NAS 9-1100

C.L.	QTY PER ASSEMBLY		CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
	-3	-1											
C	1	1		LDW270M10024-1	E	FLANGE	(SEE DWG)						
G	1			LDW270-28455-1	E	HOSE ASSY	(SEE DWG)						
J		1		LSC270-809-10	E	HOSE ASSY	(SEE NOTE 1)						
F				LDW270-28456-3	E	HOSE ASSY	(OXIDIZER)				SW	NONE	
G				LDW270-28456-1	E	HOSE ASSY	(FUEL)				SW	NONE	

CLEANLINESS LEVEL PER LSP 14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
SW	FUS. WELD-STEEL	MIL-W-8611

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-28456	A

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTES:

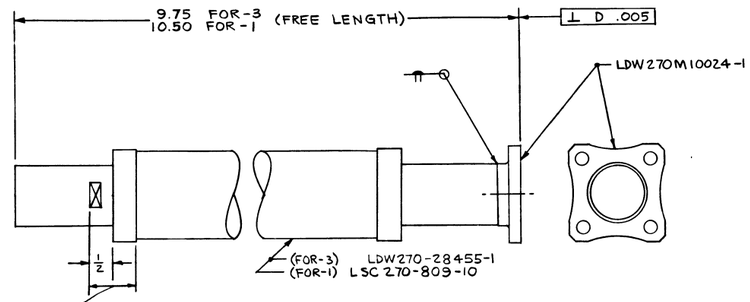
1. COMMERCIAL PART SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING.
2. 100% RADIO GRAPHIC INSPECTION REQUIRED ON WELDS.
3. ~~PROOF PRESSURE TEST HOSE ASSY TO 540 PSIG WITHOUT LEAKAGE, PERMANENT DEFORMATION OR FAILURE.~~
4. BUTT WELDS SHALL HAVE 100 PERCENT PENETRATION & FUSION FOR 100 PERCENT OF THE LINEAL LENGTH OF WELD.
5. ALL MARKINGS TO BE ELECTROLYTIC-ETCHED IN ACCORDANCE WITH LSP-14-4706.
6. ALL ASSYS SHALL BE CLEANED PER LSP-14-7062.
7. REMOVE ALL INTERNAL WELD BEADS IN EXCESS OF .010.
8. OPERATING PRESSURE 270 P.S.I.G. PROOF PRESSURE TEST PER LSP-14-19150 AFTER BELLOWS ARE RESTRAINED.

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-28456	A
SCALE NONE		SHEET 3.00	

ENG 73.1 6-64

01

NAS 9-1100



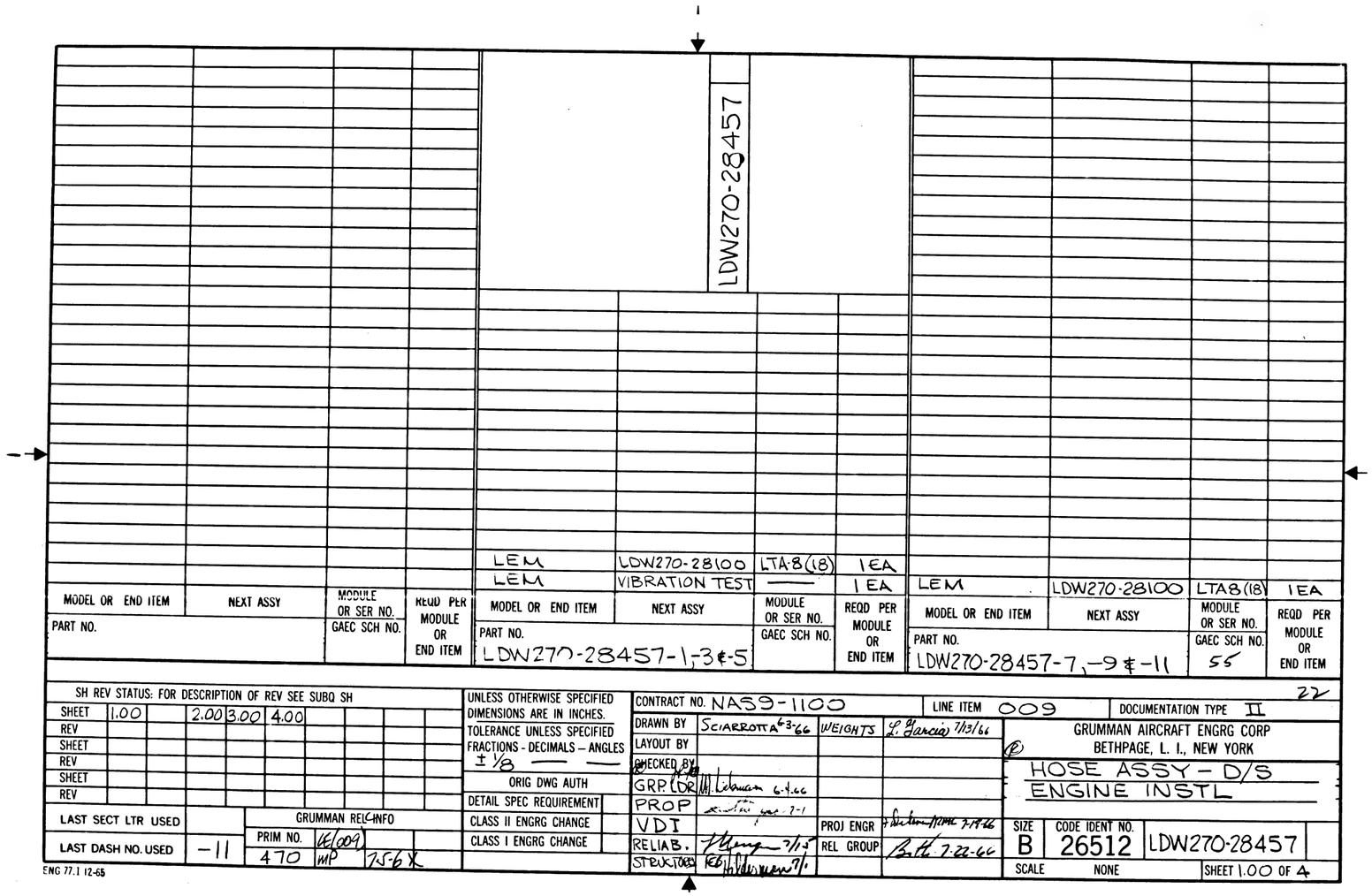
-1 HOSE ASSY (FUEL)
-3 HOSE ASSY (OXIDIZER)

LEM	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK			
	SIZE	CODE IDENT NO.		
	C	26512	LDW270-28456	A
MODEL OR END ITEM	SCALE FULL		SHEET 4.00	

ENG 752 644

NAS 9-1100

LDW270-28456A



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	
LEM	LDW270-28100	LTA-8(18)	1 EA
LEM	VIBRATION TEST	——	1 EA
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW270-28457-1,-3 & -5		GAEC SCH NO.	
LEM	LDW270-28100	LTA-8(18)	1 EA
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW270-28457-7,-9 & -11		GAEC SCH NO. 55	

22

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00	3.00	4.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	
LAST DASH NO. USED	-11

GRUMMAN REL INFO: PRIM NO. VE 009 — 470 MP 75-6X

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES ±1/8 —— ——

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS9-1100 — LINE ITEM 009 — DOCUMENTATION TYPE II

DRAWN BY	SCIARROTTA 6-3-66	WEIGHTS	L. Garcia 7/13/66
LAYOUT BY			
CHECKED BY			
GRP LDR	M. Letaman 6-4-66		
PROP			
VDI		PROJ ENGR	7-19-66
RELIAB.	7/1/5	REL GROUP	7-22-66
STRUCTURES			

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

HOSE ASSY - D/S ENGINE INSTL

SIZE B — CODE IDENT NO. 26512 — LDW270-28457

SCALE NONE — SHEET 1.00 OF 4

ENG 77.1 12-65

01 A

NAS 9-1100

	1	1	2				06851	RA200CC-4-90	FITTING, ASSY	COM'L. PART							
	1	1		2	2		06851	R3904CC									
						1	00624	FG633-4									
						1	00624	FG6009-4	FITTING, ASSY								
	A/R	A/R	A/R	A/R	A/R		06851	R500-4	HOSE, TEFLON								
						A/R	00624	AE116-4	HOSE, TEFLON	COM'L. PART							

NOTES:

1. ALL LENGTHS INDICATED ARE APPROXIMATE. TRUE LENGTHS TO BE ESTABLISHED AT INSTALLATION & ENGINEERING TO BE INFORMED.

2. FABRICATION OF HOSE ASSYS SHALL BE IN ACCORDANCE WITH LSP-14-17102.

3. ONE EACH OF -1, -3 & -5 HOSE ASSY TO BE USED FOR VIBRATION TEST IN ADDITION TO MEETING THE REQUIREMENTS OF LSP-14-17102.
   VIBRATION TEST - THE ASSY SHALL BE INSTALLED ON THE VIBRATION EQUIPMENT IN THE POSITION SIMULATING THE INSTALLATION ON THE LEM VEHICLE, SEE F/D, ONE END TO BE FIXED & THE OTHER END, WHICH IS THE ENGINE INTERFACE, FIXED TO THE SHAKER HEAD & VIBRATED ONE SWEEP 5-2000-5 CPS AT ONE OCTAVE PER MINUTE PER AXIS IN EACH OF THREE MUTUALLY PERPENDICULAR AXES. THE LINE SHALL BE PRESSURIZED TO OPERATING PRESSURE & VIBRATION LEVELS SHALL BE 5-28 CPS 0.500 INCH DOUBLE AMPLITUDE 28-2000 CPS 20 g's.

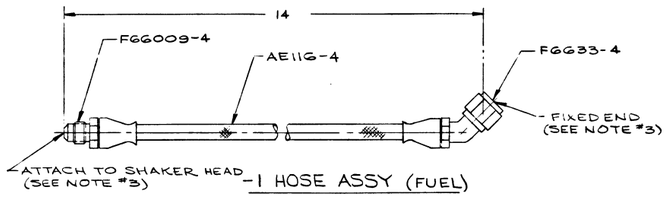
4. OPERATING PRESSURE 280 PSI.

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-28457	
SCALE ——		SHEET 3.00	

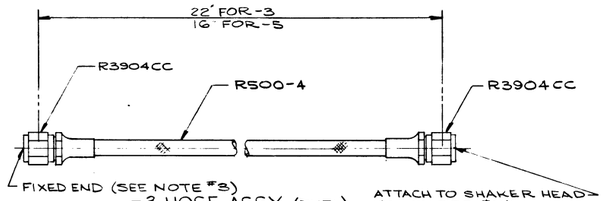
ENG 73.1 6-64

01 A

NAS 9-1100

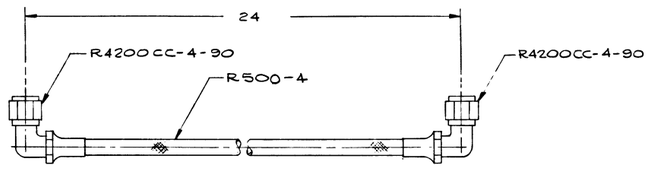


-1 HOSE ASSY (FUEL)

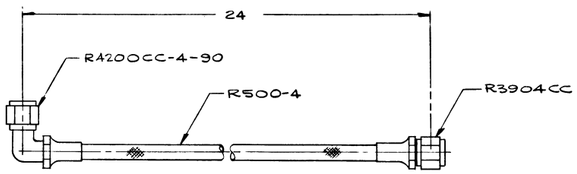


-3 HOSE ASSY (FUEL)

-5 HOSE ASSY (OX)



-7 HOSE ASSY (OX)



-9 HOSE ASSY (FUEL)

-11 HOSE ASSY (OX)

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.

FILLET AND INSIDE CORNER RADII TOLERANCES
.016R TO .062R ± .010
.063R TO .250R ± .015
OVER .250R ± .030

DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE

EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.

DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.

MISMATCH STEP OF ≤ .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.

DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING

HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.

ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES

125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10

200 FOR ALL DRILLED HOLES

REMOVE ALL BURRS. BREAK ALL EDGES .015-.031

INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS

SYMBOL ⚠ DENOTES SURFACE TO BE MACHINED

UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32

LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED

TOLERANCE ON LOFTED DELINEATIONS IS

	GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK		
LEM	SIZE D	CODE IDENT NO. 26512	LDW270-28457
MODEL OR END ITEM	SCALE		SHEET 4.00

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP
CODE IDENT NO. 26512

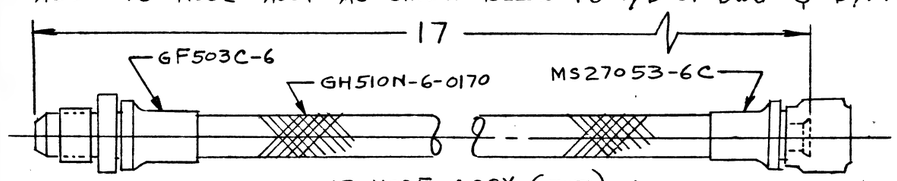
ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW270-28457 | EO NO. A1

CONTROL INFO NO. LM-270-743

ADD -13 HOSE ASSY AS SHOWN BELOW TO F/D OF DWG & B/M:



-13 HOSE ASSY (FUEL)

IN MODEL BLOCK ADD: LDW 270-28457-13; N/A LDW 270-28100; (MODULE) LTA-8(18); 4 REQD/MODULE

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	LCR 669

REASON FOR EO: SHUT-OFF VALVE VENT LINES NOW REQD ON LTA-8(18) (LCR669)

DESCRIPTION OF EO: ADDED -13 HOSE ASSY

GAEC EO RELEASE: FR 12/3/66

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY / DATE	PROP	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
LTA8(18)		LTA-8(18)		✓		✓		1					11/30/66	12-1-66		

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	HOSE ASSY - D/S ENGINE INSTL	LDW 270-28457	A1

ISSUED BY E. RIMMAUDO X1471 SECTION PROPULSION GROUP NO. 270 PL. 35

01

NAS 9-1100

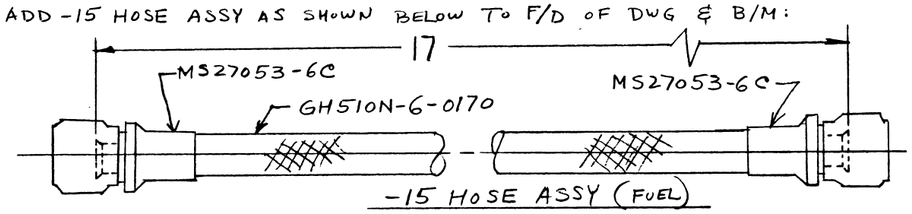
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO.	LDW270-28457		EO NO.	A2
CONTROL INFO NO.	LM 270 - 758			

ADD -15 HOSE ASSY AS SHOWN BELOW TO F/D OF DWG & B/M:



NOTE: -15 IS IDENTICAL TO -13 (REF E.O. A1) EXCEPT AS NOTED

IN M/B: LDW 270-28457-15 WAS LDW 270-28457-13

THIS IS A REVISION OF E.O. A1

REQUESTED BY MFG.

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	LCR-669	A2

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
MALE END FITTING NOT IMMEDIATELY AVAILABLE	(REF. E.O. A1) -15 HOSE ASSY WAS -13	FR 12/7/66

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LTA-8(18)		LTA-8(18)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	PRIORITY
✓			✓	C

APPROVED BY				KA			
DATE				12/7/66			
	2	PROP	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG

DRAWING TITLE: HOSE ASSY — D/S ENGINE INSTL

DRAWING NO.: LDW 270-28457

EO NO.: A2

ISSUED BY E. RIMMAUDO SECTION PROPULSION GROUP NO. 270 PL 35

01 NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-66

DWG. NO. LDW 270-28457		EO NO. A3
CONTROL INFO NO. LM 270-821		

ON SH. 1.00, FOR -1, -3 & -5: DELETE VIBRATION TEST FROM NEXT ASSEMBLY E.O. NUMBER WAS C1

ON SH. 3.00: DELETE NOTE NO. 3

22

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG

REASON FOR EO: VIBRATION TEST NOT REQD FOR LTA-8 (18)

DESCRIPTION OF EO: DELETED VIBRATION TEST FROM N/A; DELETED NOTE 3.

GAEC EO RELEASE: JK 3/3/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LEM		LTA-8 (18)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓			✓

APPROVED BY								
	JRG		—	RB	—	—		
DATE	3/1/67		—	3/1/67	—	—		
6	PROP	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

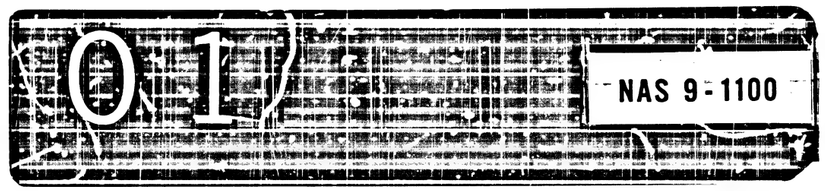
PRIORITY: C

DRAWING TITLE: HOSE ASSY - D/S ENGINE INSTL

DRAWING NO.: LDW 270-28457

EO NO.: A3

ISSUED BY E. RIMMAUDO X 1471 SECTION PROPULSION GROUP NO. 270 PL 35



GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW 270-28457 | EO NO. C1

CONTROL INFO NO. LM 270-821

ON SH. 1.00, FOR -1, -3 & -5: DELETE VIBRATION TEST FROM NEXT ASSEMBLY

ON SH. 3.00: DELETE NOTE NO. 3

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG

22

REASON FOR EO: VIBRATION TEST NOT REQD FOR LTA-8 (18)

DESCRIPTION OF EO: DELETED VIBRATION TEST FROM N/A; DELETED NOTE 3.

GAEC EO RELEASE: JK 3/17

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP
LEM		LTA-8 (18)		✓			✓

APPROVED BY	PROJ	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENG'G
JPG		—	RB	—	—	3.17	3/16/67
DATE 3/16/67	6 PROJ		—	3/16/67	—	—	

PRIORITY: C

DRAWING TITLE: HOSE ASSY - D/S ENGINE INSTL

DRAWING NO.: LDW270-28457

EO NO.: C1

ISSUED BY E. RIMMAUDO X 1471 SECTION PROPULSION GROUP NO. 270 PL 35

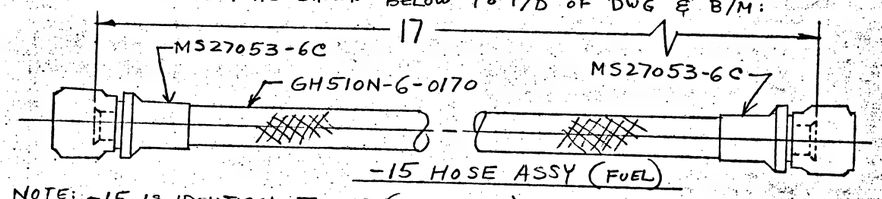
ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LDW270-28457 | EO NO. A2
CONTROL INFO NO. LM 270 - 758

ADD -15 HOSE ASSY AS SHOWN BELOW TO F/D OF DWG & B/M:



-15 HOSE ASSY (FUEL)

NOTE: -15 IS IDENTICAL TO -13 (REF E.O. A1) EXCEPT AS NOTED IN M/B: LDW 270-28457-15 WAS LDW 270-28457-13

THIS IS A REVISION OF E.O. A1

REQUESTED BY MFG.

DETAIL SPEC REQ. | CL II ENGRG CHG | CL I ENGRG CHG | LCR-669

REASON FOR EO: MALE END FITTING NOT IMMEDIATELY AVAILABLE

DESCRIPTION OF EO: (REF E.O. A1) -15 HOSE ASSY WAS -13

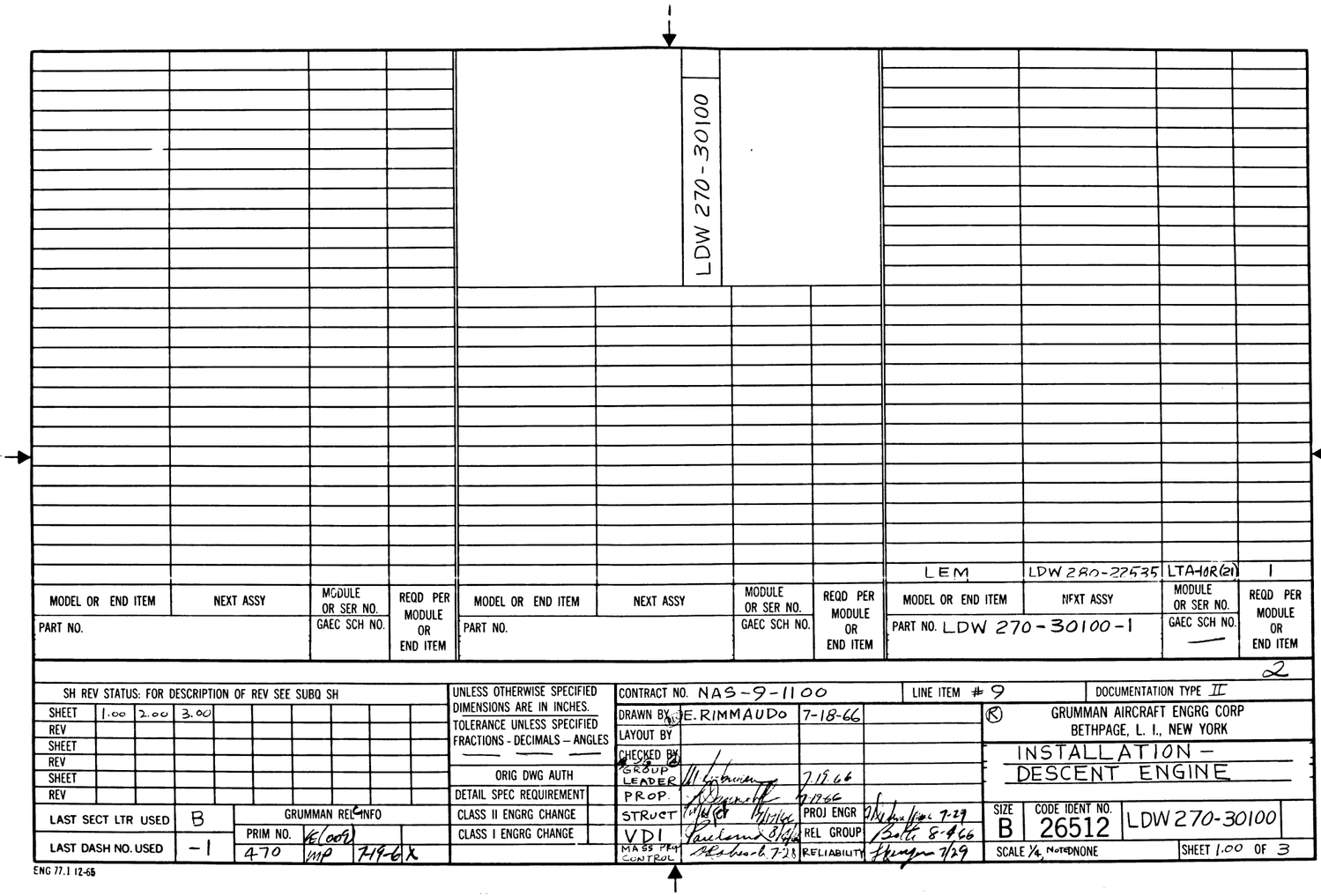
GAEC EO RELEASE: 22 | FR 2/7/66

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LTA-8(18)		LTA-8(18)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO | REWORK | SCRAP ✓
DISPOSITION OF PARTS: PROP | SUPPORT
PRIORITY: C
DRAWING TITLE: HOSE ASSY — D/S ENGINE INSTL
DRAWING NO.: LDW 270-28457
EO NO.: A2

APPROVED BY	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	DATE
[illegible]	—	KA	—	[illegible]	[illegible]	12/7
	—	12/7/66	—			12/7/66

ISSUED BY E. RIMMAUDO SECTION PROPULSION GROUP NO. 270 PL 35



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LEM	LDW 280-22535	LTA-10R(2)	1
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW 270-30100-1		GAEC SCH NO. —	2

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00	2.00	3.00							
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED	B
LAST DASH NO. USED	-1

GRUMMAN REL INFO

PRIM NO.	VE(009)		
470	MP	7-19-66	K

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS-9-1100 | LINE ITEM # 9 | DOCUMENTATION TYPE II

DRAWN BY	E. RIMMAUDO	7-18-66		
LAYOUT BY				
CHECKED BY				
GROUP LEADER		7-19-66		
PROP.		7-19-66		
STRUCT			PROJ ENGR	7-29
VDI			REL GROUP	8-9-66
MASS PROP CONTROL		7-28	RELIABILITY	7/29

Ⓚ GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

INSTALLATION - DESCENT ENGINE

SIZE	CODE IDENT NO.	
B	26512	LDW 270-30100

SCALE 1/4 NOTED NONE | SHEET 1.00 OF 3

ENG 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
4		NAS 1305-9H	E	BOLT	STD PART						
8		NAS 1304-5	E	BOLT							
8		MS21042L4	E	NUT							
AS REQD		MS20995NC32	E	LOCKWIRE							
4		AN960-516	E	WASHER							
8		AN960-416	E	WASHER	STD PART						
1		LSC270-00600-6	S	SEE NOTE 1							
-1		LDW270-30100-1	E	INSTL-DES ENG							

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

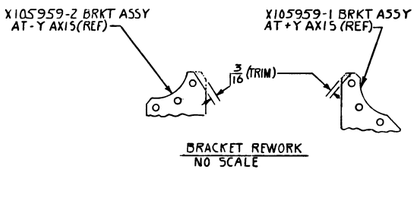
SIZE	CODE IDENT NO.	
B	26512	LDW 270-30100

SCALE ½ NONE | SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

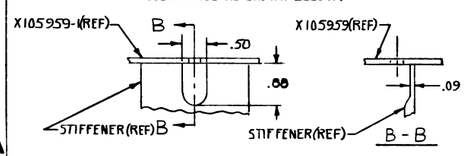


BRACKET REWORK
NO SCALE

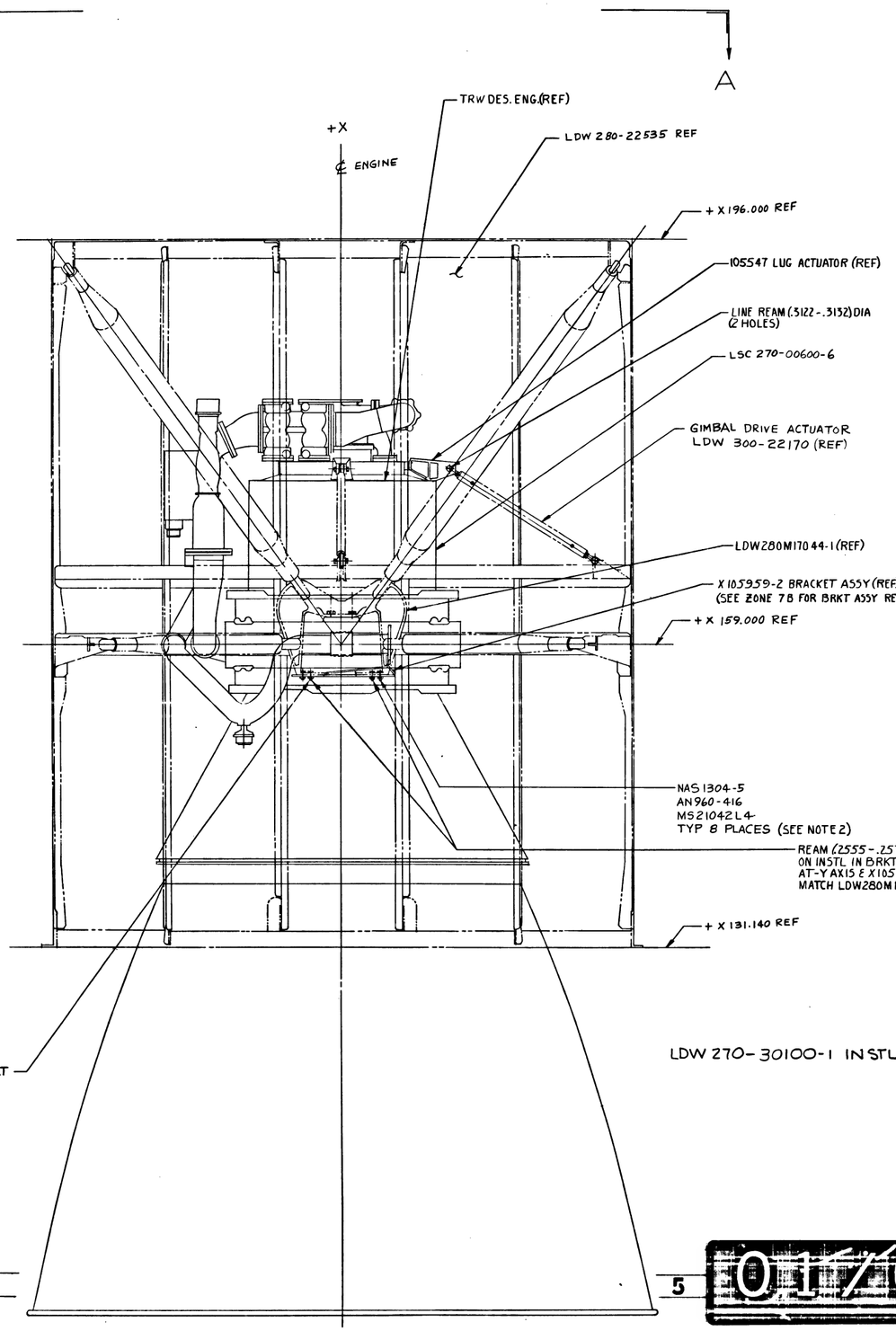
REWORK BRKT ASSY X105959-1 AT +Y AXIS AFTER REAMING (2) HOLES AS FOLLOWS:

A) CLEAN UP WELD WITH ROTARY FILE FROM WELD ADJACENT TO STIFFENER

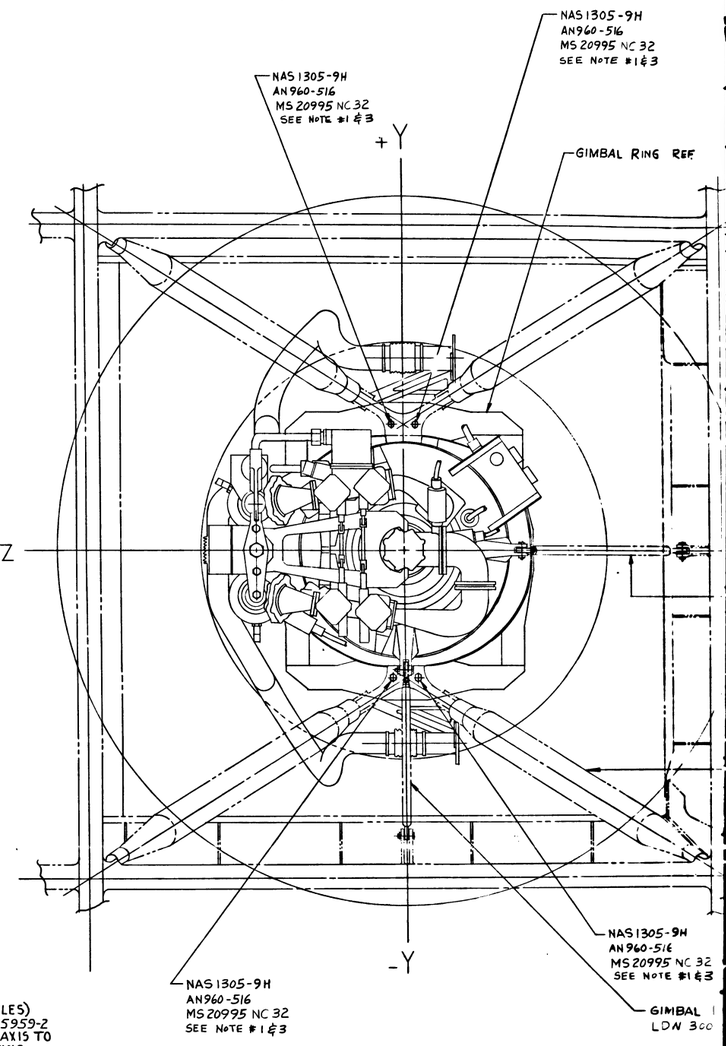
B) USING ROTARY FILE REMOVE .09 MATERIAL APPROX. FROM STIFFENER TO PROVIDE NUT & WASHER CLEARANCE AS SHOWN BELOW:



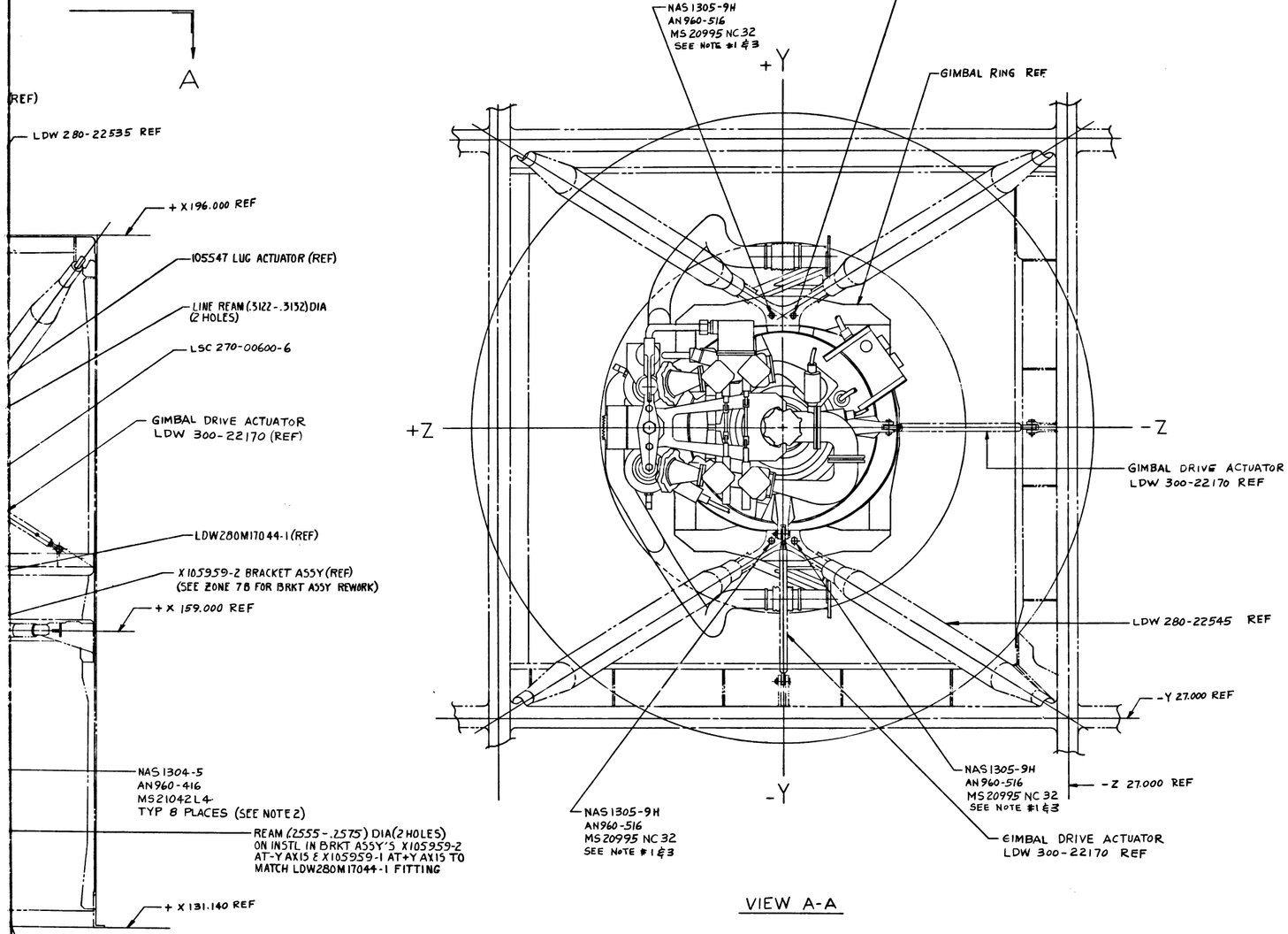
① GRIND WASHER TO FIT AT INSTL IF REQ'D AT EA. BRKT



LDW 270-30100-1 INSTL



VIEW A-A



VIEW A-A

LDW 270-30100-1 INSTL

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.	
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ±.010 .063R TO .250R ±.015 OVER .250R ±.030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
250 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

DWG SIZE 24 X

PRINTING INFO ONLY
FULL SIZE SHEET AREA (24 X 36 SQ. FT.)
1/2 SIZE SHEET AREA (1/4 OF FULL)

PRINT TRIM LINE

C

B

A

LDW 270-30100

LDW 270-30100

NOTES:
1. SAFETY IN ACCORDANCE WITH MS33540.
2. TORQUE NAS1304-5 BOLTS 50 TO 70 INCH POUNDS.
3. TORQUE NAS1305-9H BOLTS 100 TO 140 INCH POUNDS.
4. COMMERCIAL PART - SEE SPECIFICATION CONTROL DRAWING # LSC 270-00600-6 BEFORE ORDERING
5. CLEANLINESS REQUIREMENTS ARE WAIVED FOR THE LSC 270-00600-6 ENGINE & THE -1 INSTL.

02702

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LEM	SIZE J	CODE IDENT NO. 26512	LDW 270-30100
MODEL OR END ITEM	SCALE 1/4		SHEET 3.00

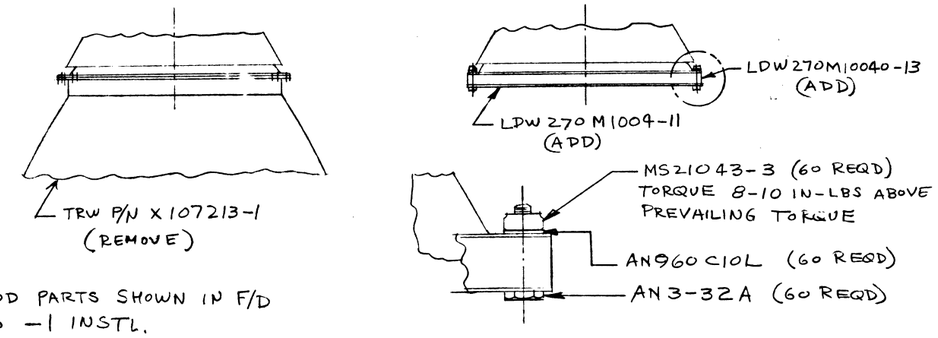
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER *

DWG. NO	LDW 270-30100		EO NO.	A1
CONTROL INFO NO.	LM 270-960			

ON SH 3.00, ZONE 6A: REMOVE ENGINE NOZZLE EXTENSION, TRW PART NO. X107213-1 & ASSOCIATED HARDWARE, & ADD COVER PLATE LDW 270M10040-11 & -13 AS SHOWN BELOW:



ADD PARTS SHOWN IN F/D
TO -1 INSTL.

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD 19-1579												2
REASON FOR EO: To PREVENT CHAMBER ABLATIVE LINER FROM FALLING OUT DURING LAUNCH & BOOST VIBRATION						DESCRIPTION OF EO: REMOVED NOZZLE EXT. AND ADDED COVER PLATE & SUPPORT HARDW. IRE: (60) MS21043-3, (60) AN960C10L (60) AN3-32A; (1) LDW270M10040-11, (1) LDW270M10040-13											GAEC EO RELEASE	5/19/67
EFFECTIVITY				DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY										
MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	REVISE DWG	RECORD EO	REWORK	SCRAP	DATE	5/18/67	—	—	5/19/67	5-18-67	—	5-18-67	5-18-67		
LM		LTA-10R(21)						5	PROP	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT		
				PRIORITY		DRAWING TITLE						DRAWING NO.					EO NO.	
				C		INSTALLATION - DESCENT ENGINE						LDW 270-30100					A1	

ISSUED BY E. RIMMAUDO X1471 5/18/67 SECTION PROPULSION GROUP NO. 270 PL 25

01
NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER *

DWG. NO.	LDW270-30100		EO NO.	A2
CONTROL INFO NO.	LM83-1030			

REF E.O A1 ON -1 INST'L

1. LDW270M1004-11 S/B LDW270M10040-11
2. AN3-32A S/B AN3-23A
3. DELETE "TORQUE 8-10 IN-LBS ABOVE PREVAILING TORQUE"

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG ✓	

5

REASON FOR EO: TO PREVENT CHAMBER ABLATIVE LINER FROM FALLING OUT DURING LAUNCH & BOOST VIBRATION

DESCRIPTION OF EO: LDW270M10041-11 WAS LDW270M10041-11 AN3-23A WAS AN3-32A REMOVED TORQUE NOTE — LCD 1579

GAEC EO RELEASE: C — JK 6/4/67

MODEL	EFFECTIVITY: PRECEDING ACCEPTED VEH.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM	LTA10R	(21)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	DATE	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
✓		✓		RB	6/4/67	5-31-67			5-31-67
				5	PROP	SUPPORT	RELIAB GROUP		

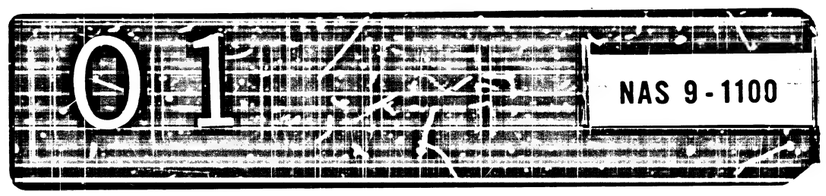
PRIORITY: C

DRAWING TITLE: INSTALLATION DESCENT ENGINE

DRAWING NO.: LDW270-30100

EO NO.: A2

ISSUED BY P KLUG 5/23/67 SECTION PROPULSION GROUP NO. 812 PL 83



ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-30100 | TO NO. A3
CONTROL INFO NO. LM 270-962

ON SHEET 1.00 OF 3, REVISE N/A:

LDW 280-30510 WAS LDW 280-22535

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓		2

REASON FOR EO: To correct next assy number (DWG Corr)

DESCRIPTION OF EO: REVISED N/A: LDW 280-30510 WAS LDW 280-22535

GAEC EO RELEASE: 4/5/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		NOT REQD	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: REWORK NOT REQD | SCRAP

APPROVED BY								
	PROP	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	DGMT
DATE	6			6/1/67			6-1-67	6-2-67

PRIORITY: E

DRAWING TITLE: INSTALLATION - DESCENT ENGINE

DRAWING NO.: LDW 270-30100

EO NO.: A3

ISSUED BY: E. RIMMAUDO x1971 5/23/67 SECTION: PROPULSION GROUP NO. 270 PL 25

ENG 32.1 REV 3-65

C

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LDW270-30100 | EO NO. 14
CONTOUR INFO NO. LM-2-3643

IN MODEL BLOCK FOR -1 INSTL
REVISE NEXT ASSEMBLY
LDW280-22535 SHOULD BE LDW280-30510

DETAIL SPEC REQ | CL II ENGRG CHG: J | CL I ENGRG CHG | 5

REASON FOR EO: INCORRECT NEXT ASSEMBLY

DESCRIPTION OF EO: IN MOD/BLK, FOR -1, REVISED NEXT ASSY, LDW280-30510 WAS LDW280-22535

GAEC EO RELEASE: JL 7-5 | 02181

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA-10R(2)	

DRAWING CHANGE REQD: REVISE DWG: J; RECORD EO:
DISPOSITION OF PARTS: NOT REQD; REWORK; SCRAP; SUPPORT; RELIAB GROUP

APPROVED BY / DATE:

GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	CONT
RB 6/6/67	RBS 6/29/67	CEF 6/29/67	RB 7/6/67	JP 6/29/67

PRIORITY: C
DRAWING TITLE: INSTALLATION-DESCENT ENGINE
DRAWING NO.: LDW270-30100
EO NO.: A4

ISSUED BY LIAISON J. MALONEY 6/28/67 X3604 SECTION FLUIDS GROUP NO. 270 PL 25

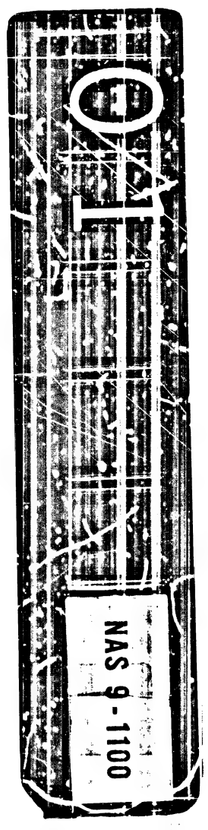
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NAS 9-1100

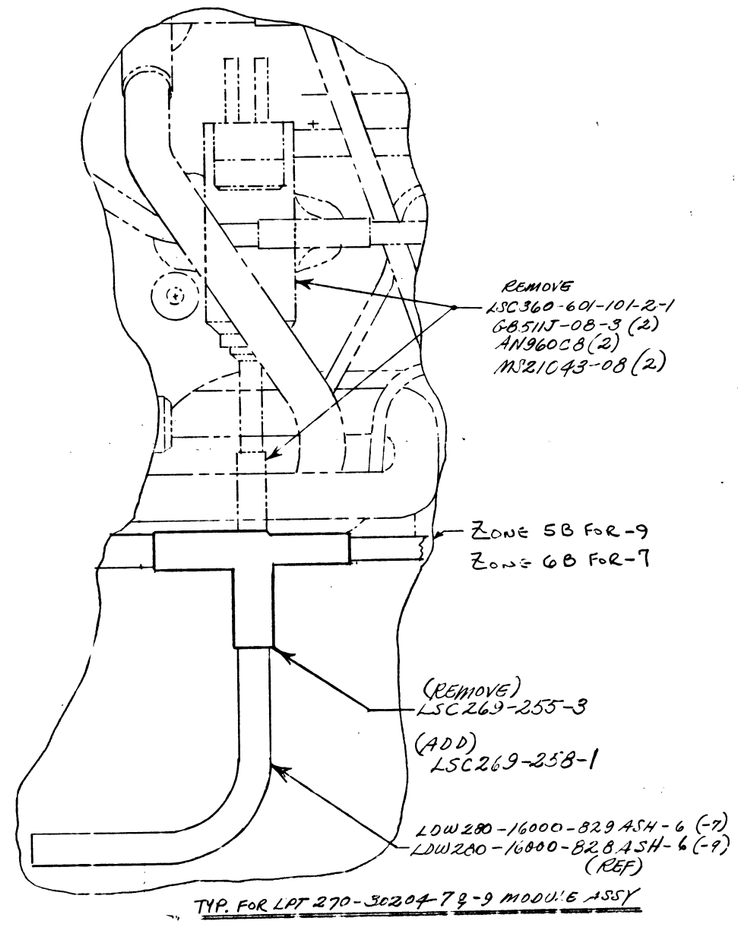
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LPT270-30204		EO NO. E5
CONTROL INFO NO. LDW82-3957		

ENG 32.2 REV 3-65

ON SHT. 6.00 & 7.00 F/O & C/M
CHANGE AS SHOWN





TYP. FOR LPT 270-30204-7 & -9 MODULE ASSY

DETAIL SPEC REQ		CL II ENGRG CHG	✓	CL I ENGRG CHG		(82)

REASON FOR EO: RELOCATED HELIUM TANK PRESSURE TRANSDUCERS TO FLIGHT LOCATION

DESCRIPTION OF EO: ON -7 & -9 ASSY — REMOVED LSC360-601-101-2-1, GB511J-08-3(2), AN960C8(2), MS21043-08(2), LSC269-255-3. ADDED: LSC269-258-1

GAEC EO RELEASE: K 5/17

MODEL	EFFECTIVITY: PROGRAMMED ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		PAI-(97)	
	TPL 8071		

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		✓	

APPROVED BY								
DATE	5/14/68	5/14/68		5/16-8.6	5/8/68	5/9/68	5/16/68	
			SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG

PRIORITY: C

DRAWING TITLE: MODULE ASSEMBLY-ASCENT PROPELLANT-PRESURIZATION SUB-SYSTEM

DRAWING NO.: LPT 270-30204

EO NO.: E5

ISSUED BY J. Johannes / P. Dugan X5213 SECTION DEV ENG / MSC-WSTF GROUP NO. 194 PL 82

ENG 22.1 REV 3-66

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LDW270-56402 | EO NO. A2

CONTROL INFO NO. 270-1281

CANCELS EO A1

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	LCO 3127
		✓	

REASON FOR EO: RECEIPT OF SWIP II PROP. TKS. FOR LM-6

DESCRIPTION OF EO: CANCELED EO A1

(5) GAEC EO RELEASE: C — VK 5/6/68

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-6(36)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: REWORK | SCRAP ✓

APPROVED BY								
	LK			GMM			GMM	DM
DATE	4/27/68			4/27/68			4/27/68	72-68

SUPPORT | RELIAB. GROUP | GROUP LEADER | STRESS GROUP | LIAISON ENGRG | PROJ ENGRG ✓

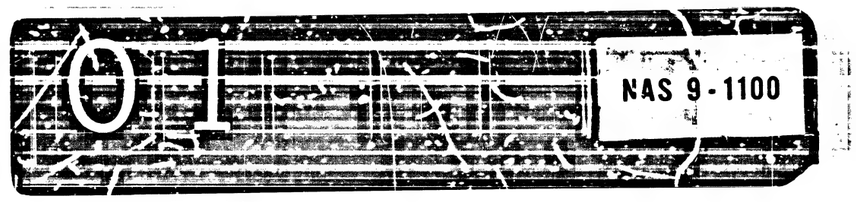
PRIORITY: C

DRAWING TITLE: PLD INSTALLATION

DRAWING NO.: LDW270-56402

EO NO.: A2

ISSUED BY S. NEWMAN SECTION LM PROPULSION GROUP NO. 270 PL 25



REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	QUAL APPD
A	1	1.00							REVISED STATUS BLOCK: ADDED 9.00, 9.01, 9.02, 8.00, 10.00 & 11. REMOVED 2.02, 2.03, 2.04 & 4.00. ADDED 1.10,	LEM 1	Not Required		B. ZANG 16APR66		
	2	2.00, 2.01 2.02, 2.03 2.04							DELETED MECHANICAL COMPONENT REFERENCE DESIGNATIONS. ADDED REF DESIGNATIONS TO ELECT. COMPONENTS SH 2.00 & 2.01 ELIMINATES THE NEED FOR SH 2.02, 2.03 & 2.04						
	3	9.00, 9.01 9.02							ADDED & RENUMBERED ALL NOTES – WERE PART OF SHEETS 3.00, 5.00, 6.00, 7.00 & 8.00						
	4	4.00		NASA DIRECTIVE TWXEP2-9-B G54-65-448					DELETED SH 4.00 DESCENT FLUID LINES WITH AMBIENT PRESSURIZATION SYSTEM.						
	5	5.00							EXTENSIVELY REVISED & REDRAWN. DELETED NOTES 1 THRU 11 REMOVED ASCENT ENGINE ELECTRICAL INFO						
	6	6.00							EXTENSIVELY REVISED & REDRAWN. DELETED NOTES 1 THRU 13 REMOVED DESCENT ENGINE ELECTRICAL INFO						
	7	7.00							EXTENSIVELY REVISED & REDRAWN DELETED NOTES 1 THRU 9						
	8	8.00							ADDED SHT 8.00 DESCENT FLUID LINES WITH SUPERCRITICAL PRESSURIZATION SYSTEM.						
	9	3.00							DELETED NOTES LSC 270-00500-10 WAS LSC270-5A. REVISED MECH. SYMBOLS TO CONFORM TO MSFC STD-162. ADDED DASH NOS. TO COMPONENTS. ADDED MEASURE. I.D. TO INLET & OUTLET PORTS. REVISED AND/OR ADDED PART NUMBERS OF COMPONENTS TO REFLECT CURRENT EFFECTIVITY REQUIREMENTS.						
	10	10.00							ADDED SH 10.00 ASCENT ENGINE ELECTRICAL INTERFACE.						
	11	11.00							ADDED SH 11.00 DESCENT ENGINE ELECTRICAL INTERFACE.				I		
B	1	8.00 6.00 2.01	7C 6B 4CC					B1	(4) LINE WAS BETWEEN GQ3616P AND #1 FUEL TANK. GQ3666P WAS GQ3616P AND "---FUEL TANK #2 ----" WAS "---FUEL TANK #1 ---". (CONT.)	LEM-1(31)	NOT REQD		APPROVED 6-13-66		

FOR CONTINUATION OF REVISIONS SEE SHEET 1.11

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51000	G

SCALE NONE | SHEET 1.10

0 1 NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	QUALITY APPD
B	2	1.00	–						SH 1.00 OF 15 WAS 1.00 OF 14. ADDED SH 1.11	LEM-1(31)	NOT	REQD	APPROVED 6-13-66		
	3	2.00 7.00	68A						"ZENER DIODE" WAS "DIODE". "LDW---" WAS "LSC---" ON 10A4 THRU 10A7. -12 WAS -11 ON 10M3 & 10M4 METERS.						
	4	2.01 5.00 6.00	– 31B 32B 45B						-13 WAS -7 ON 10MT41, -14 WAS -8 ON 10MT43 & -65 WAS -51 ON 10MT45						
	5	3.00	5,6 & 7						RELOCATED TRANSDUCERS GP7606T & GP7608T. REVISED -4 & -20 LINES. ADDED GP9477 CALLOUT. FLEX HOSE LSC270-809-22 & -23 WAS -10 & -12.						
	6	6.00	47B						CALLOUTS FOR 10MT11 & 10MT12 WERE "REG INLET PRESS"						
	7	7.00	62B 64B						ADDED P173 & J173 CONN INFO TO WIRES K608 & K628. ADDED J733 CONN INFO TO WIRES K607 & K628						
	8	8.00	13B 13D						ADDED CALLOUT FOR LSC270-821-29, LSC270-821-29 WAS "----51"						
	9	9.00 9.01 9.02	– – –						DELETED NOTES 19 & 26. ADDED NOTE 40. IN NOTE 28 "NO. 3.00" WAS "NO. 9.00".						
	10	10.00							ADDED MEASUREMENT NUMBERS & REVISED WIRING ON GP2997U & GP2998U. RELOCATED SHIELD CALLOUTS.						
	11	11.00							(B) EXTENSIVELY REVISED WIRING & CALLOUTS						
C	1	1.00, 1.11 9.03	–					LE0270-5	ADDED NOTE 41.	NOTED	NOT	REQD	V. H. CORBETT 1-9-67		
	2	3.00 8.00	6A (C) 7A 7C 7A (C) 8A (C)					E0C2	REMOVED LSC270-809-14 & -16 WITH ASSOCIATED SYMBOLS. LSC270-826-3 & -1 (2 PLACES EACH) WAS LSC270-809-12, -23, -10 & -22 RESPECTIVELY. REMOVED LSC270-809-2(2) & -4(2) (2 PLACES EACH) LSC270-826-7(2) & -5(2) (2 PL EA) WAS LSC270-809-8(2) & -6(2) (2 PLACES EACH).						
	3	8.00 9.02	9C –					LE0270-8	LSC270-818-5 & -6 VALVES WERE LSC270-818-3 (OR-1) & -4 (OR-2)						
	4	2.01 10.00	– 17B 20B 21B					LE0270-10	ADDED PRESSURE TRANSDUCERS 10MT60 THRU 10MT64 WITH ASSOC WIRE CHANGES. ADDED CABLE NO'S 10W1, 10W2 & 10W3.						

FOR CONTINUATION OF REVISIONS SEE SHEET 1.12

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51000	G

SCALE NONE SHEET 1.11

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
C	5	1.00, 1.12 2.01 3.00 5.00 7.00	– 6A 34B 35D 52A					E0C5	GP7615T WAS GP7606T, GP7625T WAS GP7608T. ON J556 PIN "B" WAS PIN "R". ADDED J562 REF DESIGNATION. ON J173 PINS 221 & 239 WERE PINS 62 & 63 RESPECTIVELY.	NOTED	NOT	REQ'D	J.H. CORBETT 1-10-67		
	6	11.00	27B					LE0270-12	REVISED WIRING FOR MEASUREMENTS GQ7498U & GQ7499U.						
	7	7.00	68C					LE0270-14	ON 10MI TERMINAL 6 WAS 7 & TERMINAL 7 WAS 6.						
	8	3.00	7A 7D					E0C8	LSC270-801-13 WAS LSC270-801-7 LSC270-801-14 WAS LSC270-801-8						
	9	8.00	11B					LE0270-16	LSC270-814-3 WAS LSC270-814-1						
	10	6.00	44C					LE0270-17	REVISED WIRING FOR 10MT47(GQ3476T) 10MT47 HAD 3 WIRES.						
	11	7.00	63B					LE0270-18	ADDED WIRES TO PIN "B" OF P55A AND P55B FOR SHIELD RETURN.						
	12	8.00	6C					LE0270-20	REROUTED HEAT EXCHANGER LINES -8(3), -32-6 & REVISED TANK COILS ACCORDINGLY.						
	13	6.00 9.03	42B –					E0C13	ADDED NOTE 42. ADDED "SEE NOTE 42" (3 PLACES)						
	14	6.00 8.00 9.01 9.03	45C 13A 13B 13D –					E0C14	ADDED NOTE 43. DELETED NOTE 33. DELETED LSC270-821-11 LSC270-821-65 WAS -29. LSC270-821-53 WAS -13. LSC270-821-85 WAS -23. DUAL BURST DISC ASSY WAS BURST DISC. ON 10MT45, YEL, BLK, RED, GRN WAS RED, BLK, YEL, WHT.						
	15	2.01 5.00	34B 35B					LE0270-23	10MT65 WAS 10MT33 (GP7606T-ENGINE INTERFACE FUEL). 10MT66 WAS 10MT34 (GP7608T-ENGINE INTERFACE OXID).						
	16	3.00	7A					LE0274-24	LSC270-717-5 WAS LSC270-717-3						

FOR CONTINUATION OF REVISIONS SEE SHEET 1.13

ENG 77.3 5-66

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51000	G

SCALE None SHEET 1.12

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
C	17	1.00 1.13 8.00	6B					LE0270-25	ADDED LSC270-813-26, LINE RUN & FLEX LINE FOR TEST SHUT OFF VALVE PRE VALVE. REMOVED "PLUGGED GQ9475" FROM 1/4 PORT (REF) CALLOUT.	NOTED	NOT	REQ'D	J. H. CORBETT 1-10-67		
	18	3.00	5D					EOC18	LSC270-00500-10-1, ASCENT ENGINE, MODIFIED BY LDW270-51010-3 WAS LSC270-00500-10 ASCENT ENG.						
	19	2.00 7.00	6BB					EOC19	DELETED -03 FROM PART NO. ON 10FL1 THRU 10FL4. -12 WAS -13 ON 10M3.						
	20	11.00	23C 24C 30B					LE0270-26	ORN WAS GRN AT J562 PIN HH. REMOVED "NO.7", NO.2" & "NO.4" AT J564, PINS "L, K, F", "R, Z, S" & "X, FF, W".						
	21	5.00	41C					LE0270-30	ON 4CB53, "5A" WAS "3A".						
	22	11.00	23C					LE0270-31	CHANGED GQ7213T TO GQ7208T & GQ7214T TO GQ7209T						
	23	8.00	4C					LE0270-32	GQ7208T WAS GQ7213T & GQ7209T WAS GQ7214T						
	24	3.00	5D					EOC24	LSC270-00500-10 WAS LSC270-00500-10-1						
	25	3.00	7A					LE0270-33	REMOVED LSC270-717-4 & -5, ADDED LSC270-717-6 & -7.						
	26	3.00 8.00	6C 7B 8B 9D 8D 9A 11A 11D 11D 8B 12B 11B					EOC26	ON SHEET 8.00, ZONES 8B & 12B, DELETED "TEE" FROM THRUST NEUTRALIZER & CHANGED SYMBOL AS ON SHEET 3.00, ZONE 7B. ON GP9446 & GP9447 [symbol] WAS [symbol] ON SHEET 3.00, ZONES 8D, 9A, 11A & 11D & ON SHEET 8.00, ZONES 9A, 9C & 11D, ADDED LSC270-714-113 BOOSTER CARTRIDGE (2) LSC270-00822-7-2 WAS LSC270-00822-7. LSC270-715-5-1 WAS LSC270-715-5 LSC270-715-7-1 WAS LSC270-715-7 ON SHEET 8.00, ZONE 11D, LSC270-813-31 (2) WAS LSC270-813-21 (2), ZONES 11B, & 12B, LSC270-813-31 WAS LSC270-813-21.						

FOR CONTINUATION OF REVISIONS SEE SHEET 1.14

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51000	G
SCALE NONE		SHEET 1.13	

ENG 77.3 5-66

0-1

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
C	26	1.00 1.14 8.00 2.00	6B 6C 10A 10D 11A 12C -					E.O.C26	LSC270-820-11 WAS LSC270-820-3 LSC270-807-7 WAS LSC270-807-1 LSC270-808-7 WAS LSC270-808-1 LSC270-816-11-1 WAS LSC270-816-11 LSC270-713-9 (REF) WAS LSC270-713-5 (REF) LDW390-28070-11 WAS LDW390-28070-1 LDW390-28070-13 WAS LDW390-28070-1 LSC270-713-10(REF) WAS LSC270-713-6 (REF) RELOCATE GQ9463, OXIDIZER HIGH POINT BLEED AND GQ9464, FUEL HIGH POINT BLEED; POINTS OF ORIGIN FROM ENGINE INTERFACE TO ANY POINT ON -32 LINE, BETWEEN RESPECTIVE OXIDIZER & FUEL FILTER & TRIM ORIFICE., DELETE RESPECTIVE BELLOWS SYMBOL. RELOCATE REFERENCE OUTLINE OF HELIUM TANK ASSY TO SHOW FOUR (4) TEMPERATURE TRANSDUCERS (GQ3451T, GQ3476T, GQ3459T & GQ3455T) OUTSIDE THE S.C.D. PACKAGE.	NOTED	NOT	REQD	J.H. CORBETT 1-10-67		
	27	8.00	6A 6C					E.O.C27	ADDED LDW270-51459-1 & (REF) TO LSC270-802-1 CALLOUT; ADDED LDW270-51459-3 & (REF) TO LSC270-803-1 CALLOUT.						
	28	3.00 8.00	9A 9D 10A					E.O.C28	LSC270-816-11-2 WAS LSC270-816-11-1; LSC270-715-7-2 WAS LSC270-715-7-1; LSC270-715-5-2 WAS LSC270-715-5-1. &						
	29	2.00 9.03 1.12 1.13 1.14							REMOVED "(PER LAV-262-34 DATED 6-23-66)" FROM NOTE 41 ON SH 9.03. REF EOC14 NOTE 43 WAS "ADDED NOTE 42." ON SH 2.00 REF DESIGNATION 10A7 WAS LDW390-28070-3. SH 1.00 OF 15 WAS 1.00 OF 15 ADDED SHEETS 1.12, 1.13, 1.14 & 9.03. &	NOTED	NOT	REQD			

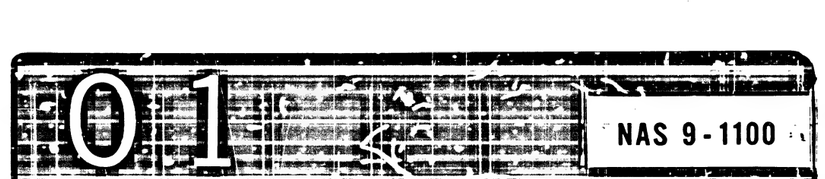
FOR CONTINUATION OF REVISIONS SEE SHEET 1.15

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51000	G

SCALE NONE SHEET 1.14

ENG 77.3 5-66



REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET 1.16

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
D	1	1.00 1.15 2.00 7.00 8.00	62B 8B					EOD1	SH. 1.00 OF 20 WAS SH. 1.00 OF 19 ADDED SH. 1.15 LSC 270-00009-41 (WAS) LSC 270-00009-23	LM-1 (31)	NOT	REQD	JOS RECCARDI 11-30-67		
	2	2.01 11.00	33C					EOD2	ADDED MEAS NO's GQ7511T, GQ7512T, GQ7513T ADDED 10MT67, 10MT68, 10MT69 WITH ASSOC. WIRING.						
	3	2.01 8.00	4B					EOD3	ADDED GQ7511T, GQ7512T & GQ7513T MEAS.						
	4	1.10, 1.11 1.12, 1.13 1.14, 3.00 5.00, 6.00 9.00, 9.01 9.02, 9.03 10.00							ADDED REV LETTER "D" TO SHEETS, 1.10, 1.11, 1.12, 1.13 1.14, 3.00, 5.00, 6.00, 9.00, 9.01, 9.02, 9.03 & 10.00 FOR DISTRIBUTION & PROCESSING PURPOSES ONLY.	NOTED	NOT	REQD			
E	1	1.00, 1.15, 8.00, 10.00, 11.00							ON SH. 8.00 ZONES 71 THRU 83 WERE ZONES 1 THRU 13, ON SH. 10.00 ZONES 34 THRU 92 WERE ZONES 14 THRU 22, ON SH. 11.00 ZONES 93 THRU 103 WERE ZONES 23 THRU 33	NOT REQD	NOT	REQD	BEN AZZARA 3-2-67		
	2	1.10, 1.11, 1.12, 1.13, 1.14, 3.00, 5.00, 6.00, 7.00, 9.00, 9.01, 9.02, 9.03							ADDED REV LETTER "E" TO SHEETS 1.10, 1.11, 1.12, 1.13, 1.14, 3.00, 9.00, 9.01, 9.02 & 9.03 FOR DISTRIBUTION & PROCESSING PURPOSES ONLY.	NOT REQD	NOT	REQD			
	3	5.00 6.00 7.00	40A 56A 64B 68A						PANEL I PART NO LDW390-28101 WAS LDW390-51101	NOTED		E/R	T.A. CRISPOW 3-6-67		

LTR	GROUP LDR

CHG APPROVED

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51000	G

SCALE NONE SHEET 1.15

ENG 77.16 3-66

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET 1.17

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
F	1	3.00 9.01	9A	& D				LE0270-36	IN F/D: LSC270-721-1 (SEE NOTE 32) (WAS) LSC270-715-5-2 (SEE NOTE 34); LSC270-721-3 (SEE NOTE 32) WAS LSC270-715-7-2 (SEE NOTE34) REVISE NOTE 32 PARA "B" AS SHOWN ABOVE & AS FOLLOWS: 1.45 ± .05 (WAS) 1.55 ±10% (4 PLACES), 186 PSIG TO 194 PSIG (WAS) 192 TO 196, FOR-1 (WAS) -5 (2 PLACES), FOR-3 (WAS) -7 (2 PLACES), 178 PSIG TO 186 PSIG (WAS) 186 TO 190, 180 PSIG TO 188 PSIG (WAS) 194 TO 198, 172 PSIG TO 180 PSIG (WAS) 188 TO 192, "PRIMARY OR DOWNSTREAM" (WAS) "PRIMARY OR UPSTREAM"	LM-1(31)	NOT	REQD	T. A. CRISPYN 4-17-67		
	2	3.00 5.00 6.00 8.00 9.02 9.03 10.00	3C, 36B 46C 79A 9&C	3B, 8C 47B 79C				EO F2	DELETED NOTE 40, ADDED NOTES 44 & 45, ADDED SEE NOTE 44 TO GP2706, GP2803, GP0504, GQ3501, GQ4005, GQ4001						
	3	3.00	12					LE0270-37	ADDED GP0007 & GP0008T						
	4	2.01 11.00 8.00	103C 74B	93C 73B				EO F4	DELETED: GQ7208T, GQ7209T, GQ7511T, GQ7512T & GQ7513T; 10MT67, 10MT68, 10MT69 WITH ASSOC. WIRING, ADDED GQ7213T, GQ7214T TO HT SHIELD (SEE F5)						

CHG APPROVED

LTR	GROUP LDR

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51000	G

SCALE NONE SHEET 1.16

ENG 77.15 3-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET 1.18

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
F	5	11.00 1.16	93C						REF EO F4, J574 SHOULD BE JS64 FOR GQ7213T AND GQ7214T	LM-1(31)	NOT	REQD	T.A. CRISPYN 4-17-67		
	6	1.00 1.10 1.11 1.12 1.13 1.14 1.15 2.00 2.00 9.00							SHEET 1.00 OF 22 WAS 1.00 OF 20; ADDED SHEETS 1.16 & 1.17; ADDED REV LETTER "F" TO SHEETS 1.10, 1.11, 1.12, 1.13, 1.14, 1.15, 2.00, 7.00 & 9.00 FOR DISTRIBUTION AND PROCESSING PURPOSE ONLY						
G	1	2.01 7.00, 8.00	77D 78AD 63A					EO G1	LSC 270-00009-16-1 WAS LSC270-00009-16 LSC 270-00009-15-1 WAS LSC270-00009-15	LM-1(31)	NOT	REQD	CAPUTO 6-19-67		
	2	6.00	53C 53A					EO G2	DELETED 10A6A1 & 10A7A1; DELETED LDW 390-28070-11 & 13 CHANGED 10A6L1 & 10A7L1 TO 10A6 & 10A7. ADDED EMI SUPPR. CKT. ACROSS COILS OF 10A6 & 10A7						
	3	2.00 9.01 8.00	80A 80D 81A					EO G3	IN F/D & B/M: LSC270-827-1 (WAS) LSC270-816-11-2 LSC 270-713-9-1 (WAS) LDW390-28070-11. LSC 270-713-10-1 (WAS) LDW390-28070-13. DELETED 10A6L1, 10A7L1, 10A6A1CR1, 10A6A1CR2, 10A7A1CR1, 10A7A1CR2						

CHG APPROVED

LTR	GROUP LDR	ELEC GP LDR	ELEC PWR SS	PROJ GP LDR	COG SUBSYS ENGR	SYS ANA & INT	SUBSYS PROJ ENGR	PROJ ENGR	RELEASE
F6									

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51000	G

SCALE NONE SHEET 1.17

ENG 77.16 3-66

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
G	3								IN NOTE 32, LSC270-827-1 WAS LSC270-816-11-2				CAPUTO 6-19-67		
	4	3.00 9.01	9A 9D					EO G4	LSC 270-715-9 WAS LSC 270-721-1 AND LSC 270-715-11 WAS LSC 270-721-3 IN F/D &. IN NOTE 32.	LM-1(31)	NOT	REQD			
	5	10.00	90B 91B					EO G5	WIRES K36, K39 & K41 WERE (H) EMI CODE & DIRECTED TO INST. WIRES D59, D64 & D69 WERE (C) EM. CODE & DIRECTED TO EPS.						
	6	10.00	90B					EO G6	WIRE NO. K40 WAS K41, K41 WAS K40.						
	7	7.00	68C					EO G7	ADD LABEL "OFF" TO FIRST TWO POS OF 1056.						
	8	2.01						LEO 270-42	ITEM 10MT32 PRESS Δ "P" OX TANK INTERFACE (WAS) PRESS DROP OX TANK INTERFACE. ITEM 10MT29 PRESS Δ "P" FUEL TANK INTERFACE (WAS) PRESS DROP FUEL TANK INTERFACE. ITEM 10MT23 PRESS Δ "P" OX TK NO.1 BOT TO ENG INTERFACE (WAS) PRESS DELTA OX TK NO.1 BOT TO ENG INTERFACE. ITEM 10MT20 PRESS Δ "P" FUEL TK NO.2 BOT TO ENG INTERFACE (WAS) PRESS DELTA FUEL TK NO.2 BOT TO ENG INTERFACE.						

FOR CONTINUATION OF REVISIONS SEE SHEET 1.19

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51000	G

SCALE NONE SHEET 1.18

ENG 77.3 5-65

10W3	GC875BA-3	CABLE	10	86B	
10W2	GC875BA-2	CABLE	10	86B	
10W1	GC875BA-1	CABLE	10	85B	
10MT64	LSC360-624-1	PRESSURE TRANSDUCERS OXIDIZER ISOLATION VALVE INLET	10	90B	GP1503P
10MT63	LSC360-624-1	PRESSURE TRANSDUCERS FUEL ISOLATION VALVE INLET	10	91B	GP1501P
10MT62	LSC360-624-3	PRESSURE TRANSDUCERS THRUST CHAMBER	10	90B	GP2010P
10MT61	LSC360-624-1	PRESSURE TRANSDUCER OXIDIZER INJECTOR INLET	10	87B	GP2006P
10MT60	LSC360-624-1	PRESSURE TRANSDUCER FUEL INJECTOR INLET	10	87B	GP2001P
10S8	LSC350-83-10211	PROPELLANT QTY MONITOR SEL SWITCH	7	64B	
10S7	LSC350-81-05311	DESCENT REGULATOR NO. 2 SWITCH	6	56B	
10S6	LSC350-80305-11	He TEMP/PRESS MONITOR SWITCH	7	69B	
10S5	LSC350-81-05311	DESCENT REGULATOR NO. 1 SWITCH	6	56B	
10S4	LSC350-81-05311	ASCENT REGULATOR NO. 2 SWITCH	5	40B	
10S3	LSC350-81-05311	ASCENT REGULATOR NO. 1 SWITCH	5	41C	
10S1	LSC350-84-02011	TEMP/PRESS MONITOR SWITCH	7	68A	
10MT55	LSC270-00009-15-1	SENSING UNIT OXIDIZER QUANTITY	7	62C	
10MT54	LSC270-00009-15-1	SENSING UNIT OXIDIZER QUANTITY	7	63C	
10MT53	LSC270-00009-16-1	SENSING UNIT FUEL QUANTITY	7	63C	
10MT52	LSC270-00009-16-1	SENSING UNIT FUEL QUANTITY	7	63C	
10MT51	LSC360-605-407	TRANSDUCER TEMP	6	43B	GQ3463T
10MT50	LSC360-605-407	↕	6	43B	GQ3459T
10MT49	LSC360-605-407	↕	6	44B	GQ3455T
10MT48	LSC360-605-409	↕	6	44B	GQ3451T
10MT47	NTN510724-001	TRANSDUCER, TEMP	6	44B	GQ3476T
10MT45	LSC270-821-65	TRANSDUCER PRESS ABSOLUTE	6	45B	GQ3435P
10MT43	LSC270-801-14	OX TANK LEVEL LOW	5	31B	GP1408X
REF DESIGNATION	PART NUMBER	DESCRIPTION	SHEET	ZONE	

10MT42	LSC360-601-107	TRANSDUCER PRESS ABSOLUTE	5	32B	GP0025P
10MT41	LSC360-801-13	FUEL TANK LEVEL LOW	5	32B	GP0908X
10MT40	LSC360-605-303	TEMP, TRANSDUCER	5	33B	GP1218T
10MT39	LSC360-605-303	TEMP, TRANSDUCER	5	33B	GP0718T
10MT38	LSC360-605-405	TEMP, TRANSDUCER	5	33B	GP0202T
10MT37	LSC360-605-405	TEMP, TRANSDUCER	5	34B	GP0201T
10MT36	LSC360-601-101	TRANSDUCER PRESS ABSOLUTE	5	34B	GP0002P
10MT35	LSC360-601-101	TRANSDUCER PRESS ABSOLUTE	5	34B	GP0001P
10MT66	LSC360-605-301	TEMP ENGINE INTERFACE OX	5	34B	GP7625T
10MT65	LSC360-605-301	TEMP ENGINE INTERFACE FUEL	5	35B	GP7615T
10MT32	NTN510981-201	PRESS Δ P OX TANK INTERFACE	5	35B	GP1116P
10MT31	NTN510790-201	PRESS OX TANK VENT RELIEF VALVE INLET	5	35B	GP1004P
10MT30	NTN510790-201	PRESS OX TANK ULLAGE	5	36B	GP1001P
10MT29	NTN510981-201	PRESS Δ P FUEL TANK INTERFACE	5	36B	GP0616P
10MT28	NTN510790-201	PRESS FUEL TANK VENT RELIEF VALVE INLET	5	36B	GP0504P
10MT27	NTN510790-201	PRESS FUEL TANK ULLAGE	5	36B	GP0501P
10MT26	NTN510790-202	PRESS He SEC REG UPSTREAM INLET	5	37B	GP0020P
10MT25	NTN510790-202	PRESS. He PRIM REG UPSTREAM INLET	5	37B	GP0019P
10MT24	LSC360-601-107	TRANSDUCER PRESS ABSOLUTE	6	49B	GQ3611P
10MT23	NTN510981-201	PRESS Δ P OX TK #1 BOT TO ENG INTERFACE	6	45B	GQ4116P
10MT22	NTN510790-201	PRESS OX TANK VENT RELIEF VALVE INLET	6	46B	GQ4005P
10MT21	NTN510790-201	PRESS OX TANK #1 ULLAGE	6	46B	GQ4001P
10MT20	NTN510981-201	PRESS Δ P FUEL TK #2 BOT TO ENG INTERFACE	6	46B	GQ3666P
10MT19	LSC360-601-107	TRANSDUCER PRESS ABSOLUTE	6	45B	GQ3018P
10MT18	NTN510790-201	PRESS FUEL TANK VENT RELIEF VALVE INLET	6	47B	GQ3505P
10MT17	NTN510790-201	PRESS ULLAGE FUEL TANK #1	6	47B	GQ3501P
10MT16	LSC360-601-107	TRANSDUCER PRESS ABSOLUTE	6	49B	GQ4111P
REF DESIGNATION	PART NUMBER	DESCRIPTION	SHEET	ZONE	

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51000	G

SCALE NONE SHEET 2.01

ENG 77.10 7-64

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NAS 9-1100

FROM INST LDW360-21007

He TEMP/PRESS
115 VAC BUS
4CB169
3A
K603-22(B)
AC RETURN BUS N1
LDW390-51110 CDR'S CIRCUIT BREAKER PNL XI
(REF)
P60 J60 J56 P56
K602-22(B) KU
K603-22(B) KW
K602-22(B)
K603-22(B)
INTEGRAL LIGHTING LDW340-28000
15-115V 400CPS
10M1
LSC350-20100-02
HELIUM TEMPERATURE /PRESSURE INDICATOR
K317-26(H)
K318-26(H)
K604-26 CASE GND N4
K54-26(E)
K335-26(E)
K336-26(E)
K42-26(E)
K43-26(E)
K44-26(E)
K45-26(E)
DESCENT ASCENT
PRESS
TEMP1
TEMP2
PRESS1
PRESS2
OFF
OFF
TEMP
PRESS
PRESS
PRESS
He TEMP/PRESS MON SW 1056
P55A J55 P55B BHD
D321-26(H) F
D331-26(H) Z
D333-26(H) C
D323-26(H) V
D325-26(H) D
SEE NOTE 25
D322-26(H) K
D332-26(H) A
D334-26(H) Y
D324-26(H) E
D326-26(H) J
SEE NOTE 25
C
B
D8000-26 R
D8000-26 A
D8000-26 E
N4
GQ3435P GP0001P GP0002P GP0020P
D321-26(H)
D322-26(H)
D323-26(H)
D324-26(H)
D325-26(H)
D326-26(H)
D331-26(H)
D332-26(H)

10M3
FUEL PRESSURE METER
LSC350-80125-12
OXIDIZER PRESSURE METER
K338-26(H)
K340-26(H)
RET K10-22(A)
K7-22(A) +28 VDC
INTEGRAL LIGHTING LDW340-28000
0-75V 400N
SEE SHEETS 5&6
10M4
FUEL TEMPERATURE METER
LSC350-80179-13
OXIDIZER TEMPERATURE METER
K342-26(H)
K344-26(H)
K7-22(A)
K10-22(A)
ASC
DES 1
DES 2
MAIN PROPULSION PANEL I - LDW390-28101
PROPELLANT TEMP/PRESS MON SW 1051

P55A J55 P55B BHD
D365-26(H) M D365-26(H) GP1501P
D1319-26(H) P D1319-26(H) GQ3611P
D1121-26(H) T D1121-26(H) RET
D361-26(H) N D361-26(H) GP1503P
D1314-26(H) Q D1314-26(H) GQ4111P
D8000-26 W N4
D357-26(H) S D357-26(H) GP0718T
D355-26(H) K D355-26(H) GQ3718T
D353-26(H) J D353-26(H) GQ3719T
D1123-26(H) N D1123-26(H) RET
D351-26(H) I D351-26(H) GP1218T
D349-26(H) H D349-26(H) GQ4218T
D347-26(H) M D347-26(H) GQ4219T
FROM INST LDW360-21007

FROM INST LDW360-21007

GQ3435P GP0001P GP0002P GP0201T GP0202T

P55B

D321-26(H) D322-26(L) D323-26(L) D324-26(H) D325-26(H) D326-26(H) D331-26(H) D332-26(H) D333-26(H) D334-26(H)

N4

FROM INST LDW360-21007

D365-26(H) GP1501P
D1319-26(H) GQ3611P
D1121-26(H) RET
D361-26(H) GP1503P
D1314-26(H) GQ4111P
N4
D357-26(H) GP0718T
D355-26(H) GQ3718T
D353-26(H) GQ3719T
D1123-26(H) RET
D351-26(H) GP1218T
D349-26(H) GQ4218T
D347-26(H) GQ4219T

10MT52

LSC 270-00009-16-1 FUEL QUANTITY SENSING UNIT
DES-1-F

TEST CMD	(H)	E3318	NAT	DES-1-F
SIGNAL RETURN	(H)	E3319	BRN	
FUEL QUANTITY	(H)	E3320	VIO	
FUEL LOW LEVEL	(H)	E3321	GRN	
20VDC	(H)	E3322	RED	
RETURN	(H)	E3323	BLK	

K671-22(H)

10MT53

LSC 270-00009-16-1 FUEL QUANTITY SENSING UNIT
DES-2-F

TEST CMD	K615-22(H)	E3324	NAT	DES-2-F
SIGNAL RETURN	K616-22(H)	E3325	BRN	
FUEL QTY	K617-22(H)	E3326	VIO	
FUEL LOW LEVEL	K618-22(H)	E3327	GRN	
20VDC	K619-22(H)	E3328	RED	
RETURN	K620-22(H)	E3329	BLK	

K672-22(H)

10A3

SPARES
OXIDIZER QUANTITY
10-M-5A
FUEL QUANTITY
10-M-5B
FROM INTEGRAL LIGHTING 15-115 VAC 400~
LSC 350-00401-03-2

GQ3605Q FUEL QTY SELECTED
FUEL CLOCK
GROUND
GQ4105Q OXIDIZER QTY SELECTED
OXIDIZER CLOCK

P55A BHD CONN J55 P55B J173 P173

K621-22(F) 214 BLU
K622-22(F) 202 BLK
K623-22(F) 203 BRN
K624-22(F) 204 GRN
K625-22(F) 205 ORN

N4

PROPELLANT QUANTITY GAGING CONTROL UNIT LSC-270-00009-41

DES-1
DES-2
OFF
1058 PROPELLANT QUANTITY MONITOR SELECTOR SWITCH

MAIN PROPULSION PANEL #1 LDW390-28101

+D28 PQG54CB32 3A RET -D
SYS ENGR CKT BKR PANEL XVI
LDW390-51114 (REF)

P38 J38 J56 P56 +28VDC RET

K607-22(C) K608-22(C) K607-22(K) K608-22(K) K607-22(G) K608-22(G)

B H P155 J155

K607-22(C) K628-22(C)

K702-22(C) K703-22(C) J733
119 116 107 108 111 112 115 120
TO P733 (LMP) SEE CCS LDW300-21001

K626-22(E) MM K626-22(E) 1 6 VIO
K627-22(E) CC K627-22(E) 2 5 NAT
K628-22(C) DD K628-22(C) J173 221 P173 3 RED
K608-22(C) R K608-22(C) 239 4 BLK

INTERSTAGE CONN P75 J75

10MT54

LSC-270-00009-15-1 OXIDIZER QUANTITY SENSING UNIT
DES-1-OX

TEST CMD	K629-22(H)	E3330	NAT	DES-1-OX
SIGNAL RETURN	K675-22(H)	E3331	BRN	
OXIDIZER QTY	K631-22(H)	E3332	VIO	
OXIDIZER LOW LEVEL	K632-22(H)	E3333	GRN	
20VDC	K633-22(H)	E3334	RED	
RETURN	K634-22(H)	E3335	BLK	

K673-22(H)

10MT55

LSC-270-00009-15-1 OXIDIZER QUANTITY SENSING UNIT
DES-2-OX

TEST CMD	K635-22(H)	E3336	NAT	DES-2-OX
SIGNAL RETURN	K636-22(H)	E3337	BRN	
OXIDIZER QTY	K637-22(H)	E3338	VIO	
OXIDIZER LOW LEVEL	K638-22(H)	E3339	GRN	
20VDC	K639-22(H)	E3340	RED	
RETURN	K640-22(H)	E3341	BLK	

K674-22(H)

TLM: FUEL QTY TANK #1, FUEL QTY TANK #2, OXID QTY TANK #1, OXID QTY TANK #2

TEST COMMANDS: SENSOR TEST (A), SIGNAL GROUND (B), RETURN (C), FUEL TANK #1 QTY (D), FUEL TANK #2 QTY (E), OXID TANK #1 QTY (F), OXID TANK #2 QTY (G), SENSOR OUTPUT INHIBIT (H), SPARE (J)

J556 TO GSE

GQ36
GQ3
GQ41
GQ4
RET

02/03

NAS 9-1100

10A3

TEST CMD (H) E3318 NAT 1
SIGNAL RETURN (H) E3319 BRN 2
FUEL QUANTITY (H) E3320 VIO 3
FUEL LOW LEVEL (H) E3321 GRN 4
20VDC (H) E3322 RED 5
RETURN (H) E3323 BLK 6
K671-22(H)
} DES-1-F

TEST CMD K615-22(H) E3324 NAT 1
SIGNAL RETURN K616-22(H) E3325 BRN 2
FUEL QTY K617-22(H) E3326 VIO 3
FUEL LOW LEVEL K618-22(H) E3327 GRN 4
20VDC K619-22(H) E3328 RED 5
RETURN K620-22(H) E3329 BLK 6
K672-22(H)
} DES-2-F
K672-22(H)

D4971-22(E) GRN D4971-26(E) 1
GQ4455X
D4972-22(E) BRN D4972-26(E) 2
PROPELLANT TANKS LIQUID LOW LEVEL
} TO INST LDW 360-21007

BHD CONN J55 — J173 — P173
P55A P55B

GQ3605Q FUEL QTY SELECTED PP K621-22(F) 214 1 BLU
FUEL CLOCK NN K622-22(F) 202 2 BLK
GROUND JJ K623-22(F) 203 3 BRN
GQ4105Q OXIDIZER QTY SELECTED KK K624-22(F) 204 4 GRN
OXIDIZER CLOCK LL K625-22(F) 205 5 ORN
B
N4 N4 N4

PROPELLANT QUANTITY GAGING CONTROL UNIT L5C-270-00009-41

BHD CONN J55 — INTERSTAGE CONN P75 J75 — J173 — P173
P55A P55B

K626-22 (E) MM K626-22(E) 1 6 VIO
K627-22 (E) CC K627-22(E) 2 5 NAT
K628-22(C) DD K628-22(C) 221 3 RED
K608-22(C) R K608-22(C) 233 4 BLK

TEST CMD K629-22 (H) E3330 NAT 1
SIGNAL RETURN K675-22 (H) E3331 BRN 2
OXIDIZER QTY K631-22 (H) E3332 VIO 3
OXIDIZER LOW LEVEL K632-22(H) E3333 GRN 4
20VDC K633-22(H) E3334 RED 5
RETURN K634-22(H) E3335 BLK 6
K673-22(H)
} DES-1-OX
K673-22(H)

TEST CMD K635-22(H) E3336 NAT 1
SIGNAL RETURN K636-22(H) E3337 BRN 2
OXIDIZER QTY K637-22(H) E3338 VIO 3
OXIDIZER LOW LEVEL K638-22(H) E3339 GRN 4
20VDC K639-22(H) E3340 RED 5
RETURN K640-22(H) E3341 BLK 6
K674-22(H)
} DES-2-OX
K674-22(H)

TLM
FUEL QTY TANK #1
FUEL QTY TANK #2
OXID QTY TANK #1
OXID QTY TANK #2

GQ3603Q BLU D4973-22(H) D4973-26(H) 1
GQ3604Q BLK D4974-22(H) D4974-26(H) 2
GQ4103Q BRN D4975-22(H) D4975-26(H) 3
GQ4104Q GRN D4976-22(H) D4976-26(H) 4
RET ORN D4977-22(H) D4977-26(H) 5
} TO INST LDW 360-21007

SENSOR TEST DRY JQ90057X
SIGNAL GROUND
FUEL TANK #1 QTY JQ90235V
OXID TANK #1 QTY JQ90235V
FUEL TANK #2 QTY JQ90234V
OXID TANK #2 QTY JQ90234V
SENSOR OUTPUT INHIBIT JQ90239X
SPARE

TEST COMMANDS

G F E D A C B D J H K J556

TO GSE

03793 NAS 9-1100

FOR NOTES SEE SH 9.00.

FOR ENGRG INFO ONLY

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE L I N Y
SIZE J | CODE IDENT NO 26512 | LDW270-51000 | REV G
SCALE NONE | SHEET 7.00

THIS IS AN ORIGINAL DRAWING

LDW270-51000G

3 FR

NOTES CHECKED ✓ APPLY TO THIS DRAWING

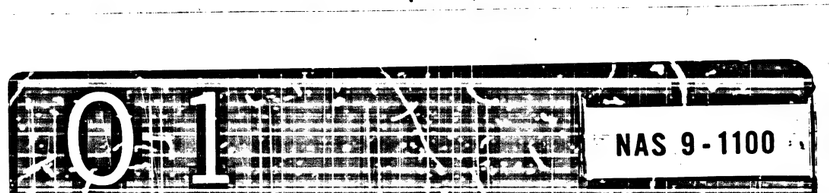
	1. SOLDERING OF ELECTRICAL CONNECTIONS TO BE IN ACCORDANCE WITH	✓	18. INSTRUMENTATION CALLOUT ON MEASUREMENT LIST & NOT SHOWN ON THIS DWG ARE TELEMETERING NOTATIONS INDICATING COMBINATIONS OF TRANSDUCERS.
	2. BOND PER LSP-390-001.		
	3. WIRING INSTALLATION PER LSP-390-002.		
✓	4. WIRES ARE TO BE TWISTED IN ACCORDANCE WITH LSP-530-001, TABLE III.	✓	19. FOR DETAILED ~~MEASUREMENT STATUS, REFER TO LEM-1 MEASUREMENT LIST, LED-360-28, REV D & SECTION III OF THE CURRENT LEM MEASUREMENT STATUS REPORT IN LSR 360-1 SECTION II DATED 25 MARCH 1966 AND/OR THE FOLLOWING PROJECT APPROVED MCR'S 304, 305, 365A, 321, 348, 364 & 341~~
	5. QUANTITIES OF END CAPS, SPLICES AND TERMINALS ARE NOT SPECIFIED IN THE BILL OF MATERIALS. USAGE: AS REQ'D.		
	6. FOR SCHEMATIC WIRING DIAGRAM SEE DRAWING NO.		
	7. ALL WIRES TO BE HOT STAMPED EVERY INCHES WITH WIRE NUMBER.		
	8. WIRE BUNDLING AND ROUTING: WIRES OF THE SAME CLASSIFICATION MAY BE BUNDLED TOGETHER WHEN A CLASSIFICATION LETTER IS PRECEEDED BY A NUMBER, SUCH SUBCLASSIFICATION SHALL BE SEPARATED BY A MINIMUM OF ONE-INCH. (EXAMPLE: 1D, 2D SEPARATED ONE-INCH MINIMUM) A MINIMUM OF ONE-INCH SEPARATION REQUIRED BETWEEN CLASSIFICATION GROUPS A, B, C, D, & E. A MINIMUM OF ONE-INCH SEPARATION REQUIRED BETWEEN CLASSIFICATION GROUPS F, G, & H. ANYONE OF THE CLASSIFICATION GROUPS A, B, C, D, OR E SHALL BE SEPARATED BY A MINIMUM OF FOUR-INCHES FROM ANYONE OF THE CLASSIFICATION GROUPS F, G, & H. WIRE BUNDLES TO BE ROUTED IN CONSOLE AS SHOWN.	✓	20. ELECTRICAL DRAWING SYMBOLS SHOWN ON THIS DRAWING ARE IN ACCORDANCE WITH SECTION 15 OF THE MSFC DRAFTING MANUAL MIL-STD-15-1A & GS22B.
	9. WIRE LENGTHS SHOWN ARE APPROXIMATE. EXACT LENGTHS TO BE DETERMINED ON FIRST MANUFACTURED UNIT AND ENGINEERING DEPARTMENT NOTIFIED.	✓	21. REFER TO LDW 320-28000 SYSTEM SCHEMATIC LEVEL 3 FOR ELECTRO EXPLOSIVE DEVICES ASSOCIATED WITH PROPULSION SUBSYSTEM.
	10. STENCIL OR MARK CHARACTERS PER MS33558, ( ) HIGH UNLESS OTHERWISE SPECIFIED, USING BLACK LACQUER PER TT-L-595, #1775 (GRUMMAN FINISH #69). COVER WITH CLEAR FLAT LACQUER PER TT-L-58 TYPE I (GRUMMAN FINISH #133).	✓	22. GROUND DESIGNATIONS: N1=AC GRD, N2=DC GRD, N3=SIGNAL GRD, N4=STRUCTURE GRD.
	11. ENGRAVE CHARACTERS ( ) HIGH x 0.005 MINIMUM DEPTH PER MS33558 (EXCEPT AS NOTED). FILL WITH BLACK LACQUER PER TT-C-595, #1775 (GRUMMAN FINISH #69).	✓	23. NOTED FLAGS WILL SHOW A STRIPE INDICATION WHEN SIGNAL POWER IS APPLIED TO PIN "Y". (NORMALLY GRAY)
	12. ENGRAVE ALL INDEX DIVISIONS APART 3/16 LONG, ROTATING OUTWARD FROM RADIUS.	✓	24. NOTED FLAG WILL SHOW GRAY INDICATION WHEN SIGNAL POWER IS APPLIED TO PIN "Y". (NORMALLY STRIPED)
	13. CENTRALIZE ALL CHARACTERS.	✓	25. CAP & STOW THESE WIRES. ANTICIPATE UTILIZATION ON LATER VEHICLES.
	14. BREAK ALL SHARP EDGES.		
	15. BEND RELIEF TO BE MINIMUM RADII.		
	16. ALL BEND RADII TO BE MINIMUM RADIUS.		
	17. FINISH: APPLY EPOXY POLYAMIDE PRIMER MIL-P-23377 OR G.M.S. #1012. APPLY COATS OF MIL-L- LACQUER COLOR # ( ) PER FEDERAL STANDARD #595.		

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51000	G

SCALE NONE SHEET 9.00

ENG 77.13 8-64



NOTES (CON'T) (NOTES CHECKED ✓ APPLY TO THIS DWG)

✓ 35. PRESSURE RELIEF VALVE REQUIREMENTS:
LSC 270-818-5 AND -6 (DESCENT STAGE)
LSC 270-717-3 AND -4 (ASCENT STAGE)

	LSC 270-813-3 AND -4	LSC 270-717-3, -4
RATE FLOW PRESSURE	260 PSIG TO 275 PSIG @ 10.0 LBS PER MINUTE	250 PSIG
RESEAT PRESSURE	254 PSIG MINIMUM	225 PSIG MIN
BURST DISC RUPTURE PRESSURE	268 PSIG TO 308 PSIG	226 PSIG TO 250 PSIG

✓ 36. INSTALL LINE TO OUTSIDE OF VEHICLE AND PROVIDE EXTERNAL GSE CONNECTION FOR SENSING ΔP, FUEL TO OXIDIZER AT ENGINE INTERFACE.

✓ 37. MECHANICAL SYMBOLS SHOWN ARE IN ACCORDANCE WITH MSFC STD-162 WITH THE FOLLOWING ADDITIONS:

FUEL LINE
HELIUM LINE
OXIDIZER LINE

DIFFERENTIAL PRESSURE TRANSDUCER

LINE SIZES (O.DIA)

(-2) = 1/8" (-4) = 1/4" (-6) = 3/8" (-8) = 1/2" (-10) = 5/8"

(-12) = 3/4" (-16) = 1" (-20) = 1 1/4" (-24) = 1 1/2" (-28) = 1 3/4"

(-32) = 2"

✓ 38. TUBING DATA:

SIZE O.DIA	PRESSURE MAXIMUM	WALL THICK.	MAT'L	SPEC
1/8				
1/4	4000	.028	304L	LSM-14-1001
1/4	250	.016	↕	↕
3/8	4000	.042		
3/8	250	.016		
1/2	4000	.058		
1/2	250	.016		
5/8	250	.016		
3/4	250	.016	304L	LSM-14-1001

✓ 39. WIRES K346-26(A), K347-26(A) AND K7-26(A) ARE CONNECTED AS SHOWN FOR UNMANNED FLIGHTS ONLY. FOR MANNED FLIGHTS, DISCONNECT WIRES ABOVE AT TERMINAL STRIP, CAP AND STOW AND REPLACE WITH NOTED WIRES.

40. ~~THIS DWG INCORPORATES MEASUREMENTS SHOWN IN LEM-1-3 MEASUREMENTS LIST, LED360-22, REV E, DATED 11 APRIL 66, AND THE FOLLOWING PROJECT APPROVED NACR'S: 305, 305A, 341, 364, 392A, 392C, 428, 468, 478 & 504.~~

CONT OF NOTES ON SHEET 9.03

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51000	G

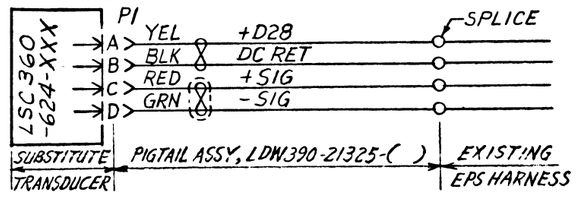
SCALE NONE SHEET 9.02

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0 1 NAS 9-1100

NOTES (CONT) (NOTES CHECKED ✓ APPLY TO THIS DWG)

✓ 41. PRESSURE TRANSDUCER LSC360-624-XXX MAY BE SUBSTITUTED FOR ANY PRESSURE TRANSDUCER LSC360-601-XXX SHOWN ON THIS LEVEL 3. IN THIS EVENT, THE RESPECTIVE LSC 60-601 WIRING DIAGRAM IS SUPERSEDED BY THE SUBSTITUTE TRANSDUCER WIRING DIAGRAM SHOWN BELOW:—



✓ 42. TRANSDUCER LSC360-627-407 MAY BE SUBSTITUTED FOR NOTED TRANSDUCERS. IN THIS EVENT THE GREEN & YELLOW LEADS OF THE NOTED TRANSDUCER ARE BLACK & WHITE, RESPECTIVELY, ON LSC360-627-407.

43. DUAL BURST DISC ASSY, LSC270-821-85 IS SET TO BURST AT PRESSURES OF 1881 PSID TO 1967 PSID.

✓ 44 THESE MEASUREMENTS ARE INSTALLED BUT THE REQUIRMENT FOR THE MEASUREMENTS HAS BEEN DELETED, FOR REASONS REFER TO APPLICABLE MEASUREMENT LIST AND MCR'S NOTED ON THIS DRAWING

✓ 45. THIS REVISION AND APPLICABLE EO'S INCLUDE THE MEASUREMENTS AS LISTED IN LED360-22 REV "G" DATED JAN 15,'67 AND SUBSEQUENT APPLICABLE PROJECT APPROVED MCRS

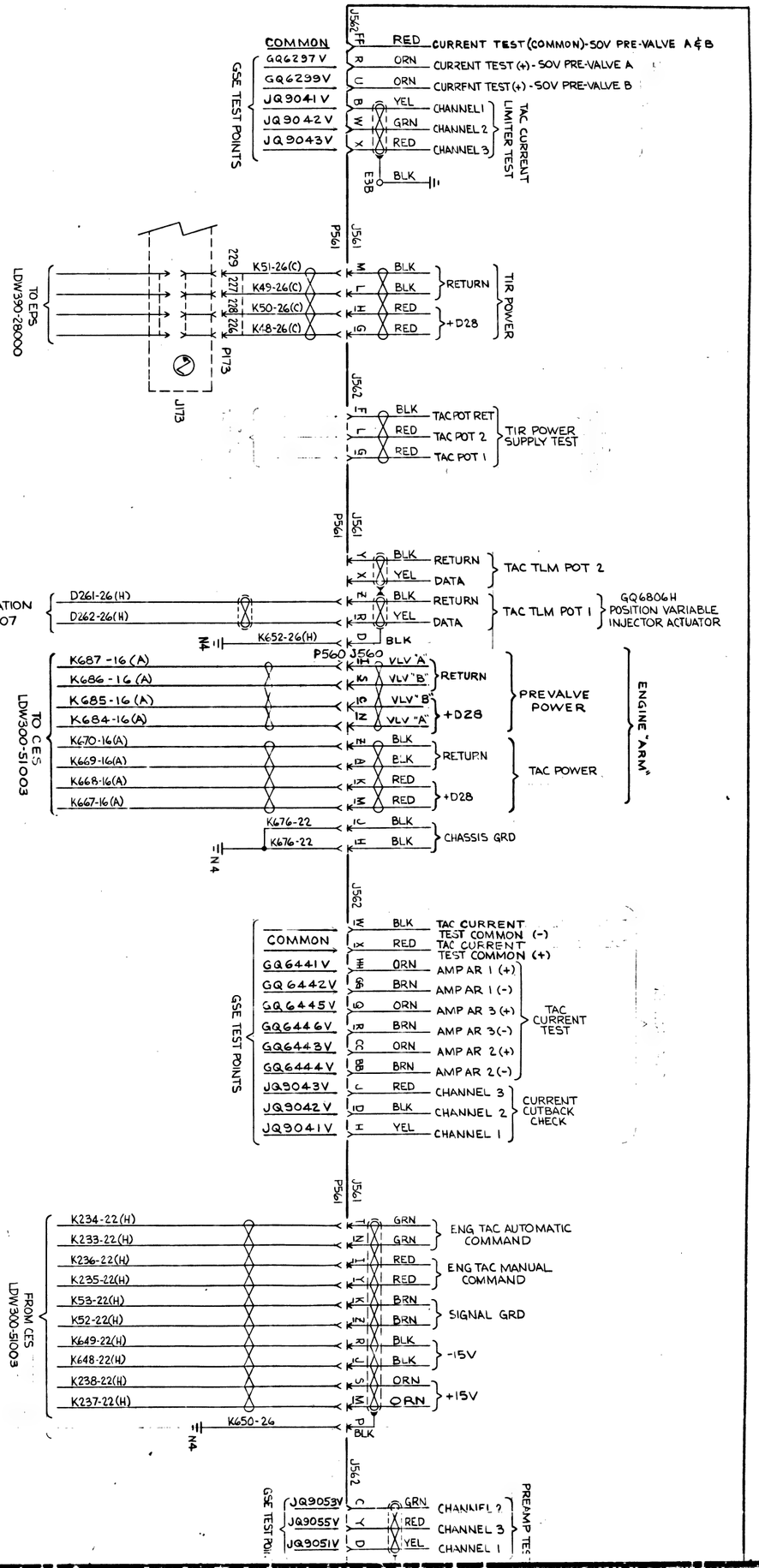
ENG 78.1 6-64

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

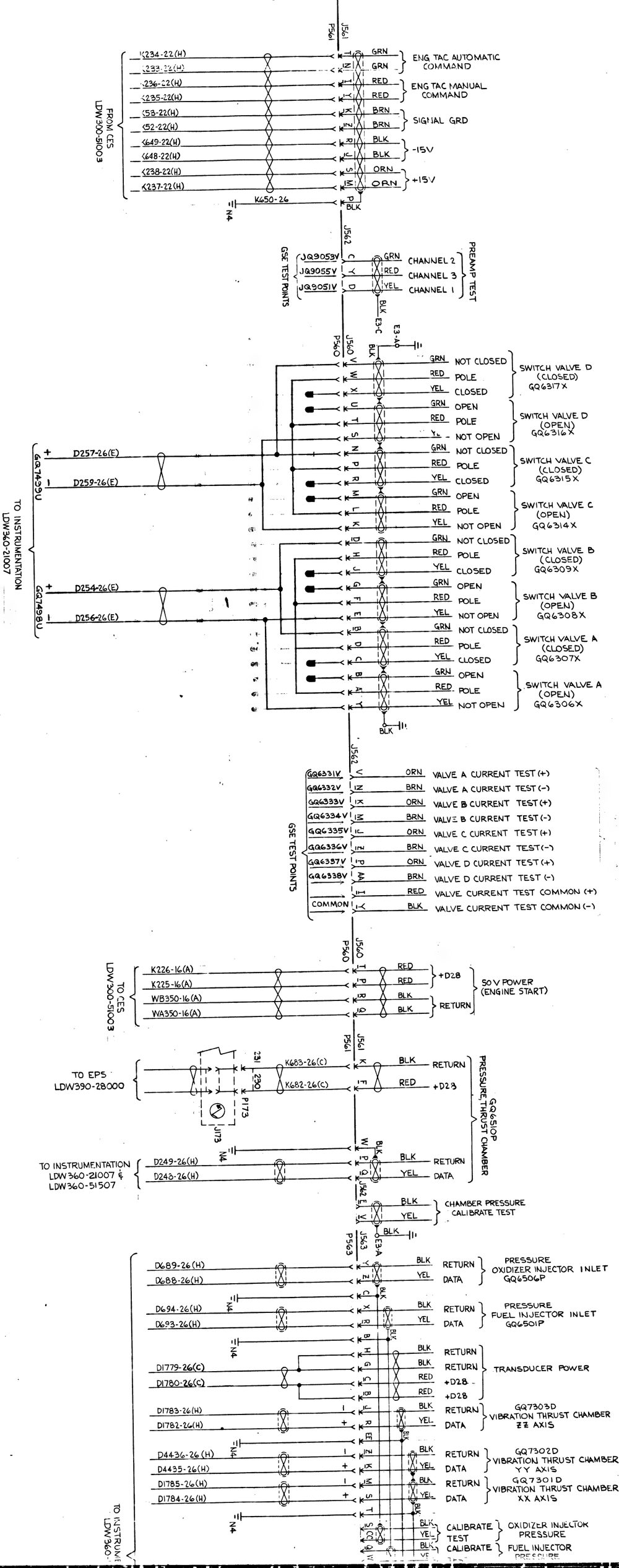
SIZE	CODE IDENT NO.		
B	26512	LDW270-51000	G

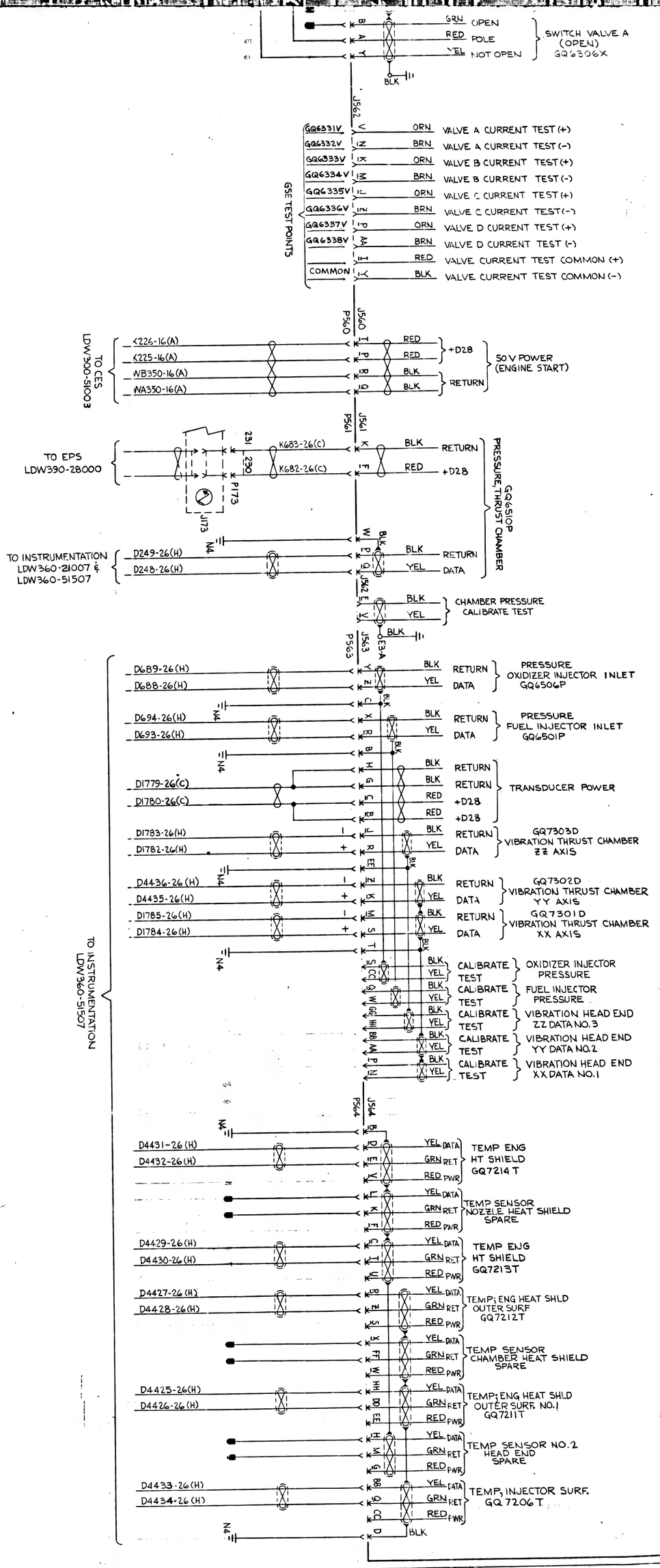
SCALE NONE SHEET 9.03

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10174-03 REV E
NAS 9-1100


P561
J561
K234-22(H)
K233-22(H)
K236-22(H)
K235-22(H)
K53-22(H)
K52-22(H)
K649-22(H)
K648-22(H)
K238-22(H)
K237-22(H)
FROM CES LDW300-51003
GRN
GRN
RED
RED
BRN
BRN
BLK
BLK
ORN
ORN
ENG TAC AUTOMATIC COMMAND
ENG TAC MANUAL COMMAND
SIGNAL GRD
-15V
+15V
K650-26
BLK
N4
J562
P560
GSE TEST POINTS
JQ90539V
JQ90555V
JQ90551V
GRN
RED
YEL
CHANNEL 2
CHANNEL 3
CHANNEL 1
PREAMP TEST
BLK
E3-C
E3-A
J560
P560
GQ74339U
GQ74398U
TO INSTRUMENTATION LDW360-21007
D257-26(E)
D259-26(E)
D254-26(E)
D256-26(E)
NOT CLOSED
POLE
CLOSED
OPEN
NOT OPEN
SWITCH VALVE D (CLOSED) GQ6317X
SWITCH VALVE D (OPEN) GQ6316X
SWITCH VALVE C (CLOSED) GQ6315X
SWITCH VALVE C (OPEN) GQ6314X
SWITCH VALVE B (CLOSED) GQ6309X
SWITCH VALVE B (OPEN) GQ6308X
SWITCH VALVE A (CLOSED) GQ6307X
SWITCH VALVE A (OPEN) GQ6306X
BLK
J562
GSE TEST POINTS
GQ6331V
GQ6332V
GQ6333V
GQ6334V
GQ6335V
GQ6336V
GQ6337V
GQ6338V
COMMON
ORN
BRN
RED
BLK
VALVE A CURRENT TEST (+)
VALVE A CURRENT TEST (-)
VALVE B CURRENT TEST (+)
VALVE B CURRENT TEST (-)
VALVE C CURRENT TEST (+)
VALVE C CURRENT TEST (-)
VALVE D CURRENT TEST (+)
VALVE D CURRENT TEST (-)
VALVE CURRENT TEST COMMON (+)
VALVE CURRENT TEST COMMON (-)
P560
J560
TO CES LDW300-51003
K226-16(A)
K225-16(A)
WB350-16(A)
WA350-16(A)
RED
RED
BLK
BLK
+D28
RETURN
50 V POWER (ENGINE START)
P561
J561
TO EPS LDW390-28000
231
230
P173
J173
K683-26(C)
K682-26(C)
BLK
RED
RETURN
+D28
PRESSURE, THRUST CHAMBER GQ6510P
N4
TO INSTRUMENTATION LDW360-21007 & LDW360-51507
D249-26(H)
D248-26(H)
BLK
YEL
RETURN
DATA
J562
CHAMBER PRESSURE CALIBRATE TEST
P563
J563
D689-26(H)
D688-26(H)
D694-26(H)
D693-26(H)
D1779-26(C)
D1780-26(C)
D1783-26(H)
D1782-26(H)
D4436-26(H)
D4435-26(H)
D1785-26(H)
D1784-26(H)
PRESSURE OXIDIZER INJECTOR INLET GQ6506P
PRESSURE FUEL INJECTOR INLET GQ6501P
TRANSDUCER POWER
GQ7303D VIBRATION THRUST CHAMBER ZZ AXIS
GQ7302D VIBRATION THRUST CHAMBER YY AXIS
GQ7301D VIBRATION THRUST CHAMBER XX AXIS
CALIBRATE
TEST
CALIBRATE
OXIDIZER INJECTOR PRESSURE
FUEL INJECTOR PRESSURE
TO INSTRUMENTATION LDW360-



FOR NOTES SEE SH 9.00

FOR ENGINEERING INFORMATION ONLY

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L.I., NEW YORK			
LEM	SIZE J	CODE IDENT NO. 26512	DRAWING NO. LDW270-51000
MODEL OR IDENT ITEM	SCALE NONE		SHEET 11.00

LDW270-51000.G A | LDW270-51000.G B | C

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.	GAEC SCH NO.		

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.	GAEC SCH NO.		

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	~	LEM-1(31)	
PART NO. LDW270-51000	GAEC SCH NO.		

FOR ENGRG INFO ONLY (5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	1.10	1.11	1.12	1.13	1.14	1.15	1.16	1.17
REV	H	G	G	G	G	G	G	G	G
SHEET	1.18	1.19	2.00	2.01	3.00	5.00	6.00	7.00	8.00
REV	G	H	H	G	H	H	H	G	H
SHEET	9.00	9.01	9.02	9.03			10.00	11.00	
REV	G	H	G	G			H	G	

LAST SECT LTR USED	
LAST DASH NO. USED	

GRUMMAN REL INFO D/E/H

PRIM NO.	451	MR 009
	471	MR-117

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS — DECIMALS — ANGLES

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS 9-1100 | LINE ITEM 9 | DOCUMENTATION TYPE II

DRAWN BY	P.Mulligan 1-9-65		
LAYOUT BY		S.ANA&INT	3/7/65
CHECKED BY	B.Pratt W.H.F 2-15-65		
ELEC GP LDR			
ELEC PWR SS	2-16-65		
PROP GP LDR		SUBSYS	
COG SUBSYS ENGR	2/16/65	PROJ ENGR	2/19/65
		PROJ ENGR	2/24/65
		RELEASE	3-22

GRUMMAN AIRCRAFT ENGRG CORP.
BETHPAGE, L. I., NEW YORK

SCHEMATIC LEVEL 3 LEM 1
PROPULSION SUBSYSTEM

SIZE	CODE IDENT NO.		
B	26512	LDW270-51000	H

SCALE ~ NONE | SHEET 1.00 OF 24

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REVISIONS

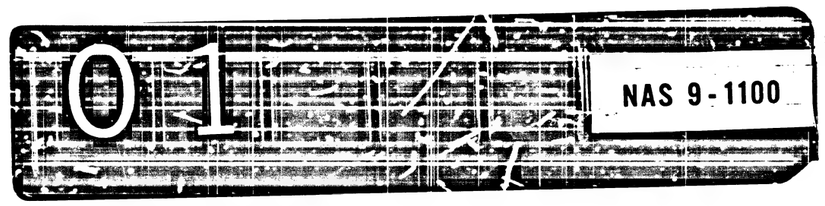
CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
G	9	2.00, 8.00 11.00	15C 33C					EO G9	LSC270-00600-20 (WAS) LSC270-00600-14	LM-1(31)	NOT	REQD	APUTO 6-20-67		
	10	1.00, 1.10 1.11, 1.12 1.13, 1.14 1.15, 1.16 9.00, 9.02 5.00 11.00							SHEET 1.00 OF 25 WAS 1.00 OF 23 ADDED SHEETS 1.18 & 1.19, ADDED REV LETTER 'G' TO SHEETS 1.10, 1.11, 1.12, 1.13, 1.14, 1.15, 1.16, 9.00, 9.02, 9.03, 5.00 & 11.00 FOR DISTRIBUTION & PROCESSING PURPOSE ONLY.	NOTED					
	1	3.00, 6.00 8.00 & 10.00	31C 33C	46C, 79A, 79D 47C & 87C			✓	EO H1 LCD1731/1731A	DELETED "SEE NOTE 44" FROM GP2706T, GP2803D, GQ3501P, GQ4001P & GQ4005P. ADD "SEE NOTE 44" TO GP2006P	LM-1(31)	NOT	REQD			
	2	2.00 5.00	30D				✓	LEO270-52	IN B/M & FD 10LG LSC 270-00822-7 & -7-2 SOLENOID VALVE PRE-VALVE (WAS) 10LG LSC 270-00822-7 & -7-2 ACTUATOR ISOLATION VALVE						
H	3	5.00	41B	41C			✓	LEO 270-54	J38 WAS P38, P38 WAS J38						
	4	3.00 9.01	9A 9D				✓	EO H4 LCD1031E	IN F/D & IN NOTE 32 LSC 270-721-1 WAS LSC270-715-9 & LSC 270-721-3 WAS LSC 270-715-11	LM-1(31)					
	5	8.00	7G			✓		EO H5 LCD10720	CHANGE DWG. CALLOUT FROM LSC 270-820-11 TO LSC 270-820-11-1.						
	6	5.00	C3			✓		EO H6 LCD10783	DISCONNECTED WIRING TO TRANSDUCERS FOR MEA'S GP7615T & GP7625T, ADDED END CAP SYMBOLS				JR J. EIISWICK 12-13-67		

FOR CONTINUATION OF REVISIONS SEE SHEET _____

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GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51000	H
SCALE NONE		SHEET 1.19	



REF DESIGNATION	PART NUMBER	DESCRIPTION	SHEET	ZONE	
10MT13	LSC360-605-301	TEMP TRANSDUCER ENG INTERFACE INLET OX	6	51B	GQ4311T
10MT12	NTN510790-203	PRESS TRANSDUCER, He SEC UPSTREAM REG INLET	6	47B	GQ3010P
10MT11	NTN510790-203	PRESS TRANSDUCER, He PRI UPSTREAM REG INLET	6	47B	GQ3009P
10MT10	LSC360-605-303	TEMP, TRANSDUCER	6	51B	GQ4219T
10MT9			6	51B	GQ4218T
10MT8			6	50B	GQ3719T
10MT7	LSC360-605-303	TEMP, TRANSDUCER	6	50B	GQ3718T
10MT1	LSC360-605-301	TEMP ENGINE INTERFACE FUEL	6	48B	GQ3811T
10M5	LSC350-00401-03-2	PROPELLANT QTY INDICATOR	7	64B	
10M4	LSC350-80179-13	DUAL VERT METER TEMP	7	68A	
10M3	LSC350-80125-12	DUAL VERT METER PRESS	7	68A	
10M1	LSC350-20100-02	He TEMP/PRESS READOUT	7	68C	
10L6	LSC270-00822-7	SOLENOID VALVE PRE-VALVE	5	29B	
10FL4	LSC350-80402	DESCENT STATUS REG FLAG NO. 2	6	56A	
10FL3	LSC350-80401	DESCENT STATUS REG FLAG NO. 1	6	56B	
10FL2	LSC350-80401	ASCENT STATUS REG FLAG NO. 2	5	40A	
10FL1	LSC350-80401	ASCENT STATUS REG FLAG NO. 1	5	40B	
~~10A7L1~~	~~LSC270-713-10~~	~~LATCHING He SOLENOID VALVE #2~~	~~6~~	~~53B~~	
~~10A6L1~~	~~LSC270-713-9~~	~~LATCHING He SOLENOID VALVE #1~~	~~6~~	~~53C~~	
10A5L1	LSC270-713-15	LATCHING He SOLENOID VALVE #2	5	38A	
10A4L1	LSC270-713-15	LATCHING He SOLENOID VALVE #1	5	38B	

REF DESIGNATION	PART NUMBER	DESCRIPTION	SHEET	ZONE	
~~10A7CR2~~	~~UZ 5840~~	~~ZENER DIODE~~	~~6~~	~~51E~~	~~ARC SUPPR~~
~~10A7CR1~~	~~UZ 5840~~		~~6~~	~~51B~~	~~ARC SUPPR~~
~~10A6CR2~~	~~UZ 5840~~		~~6~~	~~54C~~	~~ARC SUPPR~~
~~10A6CR1~~	~~UZ 5840~~		~~6~~	~~54C~~	~~ARC SUPPR~~
10A5CR2	UZ 5840		5	38B	ARC SUPPR
10A5CR1	UZ 5840		5	38B	ARC SUPPR
10A4CR2	UZ 5840		5	38C	ARC SUPPR
10A4CR1	UZ 5840	ZENER DIODE	5	38C	ARC SUPPR.
10A7	LSC713-10-1	VALVE ASS'Y	6	54B	
10A6	LSC713-9-1		6	54C	
10A5	LDW390-51070-1		5	38B	
10A4	LDW390-51070-1	VALVE ASSY	5	38C	
10A3	LSC270-00009-41	GAGING CONTROL UNIT PROPELLANT QUANTITY	7	62C	
10A2	LSC270-00500-10	ASCENT ENGINE(BELL)	10	85C	
10A1	LSC270-00600-20	DESCENT ENGINE	11	93C	

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

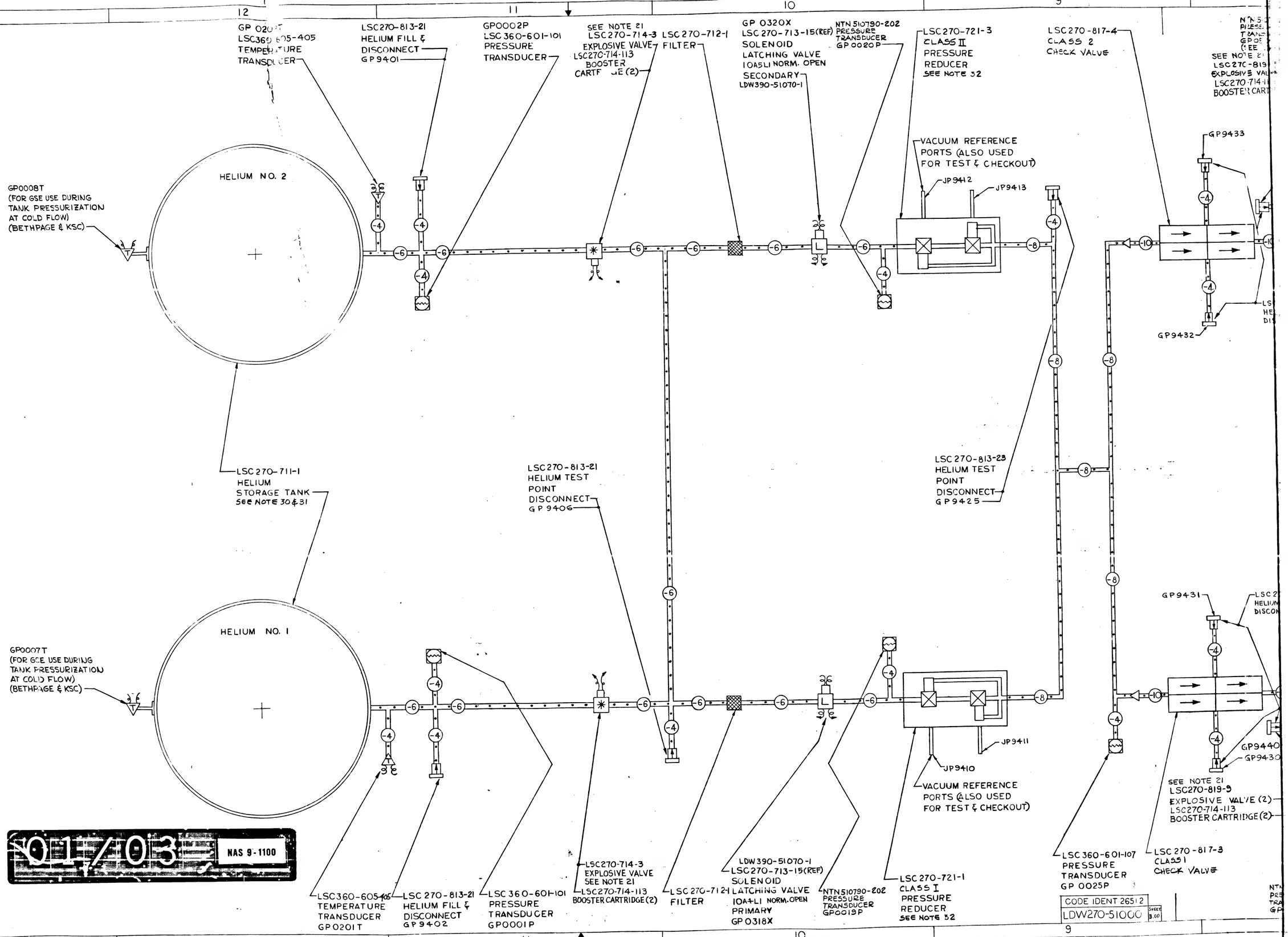
SIZE	CODE IDENT NO.		
B	26512	LDW270-51000	H

SCALE NONE SHEET 2.00

ENG 77.10 7-64

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NAS 9-1100



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CODE IDENT 26512
LDW270-51000 SHEET 3.00

LSC270-817-4 CLASS 2 CHECK VALVE

NTN510790-201 PRESSURE TRANSDUCER GP0504P (SEE NOTE 44)

SEE NOTE 21 LSC270-819-3 EXPLOSIVE VALVE (2) LSC270-714-113 BOOSTER CARTRIDGE (2)

LSC270-717-6 TYPE 2 PRESSURE RELIEF VALVE SEE NOTE 35

LSC270-804-2 FUEL FILL-VENT COUPLING GP9443

GP 0501P PRESSURE TRANSDUCER NTN510790-201

GP 0908X LSC270-801-13 LOW LEVEL SENSOR

GP0718T LSC360-605-303 TEMPERATURE TRANSDUCER

LSC270-701-1 FUEL FILL COUPLING (ALSO USED FOR OVERBOARD DRAIN) GP9453

GP 0616P DIFFERENTIAL PRESSURE TRANSDUCER NTN510981-201

GP 7615T LSC360-605-301 TEMPERATURE TRANSDUCER

GP1501P

GP9472 GP1802X ISOLATION VALVE CONTROL

GP1812X ISOLATION VALVE "B"

SEE NOTE NO.34

LSC270-00500-10 ASCENT ENGINE MODIFIED BY LDW270-51010-3

BY-PASS REMOVED BEFORE FLIGHT

BRAZED CAPS (2)

GP9433

GP9441

GP9432

LSC270-813-24 HELIUM TEST POINT DISCONNECT

GP9445

GP9447

LSC 260-7-55 FUEL STORAGE TANK

TO REACTION CONTROL SUB-SYSTEM SEE DWG. LDW310-51000

LSC270-813-26 FUEL TEST POINT DISCONNECT

R.C.S. (REF)

FLEX HOSE LSC270-826-1

LSC270-826-1 FLEX. HOSE

JP9482

3/8 PORT

ENGINE FILTER

1/4 BRAZED CAPS (2) INSTLD. BEFORE FLIGHT

GP9451

GP9462

1/4 MECH. FEMALE PORT (2) FOR G.S.E. & SEE NOTE NO. 36

TRIM ORIFICE

GP7551X GP7552X

LSC270-00822-7-2

LSC270-813-26 FUEL TEST POINT GP9455

LSC270-813-26 FUEL HIGH POINT BLEED GP9464

ENGINE INTERFACE

OVERBOARD (2) DRAINS (ENGINE VALVE SEAL)

GP9476

GP9477

CHAMBER

ISOLAT VALVE

BIP VAL

GP9446

GP9431

LSC270-813-25 HELIUM TEST POINT DISCONNECT

GP9444

GP9440

GP9430

(2) BRAZED CAPS

SEE NOTE 21 LSC270-819-3 EXPLOSIVE VALVE (2) LSC270-714-113 BOOSTER CARTRIDGE (2)

BY-PASS REMOVED BEFORE FLIGHT

LSC 280-7-56 OXIDIZER STORAGE TANK

GP9450

1/4 MECH. FEMALE PORT (2) FOR G.S.E. & SEE NOTE NO. 36

1/4 BRAZED CAPS (2) INSTLD BEFORE FLIGHT

GP9461 TRIM ORIFICE

LSC270-813-27 OX HIGH POINT BLEED GP9463

JP9480

3/8 PORT

FLEX HOSE LSC270-826-3

R.C.S. (REF)

LSC270-826-3 FLEX. HOSE

ENGINE FILTER

TO REACTION CONTROL SUB-SYSTEM SEE DWG. LDW310-51000

LSC270-813-27 OX TEST POINT DISCONNECT

LSC360-601-107 PRESSURE TRANSDUCER GP 0025P

LSC270-817-3 CLASS 1 CHECK VALVE

NTN510790-201 PRESSURE TRANSDUCER GP1004P

LSC270-805-2 OXIDIZER FILL-VENT COUPLING GP9442

LSC270-717-7 TYPE 1 PRESSURE RELIEF VALVE SEE NOTE 35

NTN510790-201 PRESSURE TRANSDUCER GP1001P

LSC270-801-14 LOW LEVEL SENSOR GP1408X

LSC360-605-303 TEMPERATURE TRANSDUCER GP1218T

LSC270-702-1 OXIDIZER FILL COUPLING (ALSO USED FOR OVERBOARD DRAIN) GP9452

NTN510981-201 DIFFERENTIAL PRESSURE TRANSDUCER GP1116P

LSC360-605-301 TEMPERATURE TRANSDUCER GP7625T

GP1503P

SEE NOTE NO.34

GP9471

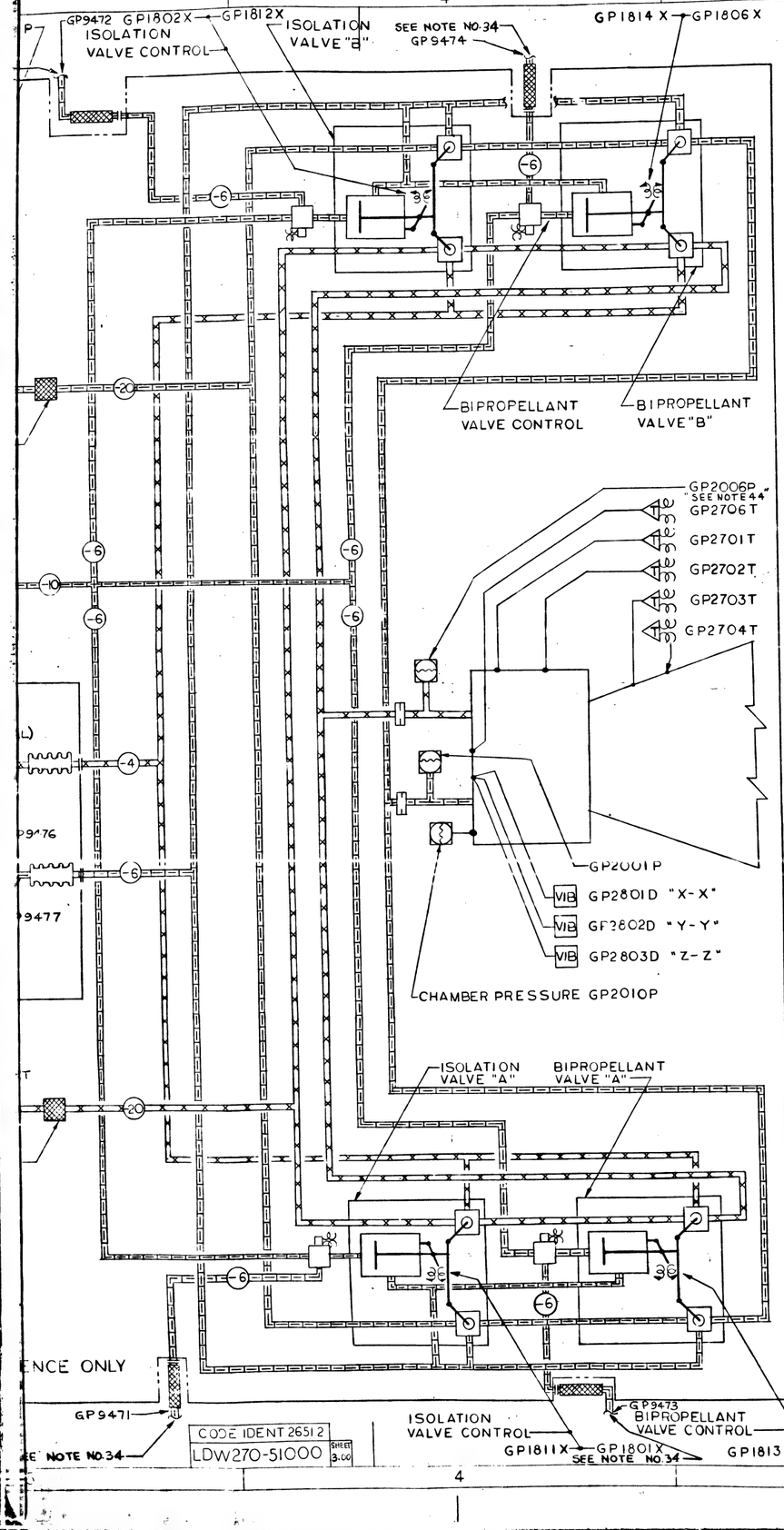
FOR REFERENCE ONLY

02/03 NAS 9-1100

CODE IDENT 26512 LDW270-51000 SHEET 3.00

CODE IDENT 26512 LDW270-51000 SHEET 3.00

ISOLATION VALVE CON



MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

- PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.
- FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010; .063R TO .250R ± .015; OVER .250R ± .030
- DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.
- EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
- DO NOT CADMIUM PLATE ! PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
- MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
- DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
- HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
- ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0001 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
- SURFACE ROUGHNESS 125 √ INCLUDING REAMED HOLES PER MIL-STD-10
- 250 √ FOR ALL DRILLED HOLES
- REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
- INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
- SYMBOL √ DENOTES SURFACE TO BE MACHINED
- UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
- LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
- TOLERANCE ON LOFTED DELINEATIONS IS

DWG SIZE 34 X 44 PRINTING INFO ONLY

D C B A

LDW270-51000 H

LDW270-51000 H

103/103

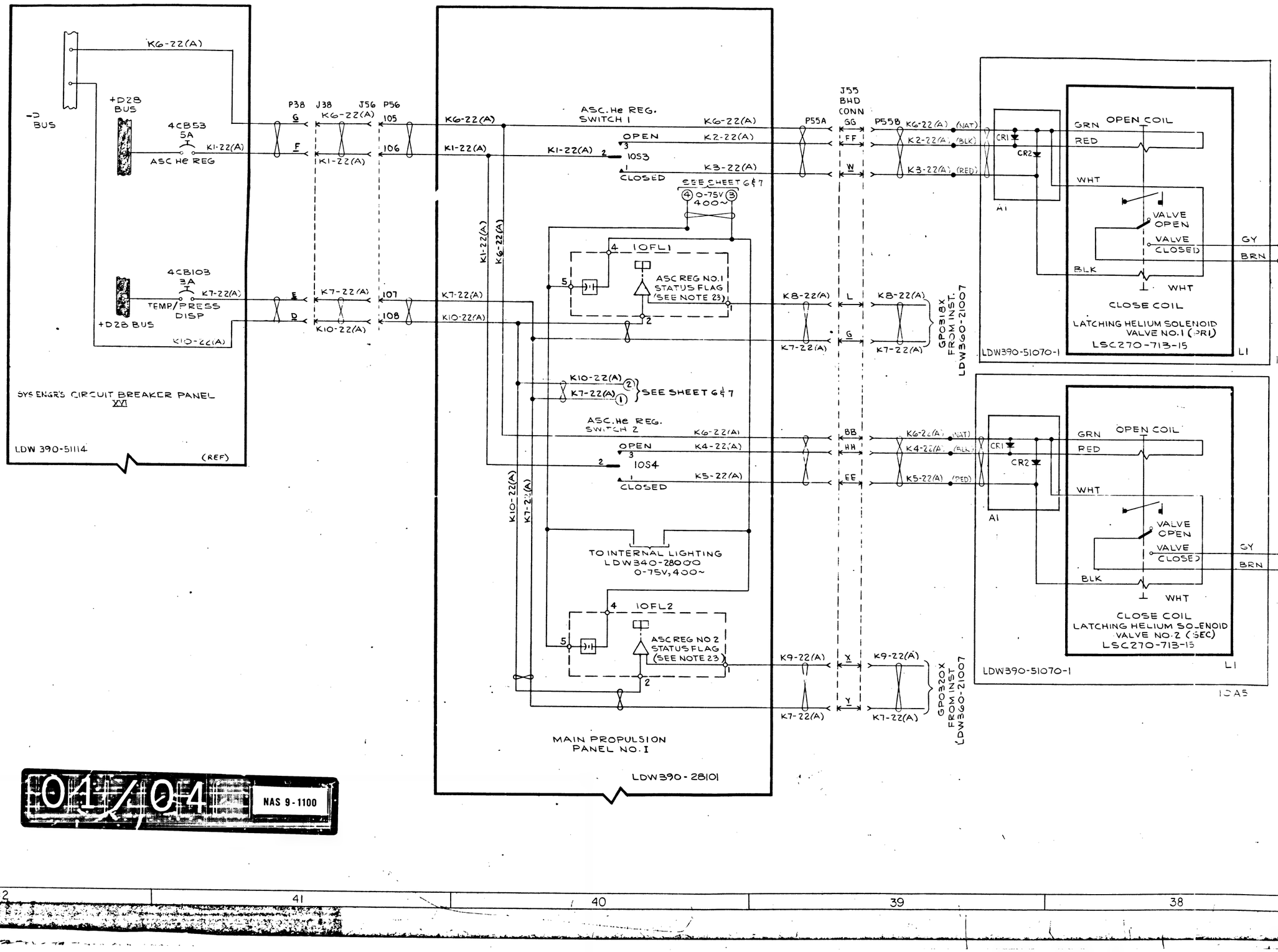
NAS 9-1100

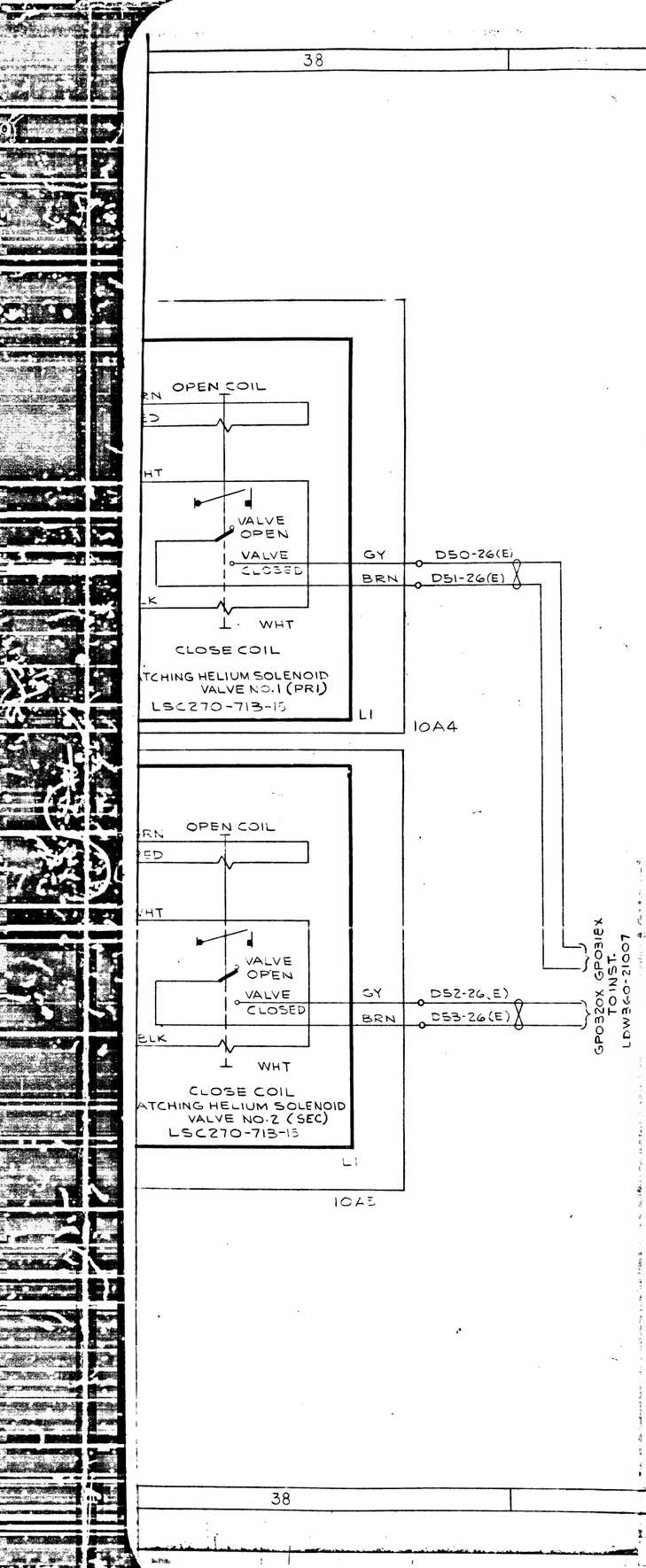
ASCENT FLUID LINES – BASIC.
FOR ELECTRICAL SEE SHTS. 5 & 7
(BELL ENGINE)

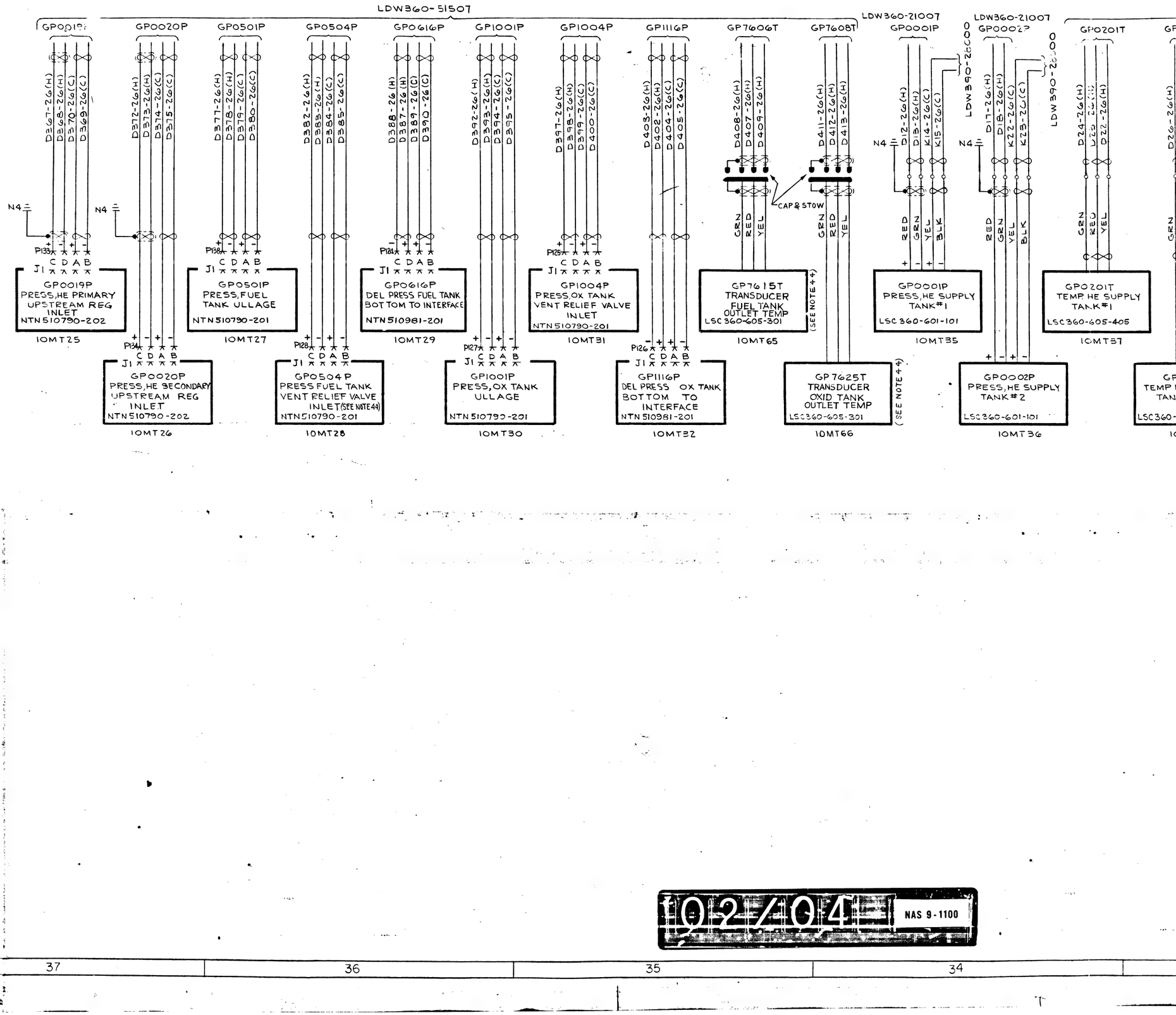
FOR NOTES SEE SH 900
FOR ENGRG. INFO. ONLY

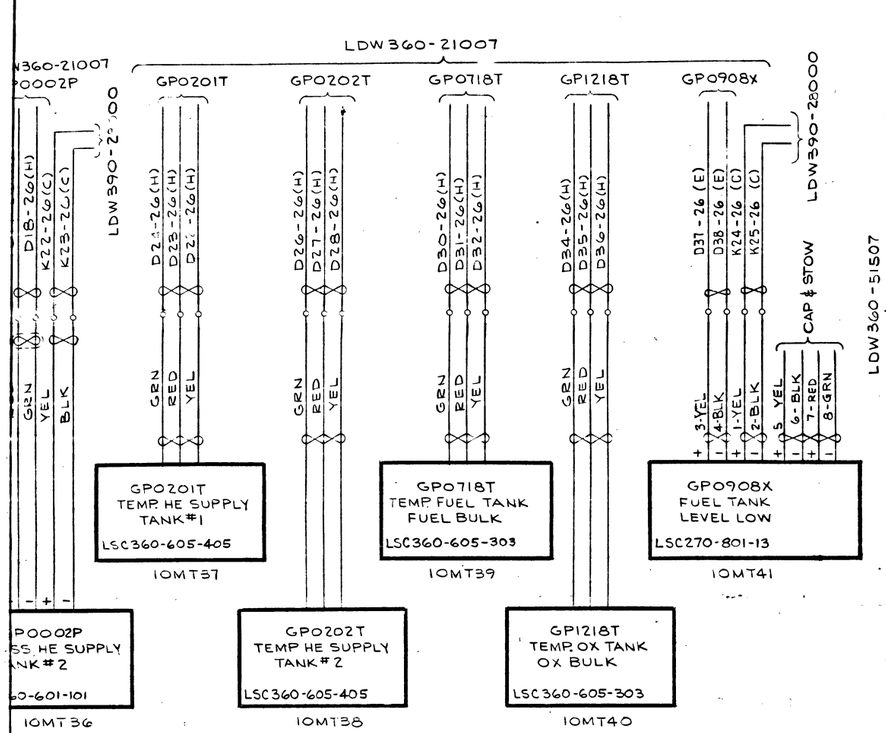
LEM	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK			
MODEL OR END ITEM	SCALE	SIZE J	CODE IDENT NO. 26512	LDW270-51000 H
				SHEET 3.00

1 3 FR.


K6-22(A)
+D28 BUS
-D BUS
4CB53 5A
K1-22(A)
ASC He REG
P38 J38 J56 P56
G
F
K6-22(A) 105
K1-22(A) 106
4CB103 3A
K7-22(A)
TEMP/PRESS DISP
+D28 BUS
K10-22(A)
E
D
K7-22(A) 107
K10-22(A) 108
SYS ENGR'S CIRCUIT BREAKER PANEL XVI
LDW 390-51114 (REF)
ASC. He REG. SWITCH 1
OPEN
CLOSED
10S3
K6-22(A)
K2-22(A)
K3-22(A)
SEE SHEET 6 & 7
0-75V 400~
10FL1
ASC REG NO.1 STATUS FLAG (SEE NOTE 23)
K8-22(A)
K7-22(A)
K10-22(A)
SEE SHEET 6 & 7
ASC. He REG. SWITCH 2
10S4
K4-22(A)
K5-22(A)
TO INTERNAL LIGHTING LDW340-28000 0-75V,400~
10FL2
ASC REG NO 2 STATUS FLAG (SEE NOTE 23)
K9-22(A)
MAIN PROPULSION PANEL NO. I
LDW390-28101
J55 BHD CONN
P55A
P55B
GG
FF
W
BB
HH
EE
L
G
X
Y
(NAT)
(BLK)
(RED)
CR1
CR2
A1
OPEN COIL
GRN
RED
WHT
VALVE OPEN
VALVE CLOSED
GY
BRN
BLK
CLOSE COIL
LATCHING HELIUM SOLENOID VALVE NO.1 (PRI)
LSC270-713-15
LDW390-51070-1
L1
GP0318X FROM INST. LDW360-21007
VALVE NO.2 (SEC)
GP0320X FROM INST LDW360-21007
1CA5


OPEN COIL
VALVE OPEN
VALVE CLOSED
WHT
CLOSE COIL
LSC270-713-15
L1
10A4
OPEN COIL
VALVE OPEN
VALVE CLOSED
WHT
CLOSE COIL
VALVE NO.2 (SEC)
LSC270-713-15
L1
10A3
GY
BRN
D50-26(E)
D51-26(E)
D52-26(E)
D53-26(E)
GP0320X GP081EX
TO INST.
LDW360-21007

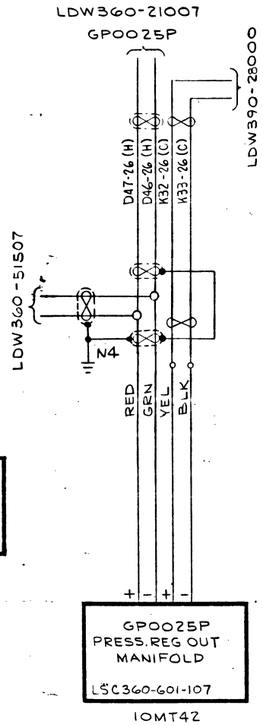

LDW360-51507
GP0019P
GP0020P
GP0501P
GP0504P
GP0616P
GP1001P
GP1004P
GP1116P
GP7606T
GP7608T
LDW360-21007
GP0001P
LDW360-21007
GP0002P
GP0201T
N4
P133
P134
P138
P128
P124
P127
P125
P126
J1
C D A B
D367-26(H)
D368-26(H)
D369-26(C)
D370-26(C)
D372-26(H)
D373-26(H)
D374-26(C)
D375-26(C)
D371-26(H)
D378-26(H)
D379-26(C)
D380-26(C)
D382-26(H)
D383-26(H)
D384-26(C)
D385-26(C)
D388-26(H)
D387-26(H)
D389-26(C)
D390-26(C)
D392-26(H)
D393-26(H)
D394-26(C)
D395-26(C)
D397-26(H)
D398-26(H)
D399-26(C)
D400-26(C)
D403-26(H)
D402-26(H)
D404-26(C)
D405-26(C)
D408-26(H)
D407-26(H)
D409-26(H)
D411-26(H)
D412-26(H)
D413-26(H)
D12-26(H)
D13-26(H)
K14-26(C)
K15-26(C)
LDW390-26000
D17-26(H)
D18-26(H)
K22-26(C)
K23-26(C)
LDW390-26000
D24-26(H)
D25-26(H)
D22-26(H)
D26-26(H)
GRN
RED
YEL
BLK
CAP & STOW
GP0019P
PRESS,HE PRIMARY UPSTREAM REG INLET
NTN510790-202
10MT25
GP0020P
PRESS,HE SECONDARY UPSTREAM REG INLET
NTN510790-202
10MT26
GP0501P
PRESS,FUEL TANK ULLAGE
NTN510790-201
10MT27
GP0504P
PRESS FUEL TANK VENT RELIEF VALVE INLET (SEE NOTE 44)
NTN510790-201
10MT28
GP0616P
DEL PRESS FUEL TANK BOTTOM TO INTERFACE
NTN510981-201
10MT29
GP1001P
PRESS,OX TANK ULLAGE
NTN510790-201
10MT30
GP1004P
PRESS,OX TANK VENT RELIEF VALVE INLET
NTN510790-201
10MT31
GP1116P
DEL PRESS OX TANK BOTTOM TO INTERFACE
NTN510981-201
10MT32
GP7615T
TRANSDUCER FUEL TANK OUTLET TEMP
LSC360-605-301
(SEE NOTE 44)
10MT65
GP7625T
TRANSDUCER OXID TANK OUTLET TEMP
LSC360-605-301
(SEE NOTE 44)
10MT66
GP0001P
PRESS,HE SUPPLY TANK #1
LSC360-601-101
10MT35
GP0002P
PRESS,HE SUPPLY TANK #2
LSC360-601-101
10MT36
GP0201T
TEMP HE SUPPLY TANK #1
LSC360-605-405
10MT37

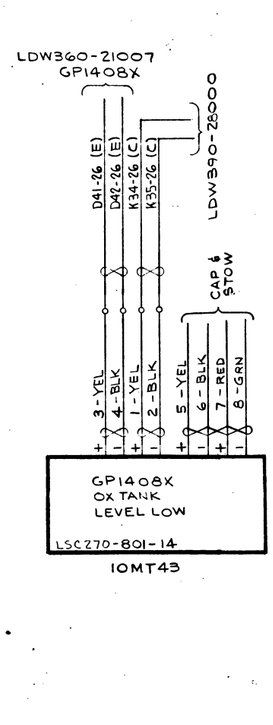

LDW360-21007
GP0002P
LDW390-28000
D18-26(H)
K22-26(C)
K23-26(C)
GRN
YEL
BLK
GP0002P
SS HE SUPPLY
NK # 2
60-601-101
10MT36

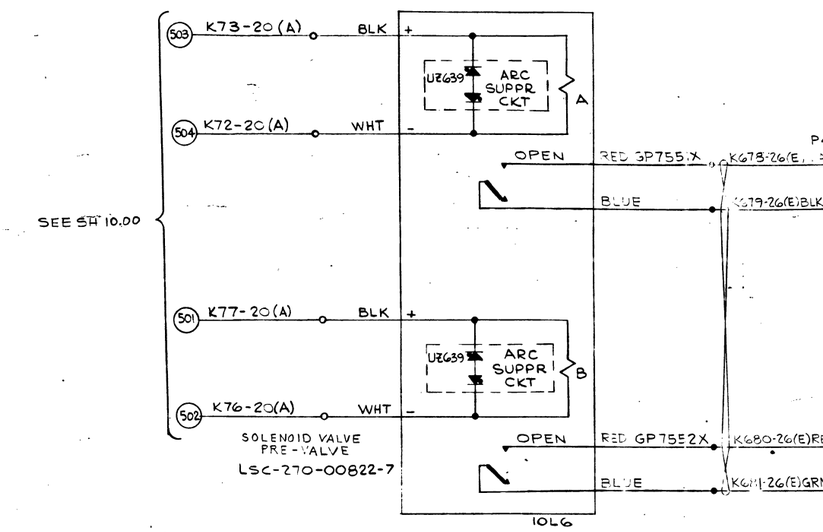
LDW360-21007
GP0201T
GP0202T
D21-26(H)
D22-26(H)
D23-26(H)
D26-26(H)
D27-26(H)
D28-26(H)
GRN
RED
YEL
GP0201T
TEMP. HE SUPPLY
TANK #1
LSC360-605-405
10MT37
GP0202T
TEMP. HE SUPPLY
TANK # 2
LSC360-605-405
10MT38

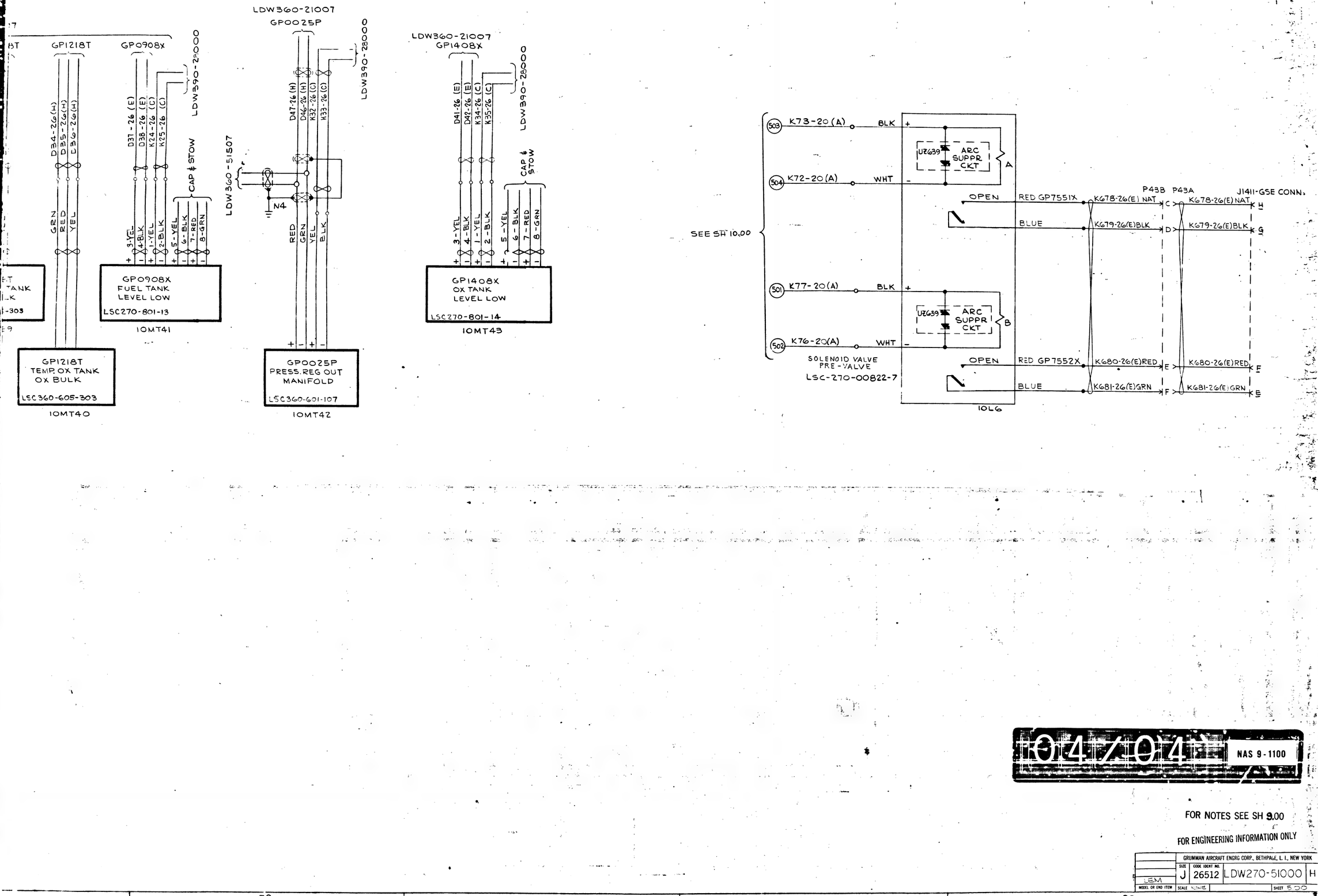
LDW360-21007
GP0718T
GP1218T
D30-26(H)
D31-26(H)
D32-26(H)
D34-26(H)
D35-26(H)
D36-26(H)
GRN
RED
YEL
GP0718T
TEMP. FUEL TANK
FUEL BULK
LSC360-605-303
10MT39
GP1218T
TEMP. OX TANK
OX BULK
LSC360-605-303
10MT40

LDW360-21007
GP0908X
LDW390-28000
D37-26 (E)
D38-26 (E)
K24-26 (C)
K25-26 (C)
CAP & STOW
3-YEL
4-BLK
1-YEL
2-BLK
5-YEL
6-BLK
7-RED
8-GRN
GP0908X
FUEL TANK
LEVEL LOW
LSC270-801-13
10MT41


LDW360-21007
GP0025P
LDW390-28000
LDW360-51507
D47-26 (H)
D46-26 (H)
K32-26 (C)
K33-26 (C)
N4
RED
GRN
YEL
BLK
GP0025P
PRESS. REG OUT
MANIFOLD
LSC360-601-107
10MT42


LDW360-21007
GP1408X
LDW390-28000
D41-26 (E)
D42-26 (E)
K34-26 (C)
K35-26 (C)
CAP & STOW
3-YEL
4-BLK
1-YEL
2-BLK
5-YEL
6-BLK
7-RED
8-GRN
GP1408X
OX TANK
LEVEL LOW
LSC270-801-14
10MT43


SEE SH 10.00
503
K73-20 (A)
BLK
504
K72-20 (A)
WHT
UZ6139
ARC SUPPR CKT
A
OPEN
RED 3P755X
BLUE
501
K77-20 (A)
502
K76-20(A)
B
SOLENOID VALVE
PRE-VALVE
LSC-270-00822-7
RED GP752X
10L6



047/047 NAS 9-1100

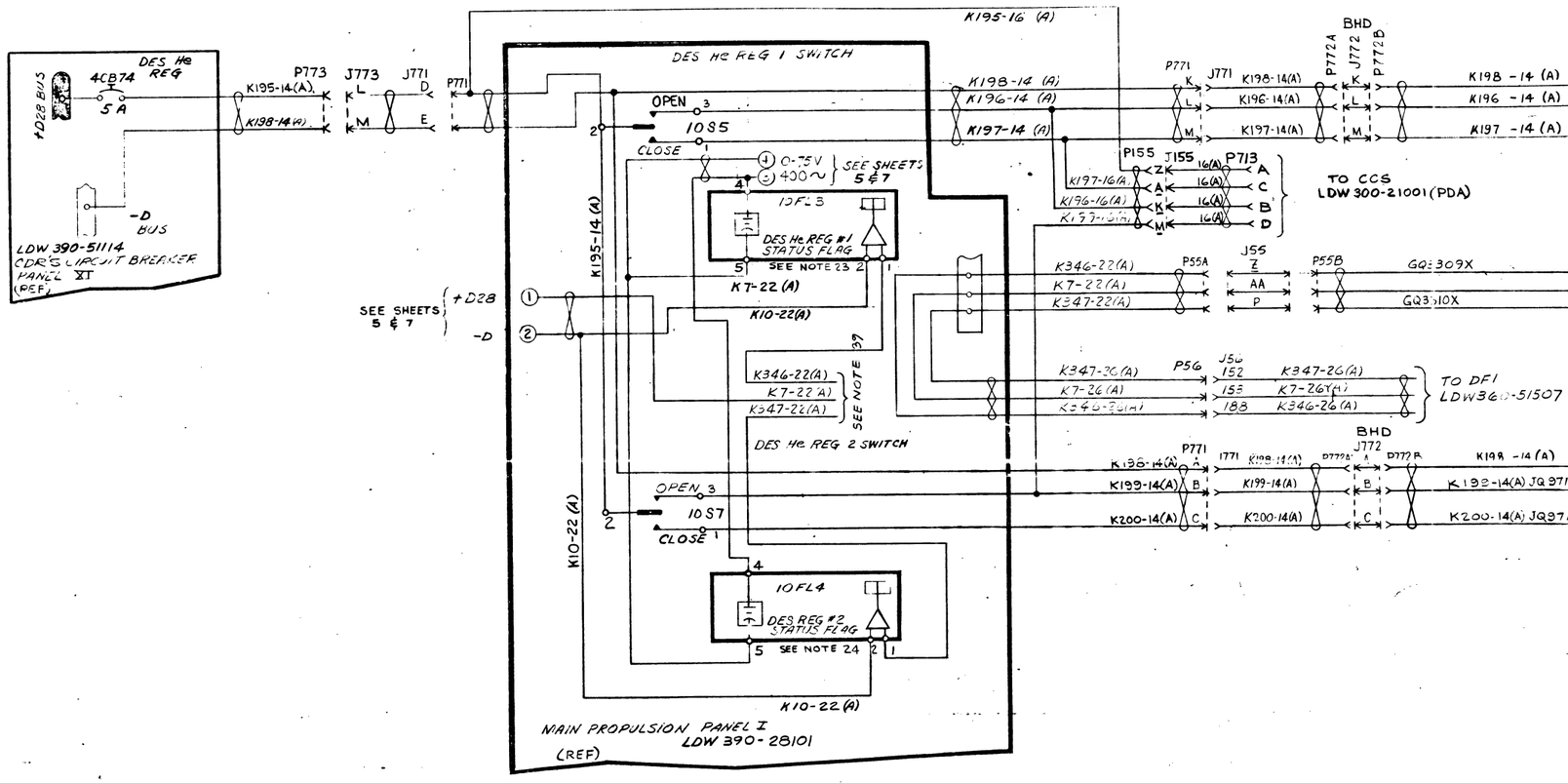
FOR NOTES SEE SH 9.00

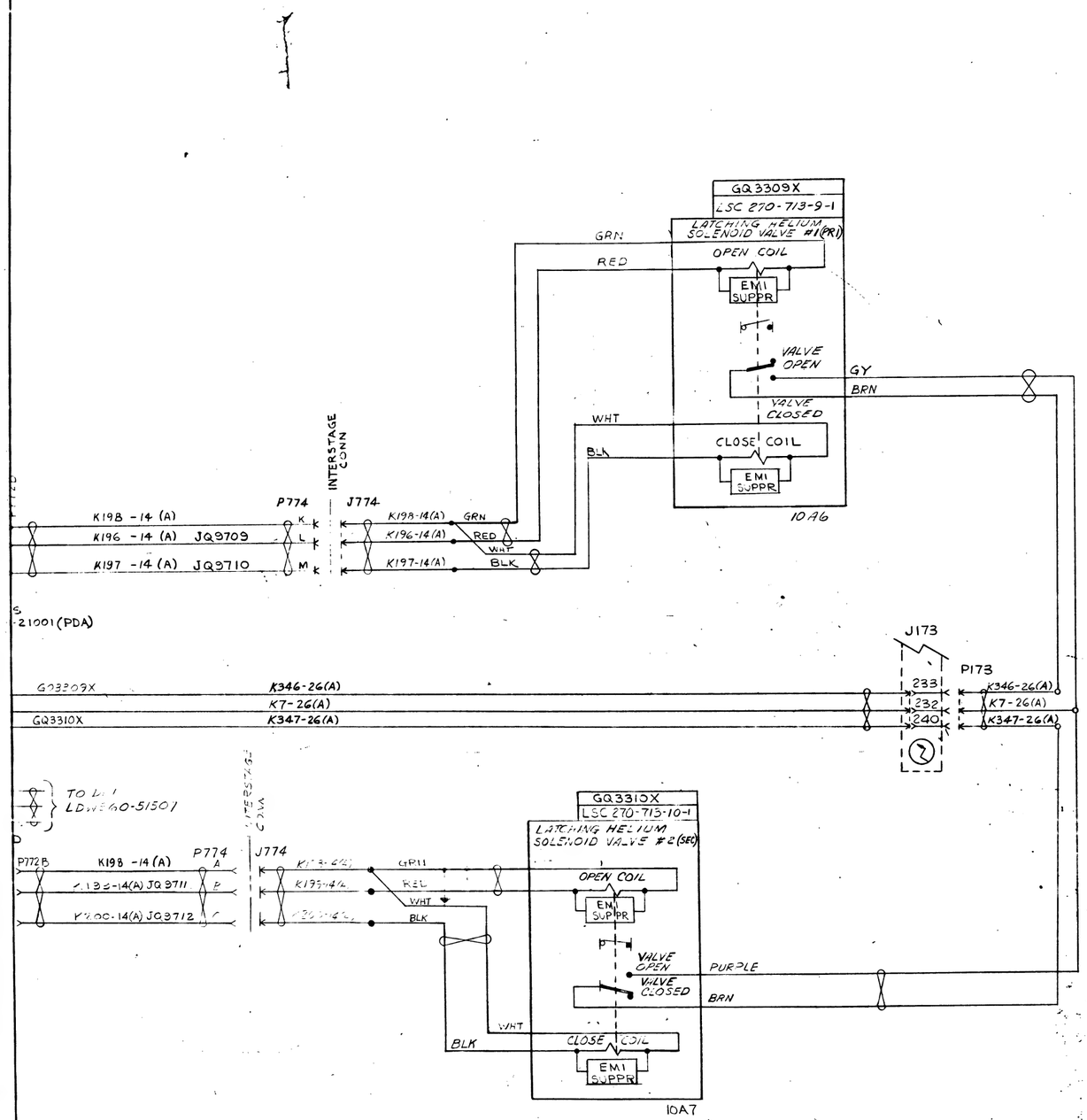
FOR ENGINEERING INFORMATION ONLY

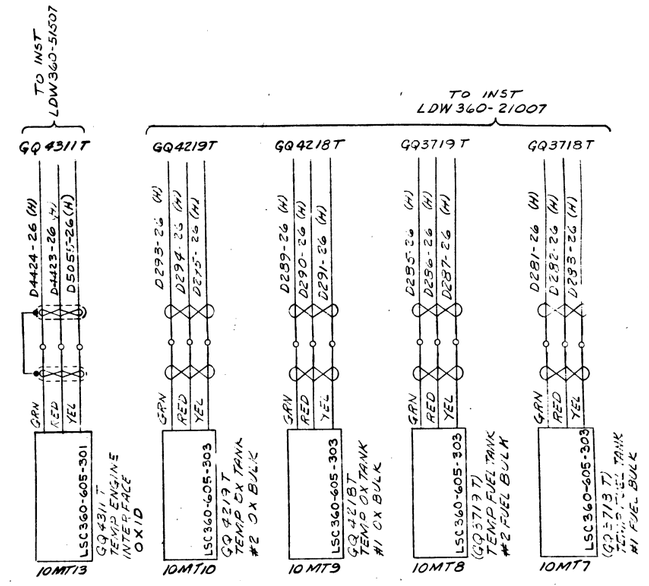
	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LEM	SIZE J	CODE IDENT NO 26512	LDW270-51000	H
MODEL OR END ITEM	SCALE NONE		SHEET 5.00	

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LDW270-51000H

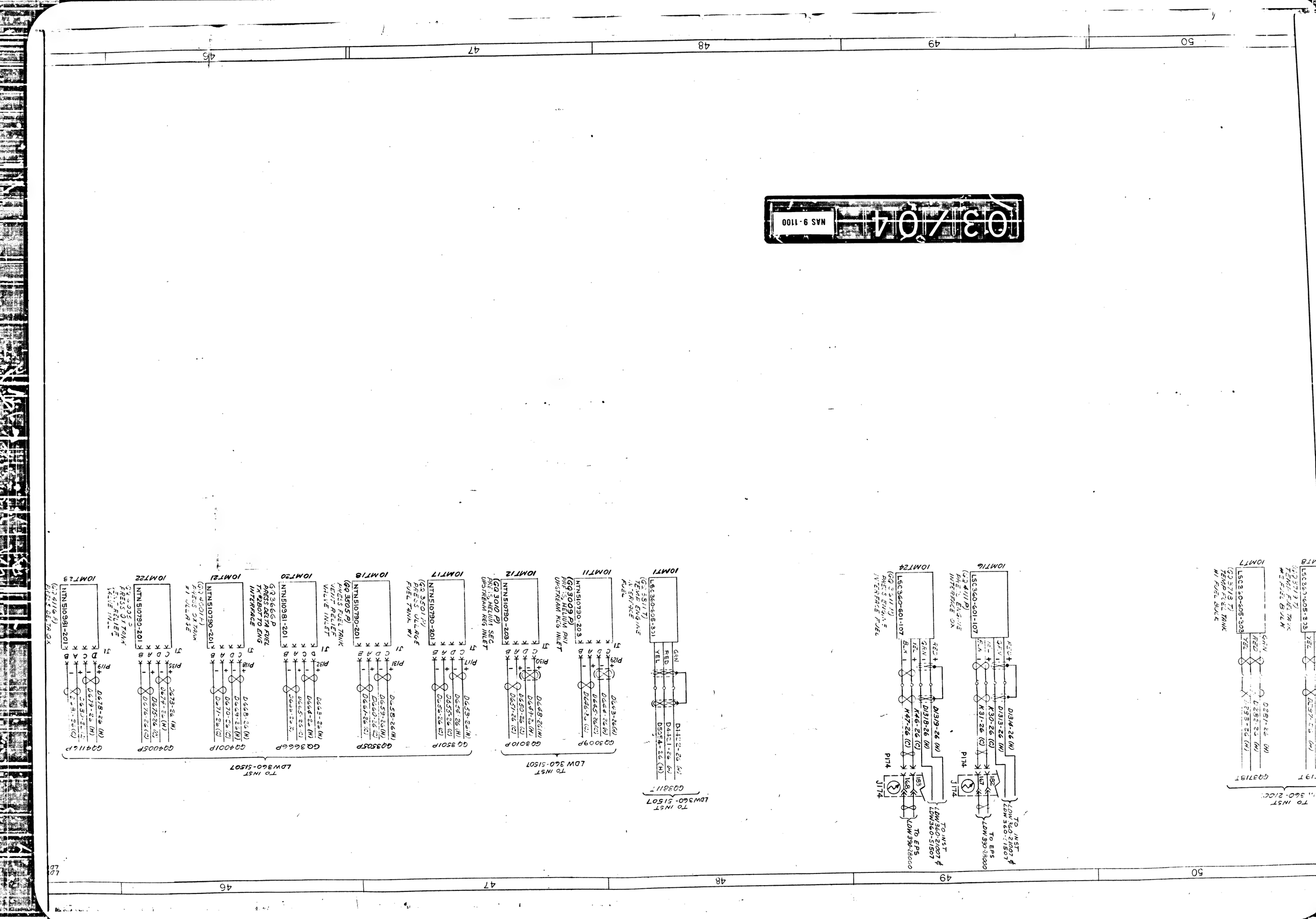

DES HE REG
4CB74
5 A
+D28 BUS
-D BUS
LDW 390-51114
CDRS CIRCUIT BREAKER PANEL XT
(REF)
P773
J773
J771
K195-14(A)
K198-14(A)
DES HE REG 1 SWITCH
OPEN
10S5
CLOSE
0-75V
400~
SEE SHEETS 5 & 7
10FL3
DES HE REG #1 STATUS FLAG
SEE NOTE 23
K7-22(A)
K10-22(A)
K195-14(A)
+D28
-D
SEE SHEETS 5 & 7
K346-22(A)
K7-22(A)
K347-22(A)
SEE NOTE 37
DES HE REG 2 SWITCH
OPEN
10S7
CLOSE
10FL4
DES REG #2 STATUS FLAG
SEE NOTE 24
K10-22(A)
MAIN PROPULSION PANEL I
LDW 390-28101
(REF)
K195-16 (A)
K198-14 (A)
K196-14 (A)
K197-14 (A)
P771
J771
P772A
J772
P772B
BHD
K198-14(A)
K196-14(A)
K197-14(A)
K198 -14 (A)
K196 -14 (A)
K197 -14 (A)
P155
J155
P713
K197-16(A)
K196-16(A)
16(A)
A
C
B
D
TO CCS
LDW 300-21001(PDA)
K346-22(A)
K7-22(A)
K347-22(A)
P55A
J55
P55B
Z
AA
P
GQ=309X
GQ3>10X
K347-26(A)
K7-26(A)
K346-26(A)
P56
J56
152
153
188
TO DF1
LDW360-51507
BHD
P771
J772
P772A
P772B
K198-14(A)
K199-14(A)
K200-14(A)
K198 -14 (A)
K199-14(A) JQ371
K200-14(A) JQ371
A
B
C

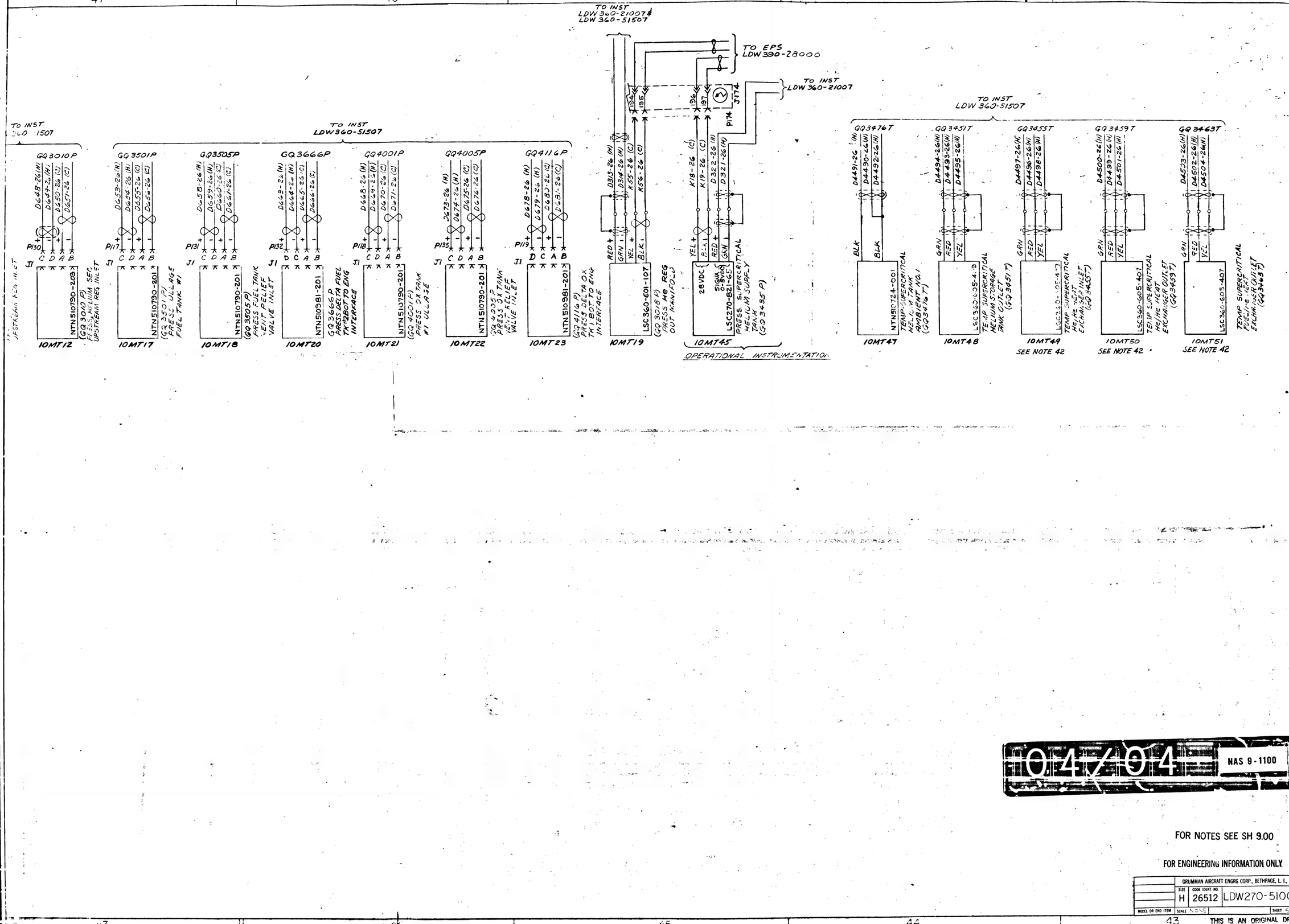

GQ3309X
LSC 270-713-9-1
LATCHING HELIUM SOLENOID VALVE #1(PRI)
OPEN COIL
EMI SUPPR
VALVE OPEN
VALVE CLOSED
CLOSE COIL
EMI SUPPR
GRN
RED
WHT
BLK
GY
BRN
10A6
INTERSTAGE CONN
P774
J774
K198 -14 (A)
K196 -14 (A) JQ9709
K197 -14 (A) JQ9710
K198-14(A) GRN
K196-14(A) RED
WHT
K197-14(A) BLK
S-21001(PDA)
J173
P173
GQ3309X K346-26(A)
K7-26(A)
GQ3310X K347-26(A)
233
232
240
TO LV LDW360-51501
GQ3310X
LSC 270-713-10-1
LATCHING HELIUM SOLENOID VALVE #2(SEC)
P772B
P774
J774
K198 -14 (A)
K199-14(A) JQ3711
K200-14(A) JQ3712
GRN
RED
WHT
BLK
OPEN COIL
EMI SUPPR
VALVE OPEN
VALVE CLOSED
PURPLE
BRN
CLOSE COIL
EMI SUPPR
10A7


TO INST LDW360-51507
GQ4311T
D4424-26 (W)
D4423-26 (W)
D5051-26 (W)
GRN
RED
YEL
LSC360-605-301
GQ4311T TEMP ENGINE INTERFACE OXID
10MT13
TO INST LDW360-21007
GQ4219T
D293-26 (W)
D294-26 (W)
D295-26 (W)
GRN
RED
YEL
LSC360-605-303
GQ4219T TEMP OX TANK #2 OX BULK
10MT10
GQ4218T
D289-26 (W)
D290-26 (W)
D291-26 (W)
GRN
RED
YEL
LSC360-605-303
GQ4218T TEMP OX TANK #1 OX BULK
10MT9
GQ3719T
D295-26 (W)
D296-26 (W)
D287-26 (W)
GRN
RED
YEL
LSC360-605-303
(GQ3719T) TEMP FUEL TANK #2 FUEL BULK
10MT8
GQ3718T
D281-26 (W)
D282-26 (W)
D283-26 (W)
GRN
RED
YEL
LSC360-605-303
(GQ3719T) TEMP FUEL TANK #1 FUEL BULK
10MT7

NAS 9-1100

0374





04404 NAS 9-1100

FOR NOTES SEE SH 9.00

FOR ENGINEERING INFORMATION ONLY

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE	CODE IDENT NO.	LDW270-51000	H
H	26512		
MODEL OR END ITEM	SCALE NONE	SHEET 6.00	

THIS IS AN ORIGINAL DRAWING

LDW270-51000H

GQ3435P
TANK-PRESSURE HELIUM SUPPLY
LSC 270-821-65

GQ3451T
LSC360-605-409

EXPLOSIVE VALVE
LSC270-714-3 SEE NOTE 21
BOOSTER CARTRIDGE (2)
LSC270-714-113

GQ3310X LDW 390-28070-13
SECONDARY LATCHING
SOLENOID VALVE
LSC270-713-10-1 NORM CLOSED

GQ3505P
RELIEF VALVE
VENT PRESSURE
NTN 510790-201

GQ3501P
ULLAGE PRESSURE
NTN 510790-201

HELIUM FILL DISCONNECT COUPLING
LSC270-821-31 GQ9401

GQ9409

GQ9405

GQ3476T
NTN 510724-001

TEST POINT
DISCONNECT
LSC 270-813-31 (2)

GQ3010P
REGULATOR INLET PRESSURE
NTN 510790-203

GQ3018P
REGULATOR OUTLET PRESSURE
LSC360-601-107

LSC270-714
BOOSTER CA
SEE NOTE
LSC270-8
EXPLOSIV
VALVE

HELIUM FILL VENT COUPLING
LSC 270-821-41 GQ 9407

BY-PASS
REMOVED BEFORE
FLIGHT

LSC 270-813-24
TEST POINT

GQ 9433

BRAZED
CAPS (2)

GQ9441

VACUUM SEAL AND
PRESSURE RELIEF

TEST POINT
DISCONNECT
LSC270-813-31
GQ 9404

VACUUM SENSING PORT
JQ 9412

LSC270-817-4
CHECK VALVE

GQ 9432

GQ9445

LSC270-818-6
PRESSURE
RELIEF VALVE
SEE NOTE 35

GQ9447

GQ 9446

TANK PRESSURE HELIUM SUPPLY
LSC 270-821-29
(REDUNDANT-NOT IMPLEMENTED)

GQ3455T
LSC360-605-407

GQ3459T
LSC360-605-407

THRUST NEUTRALIZER
GQ 9408

LSC270-813-23 DISCONNECT
TEST POINT GQ 9425

LSC270-818-5
PRESSURE
RELIEF VALVE
SEE NOTE 35

GQ9444

GQ 9431

TEST POINT DISCONNECT
LSC270-813-31 GQ9403

LSC270-814-3 FILTER

VACUUM SENSING PORT
JQ 9410

GQ9430

GQ 9440

BRAZED
CAPS (2)

LSC270-813-25
TEST POINT (4)

DUAL BURST DISC ASSY
LSC270-821-85

HELIUM TANK ASSY
LSC 270-821-53

LSC270-713-9-1 LDW390-28070-11
PRIMARY LATCHING SOLENOID VALVE
GQ3309X NORM. OPEN

LSC270-827-1
PRESSURE REDUCER
SEE NOTE 32

LSC270-817-3
CHECK VALVE

BY-PASS
REMOVED BEFORE
FLIGHT

NTN 510790-203
REGULATOR INLET PRESSURE
GQ3009P

NTN 510790-201
RELIEF VALVE
VENT PRESSURE
GQ4005P

ULLAGE P
GQ4001P
NTN 5107

01/03 NAS 9-1100

CODE IDENT 26512
LDW270-51000 SHEET 8.00

79 | 78 | 77 | 76 | 75

GQ3505P RELIEF VALVE VENT PRESSURE NTN 510790-201

GQ3501P ULLAGE PRESSURE NTN 510790-201

GQ3603Q LSC270-00009-16-1 QTY GAGING SYS

GQ3718T BULK TEMPERATURE LSC360-605-303

GQ3604Q LSC270-00009-16-1 QTY GAGING SYS

GQ3719T BULK TEMPERATURE LSC360-605-303

GQ3463T LSC360-605-407

GQ3611P ENGINE INTERFACE FUEL PRESS LSC360-601-107

GQ6806H THROTTLE VALVE ACTUATOR

VARIABLE INJECTO

)18P
IL ATOR OUTLET PRESSURE
360-601-107

LSC270-714-115 BOOSTER CARTRIDGE(2) SEE NOTE 21 LSC270-819-11 EXPLOSIVE VALVE

LSC270-813-24 TEST POINT

BY-PASS REMOVED BEFORE FLIGHT

GQ9433

BRAZED CAPS (2)

GQ9441

LSC270-817-4 CHECK VALVE

GQ9432

GQ9445

LSC270-818-6 PRESSURE RELIEF VALVE SEE NOTE 35

GQ9447

THRUST NEUTRALIZER

GQ9446

LSC270-813-23 DISCONNECT TEST POINT GQ9425

LSC270-818-5 PRESSURE RELIEF VALVE SEE NOTE 35

GQ9444

GQ9431

GQ9430

GQ9440

LSC270-813-25 TEST POINT (4)

BRAZED CAPS (2)

LSC270-819-11 EXPLOSIVE VALVE SEE NOTE 21 LSC270-714-113 BOOSTER CARTRIDGE(2)

LSC270-817-3 CHECK VALVE

BY-PASS REMOVED BEFORE FLIGHT

LSC270-804-1 GQ9443 FUEL FILL VENT, PURGE PORT & DRAIN

LSC280-4A FUEL TANK

#2 FUEL (-Y)

LSC270-826-5 FLEXIBLE METAL TUBE

GQ3605Q PQGS FUEL TK SELECTED

#1 FUEL (+Y)

LSC280-4A FUEL TANK

GQ4455X PROPELLANT TANKS LIQUID LEVEL LOW LSC270-00009-41 (REF)

LSC280-4A OXIDIZER TANK

#1 OXIDIZER(-Z)

#2 OXIDIZER(+Z)

LSC280-4A OXIDIZER TANK

GQ4105Q PQGS OX TK SELECTED

LSC270-805-1 GQ9442 OXIDIZER FILL VENT, PURGE PORT & DRAIN

LSC270-813-26 LOW POINT DRAIN GQ9457

HEAT EXCHANGER LSC270-820-11-1

TRIM ORIFICE

LSC270-813-26 GQ9464 FUEL HIGH POINT BLEED FEED SYSTEM

LSC270-807-7 FUEL FILTER

DW270-51459-1 LSC270-802-1(REF) GQ9453 FUEL FILL & DRAIN COUPLING

GQ9451

LSC270-826-5 FLEXIBLE METAL TUBE GQ9462

GQ9450

GQ9461

BRAZED CAPS (2) BEFORE FLIGHT

MECH FEMALE PORTS (2) FOR G.S.E. & NOTE NO.36

GQ3666P DIFFERENTIAL PRESSURE

GQ4311T LSC360-605-301

LSC270-808-7 OXIDIZER FILTER

LSC270-813-26 GQ9475 TEST SHUT OFF VALVE PRE VALVE

GQ4116P DIFFERENTIAL PRESS

LSC270-826-7 FLEXIBLE METAL TUBE

TRIM ORIFICE

LSC270-805-1 GQ9442 OXIDIZER FILL VENT, PURGE PORT & DRAIN

LSC270-826-7 FLEXIBLE METAL TUBE

LSC270-813-27 GQ9463 OXIDIZER HIGH POINT BLEED, FEED SYSTEM

LDW270-51459-3 LSC270-603-1(REF) GQ9452 OXIDIZER FILL & DRAIN COUPLING

LSC270-813-27 GQ9456 LOW POINT DRAIN (OX)

FUEL LOW POINT DRAIN ENGINE LSC270-813-26 GQ9477

GQ3811T LSC360-605-301

LSC270-00600-20 DESCENT ENGINE

JQ9482

ENGINE INTERFACE

JQ9480

5/16 PORT

MOT MOT MOT

SHUTOFF VALVE PREVALVE

SOLENOID VALVE "B"

1/4 PORT(REF)

SOLENOID VALVE "A"

LSC270-813-27 GQ9476 OXIDIZER LOW POINT DRAIN ENGINE

GQ4111F ENGINE INTERFACE OXIDIZER PRESS. LSC360-601-107

PROPELLANT SHUT OFF VALVE "A" WITH VPI GQ6306X GQ6307X

PROPELLANT SHU VALVE "B" WITH V GQ6308X GQ6309X

NTN 510790-201 RELIEF VALVE VENT PRESSURE GQ4005P

ULLAGE PRESSURE GQ4001P NTN 510790-201

QTY GAGING SYS LSC270-00009-15-1 GQ4103Q

BULK TEMPERATURE LSC360-605-303 GQ4218T

QTY GAGING SYS LSC270-00009-15-1 GQ4104Q

BULK TEMPERATURE LSC360-605-303 GQ4219T

CODE IDENT 26512 LDW270-51000 SHEET 3.00

02703 NAS 9-1100

CODE IDENT 26512 LDW270-51000 SHEET 3.00

CTUATOR

GQ6510P CHAMBER PRESSURE

VARIABLE INJECTOR

LSC300-170 (REF) GIMBAL DRIVE ACTUATOR (2)

VIB GQ7301D X-X
VIB GQ7302D Y-Y
VIB GQ7303D Z-Z
VIBRATION THRUST CHAMBER

GQ7206T INJECTOR SURFACE TEMP

GQ7212T EXTERNAL WALL TEMP

GQ7211T EXTERNAL WALL TEMP

VALVE

OXIDIZER HIGH POINT BLEED ENGINE, LSC270-813-27 GQ 9478

FUEL HIGH POINT BLEED, ENGINE LSC270-813-26 GQ 9479

GQ6506P OXIDIZER INJECTOR PRESS
GQ6501P FUEL INJECTOR PRESS

SOLENOID VALVE "C"

GQ7213T, TEMP ENG HT SHIELD

GQ7214T, TEMP ENG HT SHIELD

SOLENOID VALVE "D"

GQ 9473
GQ 9474
GQ 9471
GQ 9472

ENGINE SHUTOFF VALVE VENTS (4)

LANT SHUT OFF A" WITH V.P.I. 6X 7X

PROPELLANT SHUT OFF VALVE "B" WITH V.P.I. GQ6308X GQ6309X

PROPELLANT SHUT OFF VALVE "D" WITH V.P.I. GQ6316X GQ6317X

PROPELLANT SHUT OFF VALVE "C" WITH V.P.I. GQ6314X GQ6315X

CODE IDENT 26512
LDW270-51000 SHEET 8.00

1034034 NAS 9-1100

DESCENT FLUID LINES-BASIC
FOR ELECTRICAL LINES SEE SH 6.00 & 7.00
SUPERCRITICAL PRESSURIZATION

FOR NOTES SEE SH 9.00
FOR ENGINEERING INFO. ONLY

LEM	GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L.I., N.Y.		
	SIZE	CODE IDENT NO.	
	J	26512	LDW270-51000 H
MODEL OR END ITEM	SCALE: NONE		SHEET 8.00

LDW270-51000H B
LDW270-51000H A

NOTES (CON'T) (NOTES CHECKED ✓ APPLY THIS DWG)

✓ 26. ~~FRONT PANEL PRESENTLY SHOWS DESCENT TEMPT'S2. HOWEVER, THESE MEASUREMENTS WILL NOT BE OPERATIVE DUE TO DELETION OF AMBIENT HELIUM PRESSURIZATION SECTION.~~

✓ 27. ASCENT AND DESCENT ENGINE ELECTRICAL CIRCUITS AND INTERFACES ARE NOT DOCUMENTED BY LSC DWG'S. ENGINE WIRING DIAGRAMS SHOWN IN THIS LEVEL 3 ARE BASED ON THE BEST INFORMATION AVAILABLE.

✓ 28. SEE SHEET NO. 8.00 FOR SCHEMATIC OF DESCENT STAGE PROPULSION FLUID LINES. SEE SHEET NO. 3.00 FOR SCHEMATIC OF ASCENT STAGE PROPULSION FLUID LINES.

✓ 29. FLUIDS:
(1) PRESSURIZING AGENT; HELIUM IN ACCORDANCE WITH MIL-P-27407.
(2) PROPELLANT; NITROGEN TETROXIDE IN ACCORDANCE WITH MIL-P-26539
(3) PROPELLANT; HYDRAZINE IN ACCORDANCE WITH MIL-P-27402.

✓ 30. HELIUM STORAGE PRESSURE (MAXIMUM):
(a) 1555 PSIA @ 100°R (DESCENT STAGE)
(b) 3500 PSIA @ 100°F (ASCENT STAGE)

✓ 31. HELIUM STORAGE VESSEL DATA:
(a) DESCENT STAGE;
CHARGE PRESSURE=

CAPACITY=52.66 LBS TOTAL, 41.85 LBS USABLE.

(b) ASCENT STAGE:
CHARGE PRESSURE =
CAPACITY = 6.5 LBS PER STORAGE VESSEL.

1' 32. PRESSURE REDUCER REQUIREMENTS.
(a) LSC 270-827-1' (DESCENT STAGE) INLET PRESS APPLIED TO EITHER OF TWO INLET PORTS (BUT NOT TO BOTH SIMULTANEOUSLY) = 350 PSIG TO 1750 PSIG. PRESSURE AND FLOW AT OUTLET PORT = 243 PSIG TO 248 PSIG @ 0.43 LBS TO 4.25 LBS PER MINUTE.
(b) LSC 270-721-1 AND-3 (ASCENT STAGE)
PRESSURE AT INLET PORT FOR-1 AND-3 = 400 PSIG TO 3500 PSIG.
PRESSURE AND FLOW AT OUTLET PORT (WITH SECONDARY STAGE REGULATING PRESSURE = 186 PSIG TO 194 PSIG @ 1.45±.05 LBS PER MINUTE FOR-1, AND 178 PSIG TO 186 PSIG @ 1.45±.05 LBS PER MINUTE FOR-3.
PRESSURE AND FLOW AT OUTLET PORT (WITH PRIMARY OR DOWNSTREAM STAGE REGULATING PRESSURE) = 180 PSIG TO 188 PSIG @ 1.45±.05 LBS PER MINUTE FOR-1 AND 172 PSIG TO 180 PSIG @ 1.45±.05 LBS PER MINUTE FOR-3.

✓ ~~33. REFER TO SHEET NO. 8.00 LSC 270-821-23 BURST DISC RUPTURE PRESSURE = 1425 PSIG TO 1540 PSIG.~~

✓ 34. OVERBOARD DRAIN LINE SHALL HAVE OPEN END, EXACT DESCRIPTION OF TERMINAL TO BE PROVIDED LATER.

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW 270-51000	H
SCALE NONE		SHEET 9.01	

ENG 78.1 6-64

01 NAS 9-1100

VALVE POSITION INDICATING SWITCHES

OPEN POSITION

CLOSED POSITION

SURFACE TEMP XDUCERS

TEMP THRUST CHAMBER EXTERNAL WALL

TEMP INJECTOR SURF

NO.1 GP2701T — TL401A22 GRN — YEL RED GRN — D445-26(H) D446-26(H)

NO.2 GP2702T — TL402A22 GRN — YEL RED GRN — D457-26(H) D458-26(H)

NO.3 GP2703T — TL403A22 GRN — YEL RED GRN — D449-26(H) D450-26(H)

NO.4 GP2704T — TL404A22 GRN — YEL RED GRN — D462-26(H) D463-26(H)

GP 2704T — TL405A22 GRN — YEL RED GRN — D436-26(H) D437-26(H)

TO INSTRUMENTATION LDW360-51501

PROPELLANT GP1612X/GP1614X

ISOLATION GP1611X/GP1610X

PROPELLANT GP1605X/GP1606X

ISOLATION GP1601X/GP1602X

TL620322	B	BLK	POLE	
		WHT	CLOSED	
TL610322	A	RED	NOT CLOSED	
		BLK	POLE	
		WHT	CLOSED	
TL620122	B	RED	NOT CLOSED	
		BLK	POLE	
		WHT	CLOSED	
TL610122	A	RED	NOT CLOSED	
		BLK	POLE	
		WHT	OPEN	
TL320322	B	RED	NOT OPEN	
		BLK	POLE	
		WHT	OPEN	
TL610322	A	RED	NOT OPEN	
		BLK	POLE	
		WHT	OPEN	
TL320122	B	RED	NOT OPEN	
		BLK	POLE	
		WHT	OPEN	
TL610122	A	RED	NOT OPEN	
		BLK	POLE	
		WHT	OPEN	

D717-26(E) D719-26(E) — GP2998U — D414-26(E) D416-26(E) — GP2997U — TO INSTRUMENTATION LDW360-21007

PRESSURE XDUCERS

PRESSURE OX ISOLATION VALVE INLET (0-250 PSIA) GP1503P — 10MT64 SENSOR — LSC360-624-1 — TL313A22

PRESSURE, THRUST CHAMBER (0-150PSIA) GP2010P — 10MT62 SENSOR — LSC360-624-3 — TL312A22

PRESSURE, FUEL ISOLATION VALVE INLET (0-250 PSIA) GP1501P — 10MT63 SENSOR — LSC360-624-1 — TL311A22

CONDITIONER: + YEL, − BLK, + RED, − GRN

TO EPS LDW390-28000

K37-26(C) D68-26(H) D69-26(H) — K40-26(C) D59-26(H) D58-26(H) — K38-26(C) D63-26(H) D64-26(H) — TO INSTRUMENTATION LDW360-21007 LDW360-51501

SOLENOID VALVE & DIODE ASSEMBLY (TYP)

A PRPLNT	GRN	BLU	K1003A20 GRN	K73-18(A) K72-20(A)
A ISOL	RED	GRN	K1001A20 RED	K73-18(A) K72-20(A)
B PRPLNT	BRN	BLU	K2003A20 WHT	K77-18(A) K76-20(A)
B ISOL	YEL	BLK	K2001A20 YEL	K77-18(A) K76-20(A)

FROM CES LDW300-51003 — SEE SHEET 5.00

NAS 9-1100

10A2

ASCENT ENGINE
LSC270-00500-10

SURFACE TEMP XDUCERS

TEMP THRUST CHAMBER EXTERNAL WALL

TEMP INJECTOR SURF GP2706T

PRESSURE XDUCERS

PRESSURE, OXIDIZER INJECTOR INLET (0-250 PSIA) GP2006P SEE NOTE 44

PRESSURE, FUEL INJECTOR INLET (0-250 PSIA) GP2001P

VIBRATION THRUST CHAMBER

GP2803D Z-Z AXIS — TL333A29 — J500 / P500 — 10W3 — P503 — GP2803D VIB AMPLIFIER

GP2802D Y-Y AXIS — TL332A29 — J502 / P502 — 10W2 — P505 — GP2802D VIB AMPLIFIER

GP2801D X-X AXIS — TL331A29 — J501 / P501 — 10W1 — P504 — GP2801D VIB AMPLIFIER

10MT61 SENSOR — TL411A22 — LSC360-6241 — CONDITIONER (+ − + −) YEL BLK RED GRN

10MT60 SENSOR — TL412A22 — LSC360-6241 — CONDITIONER (+ − + −) YEL BLK RED GRN

0.2 GP2702T — TL403A22 — TL404A22 — TL405A22 — GRN RED YEL

N0.3 GP2703T — N0.4 GP2704T

GP2803D VIB AMPLIFIER: KA +D28V, KT POWER GND, KC OUTPUT, KD SIGNAL GND, KE INT CASE GND, KB SPARE — J512 / P512

GP2802D VIB AMPLIFIER: KA +D28V, KT POWER GND, KC OUTPUT, KD SIGNAL GND, KE INT CASE GND, KB SPARE — J510 / P510

GP2801D VIB AMPLIFIER: KA +D28V, KT POWER GND, KC OUTPUT, KD SIGNAL GND, KE INT CASE GND, KB SPARE — J511 / P511

D457-26(H)
D458-26(H)
D450-26(H)
D449-26(H)
D463-26(H)
D462-26(H)
D437-26(H)
D436-26(H)
D442-26(C)
D443-26(H)
D440-26(H)
D441-26(C)
D455-26(C)
D456-26(H)
D453-26(H)
D454-26(C)

D1222-26(C)
D1223-26(C)
D1224-26(H)
D1225-26(H)
D1232-26(C)
D1233-26(C)
D1234-26(H)
D1235-26(H)
D1223-26(C)
D1227-26(C)
D1229-26(H)
D1230-26(H)

TO INSTRUMENTATION LDW360-51507

TO INSTRUMENTATION LDW360-51507

10272/10273 NAS 9-1100

FOR NOTES SEE SH 9.00

FOR ENGINEERING INFORMATION ONLY

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L.I., N.Y.

SIZE	CODE IDENT NO		
J	26512	LDW270-51000	R
SCALE NONE		SHEET 10.00	

LDW270-51000 H

LDW270-51000 H

A

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	QUALITY APPD
A	3	4.00							"FUEL HI-POINT BLEED LINE LDW270-51206-1 FOR LEM-1 LDW270-52206-1 FOR LEM-2 REF." WAS: "FUEL HI-POINT BLEED LINE LDW270-51206-1 REF.", "FUEL ΔP LINE LDW270-51206-5 FOR LEM-1 LDW270-52206-5 FOR LEM-2 REF." WAS: "FUEL ΔP LINE LDW270-51206-5 REF."	LEM-1 & LEM-2	✓		S. SCIARROTTA 6-27-66		
	4	1.00							ON SHT 1.00 "LAST DASH NO. USED -3" WAS: "-1"						
	5	3.00						(A)	IN THE NOTES SHT 3.00 DELETED NOTE #7						
B	1	2.00 3.00 4.00	5A				✓	EO B1	INCORP. EO B1 - IN THE F/D & B/M ADD: -5 ASCENT ENGINE INSTL & -7 ASCENT ENGINE ASSY, I&T "E", CLEANLINESS LEVEL OF -5 IS "J". IN THE B/M ON -7 ADD: "LSC270-00500-10 ASCENT ENGINE QTY (1), I&T'S MAT'L "SEE NOTE #4", R512-6 PACKING QTY (2) & AN919-6D REDUCER QTY (2). ON -5 ADD: LDW270-51010-7 ASCENT ENGINE ASSY QTY (1), NAS1273-16 BOLT QTY (3), NAS 653V4 BOLT QTY (12), MS21043-6 NUT QTY (3), AN960C6I6 WASHER QTY (3), AN960C8L WASHER QTY (4) AN960C10L WASHER QTY (12), GB511J-08-4 BOLT QTY (4) & LDW270-10011-11 WASHER QTY (3). ON SHT 1.00 CHGD LAST DASH NO. USED "-7" WAS "-3". IN THE NOTES CHGD NOTE #11 TO READ "PER LSP-14-14102" WAS: PER LSP-14-14201".	LM-1 & LM-2	✓		S. SCIARROTTA 4-26-67		

FOR CONTINUATION OF REVISIONS SEE SHEET 1.12

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51010	B (B)
SCALE NONE		SHEET 1.11	

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	QUAL APPD
B	1						✓	EO B1	IN THE M/B ON-1 DELETE LM-2 REQMT, ADD EFFECT. FOR LDW270-5100-5, MODEL "LM", N/A "LDW280-52001" MODULE "LM-2 (32)" & REQD "1"	LM-1 & LM-2	✓				
	2	2.00 3.01 4.00						EO B2	INCORP. EO B2- IN THE F/D & B/M ON-3 ENGINE ASSY &-7 ENGINE ASSY ADD: LDW270-28013-1 (1) & LSC270-00501-1 (1) IN F/D, ZONE 5B & 11B CHGD PICTURE & ADDED RELATED INFORMATION. IN THE NOTES ADDED NOTE # 12						
	3	2.00 3.00 3.01 4.00 2.01	7B 9B 5C					EO B3	INCORP. EO B3- IN THE F/D SHT 4.00 & B/M SHT 2.00 FROM -3 ASSY DELETE LSC270-00500-10-1 REPLACE WITH LSC270-00500-10. IN THE F/D SHT 4.00 & B/M SHT. 2.00 TO -3 ASSY ADD GB511J-08-5 BOLT (QTY 10), LSC360-624-1 PRESS. TRANS. (QTY 4) & LSC360-624-3 PRESS. TRANS, I&T "S" & CHGD RELATED ART WORK. IN THE NOTES ADD NOTES 13, 14, 15 & 19. IN THE NOTES SHT. 2.00 CHGD. NOTE # 6 TO READ "-3 & -7 ENGINE ASSY. etc" WAS: "-3 ENGINE ASSY etc" IN THE NOTES SHT 2.00 DELETED NOTE # 8. IN F/D SHT 4.00 ADDED SECT A-A & VIEW B-B IN F/D SHT 4.00 & B/M SHT 2.00 TO -3 ASSY ADD GB511J-06-4 (QTY 20).				S. SCIARROTTA 4-26-67		

FOR CONTINUATION OF REVISIONS SEE SHEET 1.13

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51010	B

SCALE NONE | SHEET 1.12

ENG 77.3 5-65

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
B	4	2.00 3.00 3.01 4.00	7B 9B 5C				✓	EO B4	INCORP EOB4 - THIS IS A REVISION OF EO B3 - REF EOB3 DELETE SECT A-A & B-B, NOTE 19, LDW270-51203-1, LDW270-51203-3, LDW270-51203-5 & LDW270-51203-7 - IN THE F/D, SHT 4.00, ZONE 10B ADD THE FOLLOWING CALLOUTS "OXIDIZER FEED PRESS TRANSDUCER GP1503P", FUEL FEED PRESS. TRANSDUCER GP1501P, "FUEL MANIFOLD PRESS. TRANSDUCER GP2001P", CHAMBER PRESS. TRANSDUCER GP2010P & OXIDIZER MANIFOLD PRESS. TRANSDUCER GP2006P". IN THE F/D & B/M TO -1 & -5 INSTL ADD: LDW270-51203-11, LDW270-51203-13, LDW270-51203-15, LDW270-51203-17 & AN821-6D (QTY 2) & ALSO CHGD ART WORK. IN THE F/D, SHT 4.00 ZONE 5C ADD CALLOUT "NEAR & FAR SIDE ELECTRICAL SPLICE AREA SEE NOTES #16 & #20 ELECTRICAL SPLICE DETAIL SEE DWG LDW270-51359. IN THE NOTES ADD NOTES 20, 16, 17 & 18 IN THE NOTES SHT. 3.00 DELETE NOTE #8.	LM-1 & LM-2	✓		S. SCIARROTTA 4-26-67		
	5	4.00	7B 9B 5C					EO B5	INCORP EO B5 REF EOB3 & B4 ADD SECT A-A & SECT B-B THAT WAS DELETED BY EO B4						

FOR CONTINUATION OF REVISIONS SEE SHEET 1.14

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51010	B

SCALE NONE — SHEET 1.13

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
D	6	4.00	9B				✓	EOBG	INCORP. EOBG - THIS IS A REVISION OF EOB3 IN THE F/D ADD CALLOUTS "GP1501P, GP1503P, GP2010P, GP2001P & GP2006P				S. SCIARROTTA 4-26-67		
	7	2.01 4.00	3D					EO B7	INCORP. EOB7 IN F/D & B/M (ON-1) ADDED (3) MS 20002C6						
	8	2.01 4.00	3D					EO B8	INCORP. EOB8 REF EOB7 IN F/D & B/M (ON-1 & -5) WAS (ON-1)	LM-1 & LM-2	✓				
	9	2.00 4.00 2.01	3D						IN THE F/D & B/M FROM -1 & -5 DELETE NAS1273-1G(3), MS21043-6 (3) & MS20002C6 (3) REPLACE WITH LDW280-11154-11 (3), AN310C6 (3) & GW502F-6C (3) RESPECTIVELY ALSO ADDED MS 24665-302 (3), & GW502F-6P (6)				S. SCIARROTTA 4-26-67		
	10	3.02	3A 7D						IN THE NOTES ADDED NOTE #22 & IN THE F/D TO CALLOUTS ADD "SEE NOTE #22" 2 PLCS						
	11	4.00	5C 7B 8B						REF EOB3, B4 & B5 IN THE F/D CHGD. CALLOUTS TO READ "SECT B-B" WAS "SECT A-A" CHGD CALLOUT TO READ "VIEW C-C" WAS "VIEW B-B"						
	12	3.02							IN THE NOTES TO NOTE #20 ADDED: "THIS IS APPLICABLE ONLY TO LM-1 VEHICLE.						

FOR CONTINUATION OF REVISIONS SEE SHEET 1.15

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW 270-51010	B

SCALE NONE | SHEET 1.14

ENG 77.3 5-65

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
B	13	3.01							REF EOB4 IN THE NOTES FROM NOTE 16 DELETE "J3011, J3012, J3013, J4011 & J4012."	LM-1 & LM-2	✓		S. SCIARROTTA 4-26-67		
	14	3.00							IN THE NOTES, IN NOTE #2 CHGD. PART NUMBER TO "8258-472331-3" WAS: "8258-472331-1", IN NOTE #3 CHGD PART NUMBER TO "8258-473205-3" WAS "8258-473205-1"						
	15	3.02	8B 7B						IN THE NOTES ADDED NOTE #21 IN THE F/D ADDED CALLOUT "SEE NOTES #20 & #21" (2PLCS).						
	16	4.00 2.00 2.01	2A 2C 7B					LCD-19-1202	IN THE F/D ADDED VIEWS "D-D", "E-E", & RELATED INFORMATION. IN THE F/D & B/M TO -5 INSTL ADDED LSC360-624-1 (4), LSC360-624-3, GB511J-06-4 (20), LSC270-00500-200 (3); GB511J-06-3 (12) & LDW270-10012-11 (12)						
	17	4.00	12B 9B						IN THE F/D CHGD. CALLOUT TO "TYP (2) PORTS" WAS: "TYP (4) PORTS", DELETED (2) LEADERS ALSO ADDED CALLOUT: "FUEL VENT PORTS (2) MS33656-6"						
	18	4.00 2.01	8D 10C						IN THE F/D ADDED VIEW F-F, RELATED INFORMATION & CHGD ART WORK ACCORDINGLY. IN THE F/D & B/M TO -1 INSTL ADDED:						

FOR CONTINUATION OF REVISIONS SEE SHEET 1.16

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51010	B (15)

SCALE NONE | SHEET 1.15

ENG 77.3 5-65

01

NAS 9-1100

REVISIONS

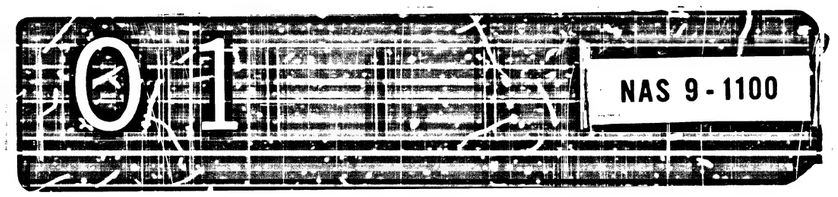
CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
B	18	4.00 2.01	8D 10C						LSC 270-00500-200(3), GBSIIJ-06-3 (12) & LDW270-10012-11(12)	LM-1 & LM-2	✓		S. SCIARROTTA 4-26-67		
	19	4.00	12B 10B 9C 10C						IN THE F/D ADDED CALLOUTS "A" ISOLATION PORT", 8258-475182-1 REF., 8258-475183-1 REF, 8258-475175-1 REF, 8258-475176-1 REF, & 8258-475150-1 REF.						
	20	4.00 2.00	11D 11B						IN THE F/D & B/M FROM -3 & -7 DELETE AN919-6D(2) & R512-6(2).						
	21	4.00 3.02	7A 6B						IN THE F/D ADDED VIEW G-G & RELATED INFORMATION, IN THE NOTES ADDED NOTE #23						
	22	4.00 3.02 2.01	4D						IN THE B/M TO -3 & -7 ASSYS ADD AN502-10-6(4) & MS20995NC32 A/R IN THE F/D ADD CALLOUT "AN502-10-6 ~4 REQD, MS20995NC32 PER MS33540 TYP BOTH SIDES SEE NOTE #24, IN THE NOTES ADD NOTE #24.						
	23	4.00	5D						REF EOB4 CHGD CALLOUT TO READ "LDW390-51014 FOR LM-1 & LDW390-52014 FOR LM-2" WAS: LDW280-51359 FOR LM-1 & LDW280-52359 FOR LM-2.						

FOR CONTINUATION OF REVISIONS SEE SHEET 1.17

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51010	B (11)
SCALE NONE			SHEET 1.16



REVISIONS

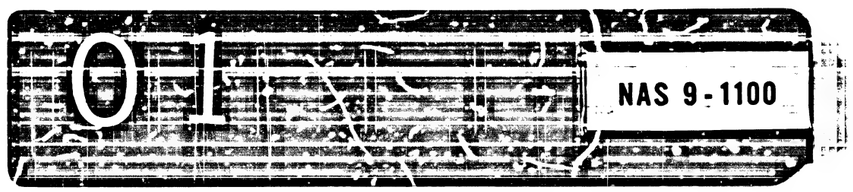
CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	MFG APPD
B	24	4.00 3.02	12B 12C						IN THE F/D TO CALLOUT ADD "TORQUE TO 75-125 INCH-LBS" TO LDW270-51203-11,-13,-15 & -17 ADD "SEE NOTE #25" (4 PLCS) IN THE NOTES ADD NOTE #25	LM-1 & LM-2	✓		S. SCIARROTTA 4-26-67		
	25								SHT 1.00 OF 15 WAS 1.00 OF 6 ADDED SHTS. 1.03, 1.04, 1.05, 1.06, 1.07, 1.08, 2.01, 3.01 & 3.02						
C	1	1.00, 1.17 & 4.00	11D 10E				✓	EOC1 LCD 19-1375	ON -1 & -5 REMOVED LDW280-51206-7, -3, -1 & -5 (REF) & ADDED LDW280-52206-3, -7, -5 & -1 RESPECTIVELY.	LM-1 LM-2	NOT	REQD			
	2	1.00, 2.00 2.01 & 4.00	6C				✓	EOC2	IN FLD/DWG & B/M TO -3 ADDED GC500S-5W(2) MS 27039-1-09, AN960C10L & MS21043-3.	LM-1	✓				
	3	1.17 & 4.00	10D 11B 12B 12C				✓	EOC3	-1 INSTL. IN FLD & B/M GE11B-4D, GE11B-6D WAS MS 33656-4 & MS33656-6 RESPECTIVELY.	LM-1 & -2			R. SVOBODA 10-6-67		
	4	1.17 & 4.00	10B 11C 12B				✓	EOC4	REF EOC3 IN FLD & DESCRIPTION OF EO -1 & -5 INSTL WAS -1 INSTL.						
	5	1.00, 1.15, 1.17, 2.00 2.01, 3.02 & 4.00	9B				✓	EOC5 LCD' 1358 LVC275-005 -190A & -191	IN B/M ON LSC270-00501-1 & LSC270-00500-200 TO I & T' ADDED 'S'; ON GB511J-08 TO I & T ADDE "E" & ON LSC270-00500-10 CHGD I & T TO 'S' WAS 'C' ADDED NOTE # 26. IN REV SH. 1.15 ITEM B16 CHGD TO READ -7 etc' WAS -5 etc'. IN FLD & B/M FROM -7 DELETED LSC270-00500-10 REPLACED WITH LSC270-00500-10-2.		NOT	REQD			
	6	1.17					✓	EOC6 LCR10549 80B171	CANCELLED BY BY EOC7	LM-1	NOT	REQD			
	7	1.17					✓	EOC7 LCD10549B	CANCELLED EO C6.						

FOR CONTINUATION OF REVISIONS SEE SHEET 1.18

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51010	D
SCALE NONE		SHEET 1.17	

ENG 77.3 5-65



REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	CHG APPD
C	8	1.00, 1.18 2.00, 2.01, 3.00 3.03 & 4.00	12C 12B 11B 11C				✓	C EOC8 LCD19-1572	ON-5 DELETED LDW270-51203-11,-13,-15 & -17. IN FLD TO LDW270-51203-11,-13,-15 & -17, LDW280-16000-534(REF) LDW280-16000-535(REF) & LDW270-51207-1 (REF) CALLOUTS ADDED LM-1. ON -5 IN FLD & B/M ADDED LDW 270-52204-1, GB511J-08-8(4), AN960C8L(4), MS21043-08(4), GS13AJ-115 & LDW280-53921-1. ADDED CALLOUTS LDW280-16000-1555(REF) FOR LM-2 (SEE NOTE "27) & -1554 FOR LM-2 (SEE NOTE "27) TO LDW280-16000-535 (REF) & 534 (REF) RESPECTIVELY. ADDED NOTE "27. REVISED NOTE "6: REMOVED "-7" & ON THE END ADDED LM-1. AN960 C10L & NAS653V4 QTY 6 EA WAS 12 EA. ADDED SHS 1.18 & 3.03.	LM-2	✓		R. SVOBODA 10-6-67		
	9	1.18 & 3.03				✓		LE0270-53 LCD1961	ADDED NOTE "28.						
	10		6C			✓		EOC10 LCD10602	CHANGED ASCENT ENGINE INTERFACE SEAL CALLOUT WAS 8258-472064-1 & 8258-472072-127.	LM-1					
D	1	1.00, 1.18 3.03 & 4.00	6D					EO D1 LCD10602	SPECIFIED BOLT TORQUE FOR PRESSURE TRANSDUCER MOUNTING SCREWS ACCELEROMETER AND ACTUATION LINE FLANGE. ADDED NOTE "29.						
	2	1.18, 2.01 3.03 & 4.00	10B			✓		EOD2 LCD10602	LSC270-00500-10-2 WAS LSC270-0050C-10 ENGINE ADDED WIRING SPLICE DETAILS TO B/M AND NOTE 20.						
	3					✓		EOD3	ADDED NOTES "31, "32 & "33 IN B/M ADDED MS2191WDH-4						
	4	1.18 & 3.03				✓		EOD4 LCD10549B	ADDED NOTE "30						
	5	1.18 & 4.00	11A				✓	EOD5 LCD19-2041	ON-5 REMOVED LDW270-52204-1 ADDED LDW270-52204-3.	LM-2					
	6	1.18, 2.01	11A				✓	EOD6 LCD1894	DELETED GS13AJ-115 ADDED GS13AL-115						

CHG APPROVED

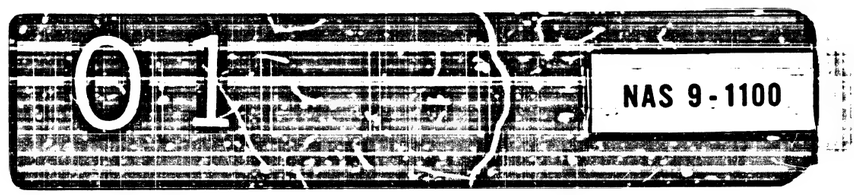
LTR	GROUP LDR	PPOP	VEH DESINT	STRUCTURES	WEIGHTS	RELIABILITY
C						
D						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51010	D

SCALE NONE SHEET 1.18

ENG 77.18 3-66



NOTES:

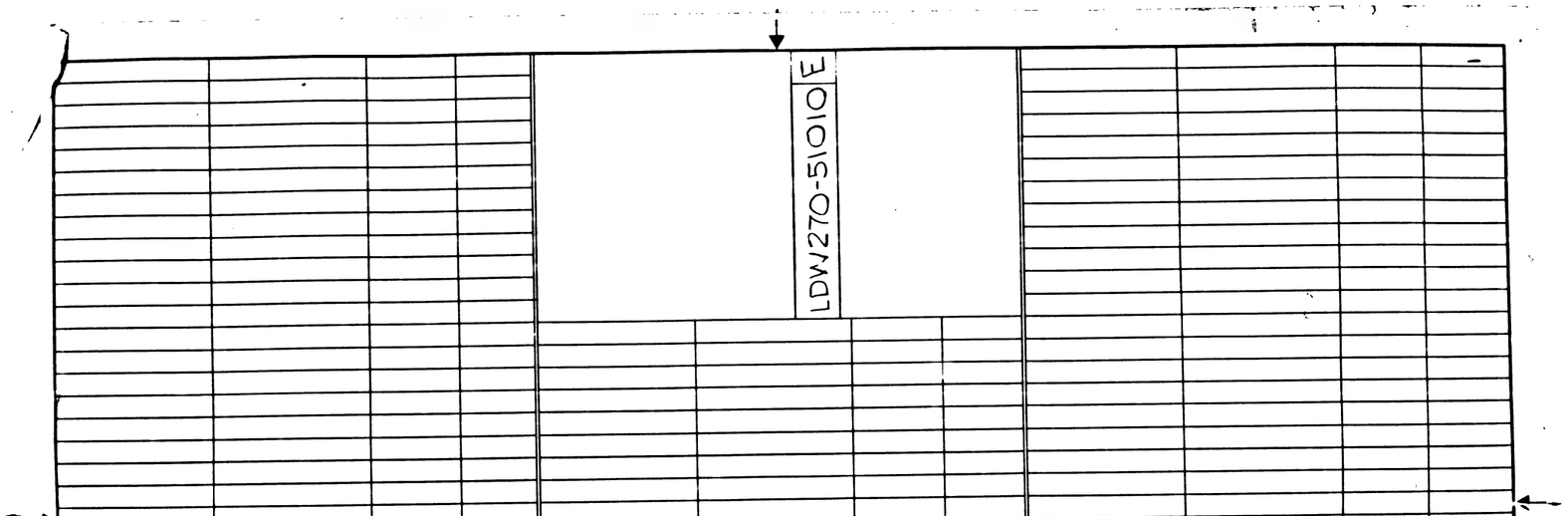
1. FOR HANDLING OF ENGINE SEE DRAWING (LDW420-63200 & LDW420-63300).
2. ON THE OX HI-POINT BLEED PORT REMOVE & RETAIN BAC PARTS AN814-6S, 4G2-6, 8258-472331-3 & 4G2-2, (REF. BAC DWG. 8258-472225).
3. ON THE FUEL HI-POINT BLEED PORT REMOVE & RETAIN BAC PARTS 8258-473204-1, 8258-472082-6, 8258-473205-3 & 8258-472082-2, (REF BAC DWG. 8258-472225).
4. COMMERCIAL PART - SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING.
5. CLEAN PER LSP-14-7072.
6. PRIOR TO INSTALLING-3 ENGINE ASSY INTO ITS RESPECTIVE LOCATION REMOVE FEED ELBOWS LDW280-16000-534 &-535, UPON ENGINE INSTALLATION RE-INSTALL FEED ELBOWS. NOTE! "O-RINGS ARE NOT TO BE RE-USED. (LM-1)
7. VEHICLE ENGINE INTERFACE TO BE PREPARED SO AS WHEN ENGINE IS INSTALLED IT MEETS ALIGNMENT REQUIREMENTS.
8. ON LSC270-00500-10-1 ASCENT ENGINE REMOVE & RETAIN ELECTRICAL CONNECTORS J506, J507, J508 & J509. (REF. BAC DWG. 8258-475318).
9. PROGRESSIVELY TORQUE BOLTS IN ROTATION TO INDICATED LEVEL.
10. BRUSH COAT EPON919 ON NUT SURFACES AFTER INSTALLATION.
11. MIX EPON 919 PER LSP-14-14102.

(FOR CONT. SEE SHT 3.01)

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-51010	D
SCALE —		SHEET 3.00	

ENG 73.1 6-64

NAS 9-1100



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	LM	LDW23V-52001	LMPLCD	1
PART NO.	LDW270-51010-5	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM

MODEL OR END ITEM	LM	LDW270-51010	LM-1/311	1
PART NO.	LDW270-51010-1	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO. 45	REQD PER MODULE OR END ITEM

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	3.00	4.00	3.03	3.04	3.05	
REV	-	A	E	D	E	E	E	E	
SHEET	1.11	1.12	2.01	3.01	1.16	1.18	1.19		
REV	E	B	E	E	B	D	E		
SHEET	1.13	1.14	1.15	3.02	1.17	5.00			
REV	B	B	B	E	D	E			

		GRUMMAN REL INFO E
LAST SECT LTR USED	L	PRIM NO. LR 009
LAST DASH NO. USED	-7	450 MP-16 Ext 19

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100 LINE ITEM 009 DOCUMENTATION TYPE II

DRAWN BY	SCIARROTTA 5-31-66	WEIGHTS	J. Garcia 6/7/66
LAYOUT BY		RELIABILITY	6-10
CHECKED BY			
GRP. LDR	6-2-66		
PROP	6-13-66		
V.D.I.		PROJ ENGR	30 June
STRUC.	6/14/66	REL GROUP	25 66

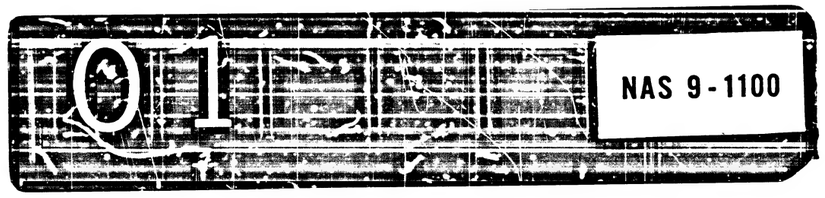
GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ASCENT ENGINE INSTALLATION

SIZE	CODE IDENT NO.	
B	26512	LDW270-51010 E

SCALE NONE SHEET 1.00 OF 21.

ENG 77.1 12-66



REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ____

CHANGE LTR ITEM NO	SHEET NO	ZONE	GRUMMAN APP. ONLY	DET SPEC CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	SCRAP	CHANGED BY AND DATE	ENGRG APPD	QUAL APPD
[illegible]	300			✓		EDE1 LD1894	ADDED E.O. TO RECORD BLOCK ADDED SH 19	NOTED	NOT	REQD			
[illegible]	[illegible]	[illegible]	GVEE		✓	EDE2 LD 894	ADDED NOTES 23, 24, 34 IN THE FID FROM LM-1 INSTL ADDED LD 5220-35 IN THE FID ADDED DETAIL A ADDED S-3-4	LM-1	✓				
[illegible]	[illegible]	[illegible]			✓	EDE3 LD 894	IN NOTES TO NOTES 3, 9, 8, 22, 23, 24, 25 RESTRICTED TO LM- ADDED NOTES 35, 36, 37 DELETED NOTE 7 IN THE FID FROM LM-5 INSTL DELETED GS13AK-115 REPLACED WITH GS13AK-115-109	LM-2	✓				
[illegible]	[illegible]	[illegible]			✓	EDE4 LD 894	IN THE FID FROM LM-5 PASSY DELETE LSL270-00500-102 REPLACE WITH LSL270-00500-103	LM-2		✓			
[illegible]	[illegible]	[illegible]			✓	EDE5 LD 2458	IN THE FID FROM LM-5 ADDED DW360M0003-1 ETC THE NOTES ADDED NOTE 38	LM-2	✓				
[illegible]	[illegible]	[illegible]			✓	EDE6 LD 1978	IN THE FID FROM LM-5 INSTL ADDED LSL270-00723-02, GSE 10-3-214 LSL270-00723-202 MS20995C20 AR ADDED NOTES 39 40 ADDED SH 3 DELETED	LM-2	✓				
[illegible]	[illegible]	[illegible]			✓	EDE7 LD 894	IN THE FID FROM LM-5 INSTL DELETE DW270-52204-3 REPLACE WITH DW270-52204-5	LM-2		✓			
[illegible]	[illegible]	[illegible]			✓	EDE8 LD2458	REVISED FID FOR LM-5 TO ADD ATTACH REROUTING AND SUPPORT FOR LSL300-624 TRANSDUCERS (LM-5) LSL270-00723-202 TO FID FROM LM ADDED GSS10-08-4 GSS 10-08-8 REQD GS510AA-4 REQD AN3601C-4 REQD MS21042-08-4 REQD AN3420-08-4 REQD MS24673-48-4 REQD DELETED NOTE 39	LM-2	✓				
[illegible]	[illegible]	[illegible]			✓	EDE9	FROM LM-5 GSS10-08-3-4 MS GSS10-08-3-4	LM-2	✓				
[illegible]	[illegible]	[illegible]			✓	EDE0 LD2458	RESTRICT NOTE 30 TO LM-1 ONLY & ADDED NOTE 41	LM-2	✓				
[illegible]	300	LM31		✓		LD1894	REVISED PER LM-1 NOTED ADDED NOTE 42	LM-1	✓				
[illegible]	2400	[illegible]	U		✓	LD 978	REVISED ADDED DETAIL H	LM-2	✓				

GROUP OF NO. DESIGNATION STRUCTURE WEIGHT CONTROL GROUP

CHG APPROVED

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L.I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW270-51010

SCALE NONE SHEET 1 OF 3

01

NAS 9-1100

| | | |

QTY PER ASSEMBLY			PART NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COMM SPEC	STOCK SIZE	PROCESS SYM	FINISH NO	ZONE
4			NAS4[illegible]3-4	E		SPACER	STD PART						
4			MS21042L05	E		NUT	STD PART						
4			AN960V5L	E		WASHER	STD PART						
1			[illegible]	E		CLAMP	GRUMMAN STD						
3			GE51J3E18	E		BOLT	GRUMMAN STD						
4			GE5113-5B6	E		BOLT	GRUMMAN STD						
1			GSTE[illegible]5109	E		SEAL	GRUMMAN STD						
4			MS21043-08	E		NUT	STD PART						
	2		GC5005-5N	E		CLAMP	GRUMMAN STD						
	1		MS27039-[illegible]09	E		SCREW	STD PART						
	1		MS21043-3	E		NUT	STD PART						
		1	MS2[illegible]9NDH-4	E		WIRE CLAMP	STD PART						
	AR	AR	GS830G	E		SLEEVING	GRUMMAN STD						
	AR	AR	GS830BC	E		SLEEVING							
	2		GS803-4	E		SPLICE CRIMP							
	2		GF820L-6	E		FERRULE	GRUMMAN STD						
	1		[illegible]	E		WASHER	SEE DWG						
	AR	AR	MS20995C20	E		LOCKWIRE	STD PART						10C
	2		[illegible]00722-12	S		COMBUSTION							2E
	4		GBE[illegible]3-2	E		BOLT	GRUMMAN STD						
	1		[illegible]00723-02	S		COMBUSTION							9E
1			[illegible]00500-03	S		ASCENT ENGINE	SEE NOTE #4						
		1	[illegible]00500-02	S		ASCENT ENGINE	SEE NOTE #4						
		1	LDW280-5[illegible]1	E		BRACKET	SEE DWG						
	13	13	MS24665T[illegible]	E		COTTER PIN	STD PART						
AR	AR		MS20995N[illegible]	E		LOCKWIRE	STD PART						10R
1			LDW360M[illegible]	E		WASHER	SEE DWG						
4	4		AN502-10-6	E		SCREW	STD PART						
	2	2	AN821-6D	E		FITTING	STD. PART						

SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO	PROCESS SYM OR FINISH NO	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH NONE

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51010	E

SCALE NONE SHEET 2.01

ENG 772 5-64

01

NAS 9-1100

NOTES:

12- FROM THE -3 & -7 ENGINE ASSYS REMOVE & RETAIN BAC PART NO. 8258-472285-3 (1) & REPLACE WITH LSC270-00501-1 (1)(SEE BAC DWG 8258-475213). INSTALL STAND (BELL PIN 8258-472290-1) INTO ACCELEROMETER AND TORQUE TO 22-24 INCH-LBS. INSTALL STAND AND ACCELEROMETER INTO MOUNTING BLOCK ON ENGINE AND TORQUE TO 18-20 INCH-LBS.

13- FROM LSC270-00500-10 OF THE -3 ASSY DELETE 8258-472350-1 (4) & 8258-472350-3 REPLACE WITH LSC360-624-1 (4) & LSC360-624-3 AS SHOWN (REF BAC DWG 8258-475213). LUBRICATE MOUNTING SCREW THREADS WITH DUPONT LUBRICANT PR-240AC AND TORQUE TO 14-28 INCH-LBS. (LM-1 ONLY)

14- THE 8258-475133-1 EYEBOLTS ARE GROUND HANDLING EQUIPMENT & ARE TO BE REMOVED DURING ENGINE INSTALLATION.

15- THE LDW270-28013-1 SHIELD IS TO BE INSTALLED AT THE KENNEDY SPACE CENTER AFTER LEAK CHECK HAS BEEN COMPLETED.

16- AFTER ALL ENGINE ASSY TESTS (PIT etc) HAVE BEEN COMPLETED & JUST PRIOR TO ENGINE INSTL REMOVE THE FOLLOWING CONNECTORS FROM ENGINE ASSY HARNESS: J506, J507, J508 & J509. REMOVE CONNECTORS P3011, P3012, P3013, P4011, P4012 & THEIR CONNECTING HARNESS TO J508 & J509 RESPECTIVELY. ALL ELECTRICAL WIRES TO BE SPLICED IN AREA SHOWN IN SIDE ELEVATION (ZONE 5C). (LM-1 ONLY)

17- TORQUE FITTINGS IN ACCORDANCE WITH AND10064 EXCEPT 1/8 FITTINGS.

18- THE LDW270-51203 HOSE ASSYS SUPPORT & CLAMPING IF REQD., TO BE ESTABLISHED AT INSTALLATION & ENGINEERING INFORMED. (LM-1 ONLY)

19- REMOVE EXCESS ELECTRICAL WIRE FROM THE LSC360-624 TRANSDUCER BETWEEN THE SENSOR & SIGNAL CONDITIONER & CRIMP SPLICE IN AREA SHOWN IN VIEW B-B.

(FOR CONT. SEE SHT 3.02)

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-51010	E
SCALE ——		SHEET 3.01	

ENG 73.1 6-64

NOTES:

20- REMOVE EXCESS ELECTRICAL WIRE FROM THE LSC360-624 TRANSDUCERS (QTY 5), BETWEEN THE SENSOR & SIGNAL CONDITIONER & SPLICE IN AREA SHOWN IN SIDE ELEV. (ZONE 5C). THIS IS APPLICABLE ONLY TO LM-1 VEHICLE. USE GS805H-4 CRIMP SPLICE (PER LSP14-13305) FOR SPLICES. COVER SPLICE WITH GS830BC-2C SEALANT SLEEVE AND THEN COVER WITH GS830G SLEEVING HOT STAMPED WITH SPLICE IDENT. NO. (MINIMUM ONE-HALF INCH OVER LAP EACH END SLEEVING OVER SEALANT, PER LSP14-13305). USE GF820A-6 CRIMP TYPE FERRULES (PER LSP14-13305 ON SHIELD WIRE. COVER FERRULES WITH GS830G SLEEVING PER LSP14-13300).

21- THE LSC360-624-1(4) REF & LSC360-624-3 REF ARE THE SIGNAL CONDITIONER PORTION OF THE PRESSURE TRANSDUCER ASSYS.

22- BAC PART 8258-472185-3 CAN BE USED AS AN ALTERNATE FOR LSC 270-00500-200. (LM-1 ONLY)

23- PRIOR TO INSTALLING BOLTS LUBRICATE BOLT THREADS WITH DUPONT LUBRICANT PR-240AC. INSTALL BOLTS FINGER TIGHT, THEN TORQUE IN SEQUENCE AS FOLLOWS: (LM-1 ONLY)

(a) PHYSICAL LOCATION FOR START OF SEQUENCE (BOLT# 1) IS OPTIONAL.
(b) TORQUE ALL BOLTS PER SEQUENCE TO 10 INCH LBS & REPEAT SEQUENCE UNTIL BOLTS NO LONGER WILL TURN WHEN 15 INCH LBS IS APPLIED.
(c) REPEAT STEP (b) APPLYING 20-25 INCH LBS FOR FINAL TORQUE.
(d) ON THE -1 FUEL PORT ONLY INCREASE FINAL TORQUE TO 30-35 INCH-LBS ABOVE LOCKING FEATURE TORQUE. TOTAL TORQUE NOT TO EXCEED 39 INCH-LBS (LM-1 ONLY). TORQUE CHECK UNTIL RELAXING STOPS.

24- FROM THE LSC270-00500-10 ASCENT ENGINE ASSY REMOVE BAC PART AN520C10R7 (4) REPLACE WITH AN502-10-6 (4) & MS20995NC32 A/R AS SHOWN IN F/D. IT IS PERMISSIBLE TO REORIENT CLAMPS TO ENABLE LOCKWIRING, (REF BAC DWG. 8258-475312). (LM-1 ONLY)

25- HOSE END FITTING OF LDW270-51203-11, -13, -15 & -17 TO BE TORQUED TO 100-250 INCH-LBS. (LM-1 ONLY)

26. PRIOR TO PRE-INSTL. TEST THE PRESSURE SENSOR PORTION OF LSC360-624 TRANSDUCERS (5) ARE TO BE INSTALLED ON THE MOUNTING SURFACES PROVIDED ON THE LSC 270-00500 ENGINE ASSY. HOOK UP THE BELL AIRCRAFT SUPPLIED 1/8 INCH INSTRUMENT LINES BETWEEN THE MALE FITTING ON THE SENSOR PORTION OF THE TRANSDUCERS (5) & THEIR RESPECTIVE ENGINE PORTS (5). THE END FITTINGS OF THE BELL AIRCRAFT INSTRUMENT LINES ARE TO BE TORQUED PER THE FOLLOWING SCHEDULE: 40-50 INCH-LBS ON THE ENDS ATTACHED TO THE PRESSURE SENSORS (5), OXIDIZER FEED PORT & CHAMBER PRESS PORT, & 25-30 INCH-LBS ON THE ENDS ATTACHED TO THE FUEL FEED PORT, THE FUEL & OXIDIZER MANIFOLD PORTS LEAK CHECK CONNECTIONS DURING PRE-INSTL TEST PER LTP-270-4 (LM-2 ONLY).

(FOR CONT SEE SH 3.03)

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE	CODE IDENT NO.	LDW270-51010	E
B	26512		
SCALE ——		SHEET 3.02	

ENG 73.1 6-64

NAS 9-1100

27. PRIOR TO INSTALLING -7 ENGINE ASSY INTO ITS RESPECTIVE LOCATION REMOVE FEED ELBOWS LDW280-16000-1554 & -1555, UPON ENGINE INSTALLATION RE-INSTALL FEED ELBOWS. NOTE! O-RINGS ARE NOT TO BE RE-USED (LM-2)

28. BOND IN ACCORDANCE WITH FIGURE 7C OF LSP14-13334 (LM-2).

29. PRIOR TO INSTALLING BOLTS LUBRICATE THREADS WITH DUPONT LUBRICANT PR-240AC PER LSM14-6004 FINGER TIGHT THEN TORQUE IN CROSS SEQUENCE AS FOLLOWS:
    a) PHYSICAL LOCATION FOR START OF SEQUENCE IS OPTIONAL.
    b) TORQUE ALL BOLTS TO 10 INCH-LBS.
    c) REPEAT STEP (b) APPLYING 14-18 INCH-LBS FOR FINAL TORQUE.

30. AFTER COMPLETION OF CHECKOUT PROCEDURE. FINAL INSTALLATION OF ELECT. CONNECTOR TO THE VIBRATION PICKUP APPLY AND ITS ASSOCIATED FEED THROUGH FLANGE IS TO BE ACCOMPLISHED AS FOLLOWS: APPLY LOCKTITE GRADE E PER MIL-S-22473 TO THE SENSOR AND FEED THROUGH MICRODOT CONNECTOR. ONE DROP SHALL BE APPLIED BETWEEN THE CONNECTOR CUP NUT AND THE CONNECTOR BODY.
    MEAS # GP2801 REF P3018
    GP2802 REF P3019
    GP2803 REF P3020 (LM-1 ONLY)

31. ROUTE WIRES FROM THE LSC360-624 TRANSDUCERS(5) AS FOLLOWS: FROM GP2006P, GP2010P AND GP2001P SENSORS THROUGH WIRE CLAMP, MS21919 WDH-4 WHICH MUST BE ATTACHED TO MOUNTING LUG ON MINUS Z SIDE OF INJECTOR, AND THEN TO MINUS Y SIDE OF ENGINE THRU EXISTING WIRE CLAMPS OR LACED TO EXISTING WIRING. FROM GP1503P SENSOR, LACE TO EXISTING VERTICAL WIRE BUNDLE ON PLUS Y SIDE OF VALVE, FOLLOW EXISTING WIRE BUNDLE BETWEEN INJECTOR AND VALVE PACKAGE AND AROUND INJECTOR TO MINUS Y SIDE, UTILIZING EXISTING WIRE CLAMPS(4) OR LACING TO EXISTING WIRE BUNDLES. FROM GP1501P SENSOR, VERTICALLY TO EXISTING TO HORIZONTAL WIRE BUNDLE UTILIZING EXISTING WIRE CLAMPS(2) OR LACING TO EXISTING WIRE BUNDLES. (LM-1).

32. THE PRESSURE SENSOR PORTION OF LSC360-624 TRANSDUCERS(5) ARE TO BE INSTALLED ON THE MOUNTING SURFACES PROVIDED ON THE LSC270-00500 ENGINE ASSY. HOOK UP BELL AIRCRAFT SUPPLIED 1/8 INCH INSTRUMENT LINES BETWEEN THE MALE FITTING ON THE SENSOR PORTION OF THE TRANSDUCERS(5) AND THEIR RESPECTIVE ENGINE PORTS(5). THE END FITTINGS OF THE BELL AIRCRAFT INSTRUMENT LINES ARE TO BE TORQUED PER THE FOLLOWING SCHEDULE: 40-50 INCH-LBS ON THE ENS ATTACHED TO THE PRESSURE SENSORS(5), OXIDIZER FEED PORT & CHAMBER PORT & 25-30 INCH-LBS ON THE ENDS ATTACHED TO THE FUEL FEED PORT, THE FUEL & OXIDIZER MANIFOLD PORTS. (LM-1 ONLY).

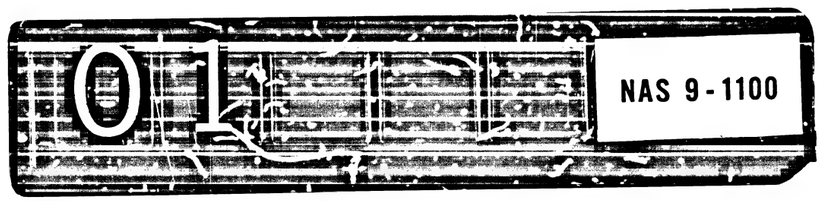
33. ROUTE CABLES K2003A20 AND K2001A20 IN THE SAME ROUTING AS WIRE FROM GP1503P SENSOR.

(FOR CONT. SEE SHT 3.04)

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE	CODE IDENT NO.	LDW270-51010	E
B	26512		
SCALE ~		SHEET 3.03	

(5)

ENG 73.1 8-64



34. PRIOR TO REINSTALLING THE FUEL MAIN FEED ELBOW APPLY A BEAD (MAX THICKNESS .020 INCH) OF LED520-35 (VISTANEX) (LED520 IS AN INTERIM PROCUREMENT DOCUMENT) PER LPC280-47 AS APPLICABLE TO THE FLANGE AS ILLUSTRATED BY VIEW G-G ALSO APPLY A BEAD OF VISTANEX TO THE MAIN FEED ELBOW MOUNTING BOLTS PER LPC280-47 (LM-1 ONLY).

35. PRIOR TO INSTALLING -7 ENG ASSY INTO ITS RESPECTIVE LOCATION DISCONNECT LINE ASSYS LDW280-16000-1576, -1577, -3002 AFD-6, -3003 AFD-6, -3004 AFD-6 - 3005 AFD-6, -1287 AFD-6 & 1289 AOD-4 FROM LDW280-52350 LINES INSTL. UPON ENGINE INSTL RE-INSTALL THE ABOVE LINE ASSYS. NOTE! SEALS ARE NOT TO BE RE-USED (LM-2 ONLY).

36. AFTER ALL ENGINE ASSY TESTS (PRE-INSTL. TEST etc) HAVE BEEN COMPLETED & JUST PRIOR TO ENGINE INSTL. REMOVE THE FOLLOWING CONNECTORS FROM ENGINE ASSY HARNESS: J506, J507, J508 & J509. ALL ELECTRICAL WIRES TO BE SPLICED IN AREA SHOWN IN SIDE ELEVATION (ZONE 3C) (LM-2 ONLY)

37. PRIOR TO INSTALLING ENGINE MOUNT BOLTS (3) LUBRICATE BOLT THREADS WITH DUPONT LUBRICANT PR-240 A C PER LSM14-6004 WIPE OFF EXCESS LUBRICANT. INSTALL BOLTS FINGER TIGHT THEN TORQUE IN SQUENCE (PER VIEW G-G) AS FOLLOWS: (TYP QXIDIZER & FUEL)
(a) PHYSICAL LOCATION FOR START OF SEQUENCE (BOLT #1) IS OPTIONAL
(b) TORQUE ALL BOLTS PER SEQUENCE TO 10 INCH-LBS & REPEAT SEQUENCE UNTIL ALL RELAXING STOPS
(c) REPEAT (b) APPLYING 20 INCH-LBS
(d) REPEAT (b) APPLYING 28-32 INCH-LBS FOR FINAL TORQUE

38. TO THE -7 ENGINE ASSY INSTALL THE FOLLOWING PARTS WHICH ARE DELIVERED WITH THE LSC270-00500 ASCENT ENGINE AS FOLLOWS: FROM THE OXIDIZER MANIFOLD PORT (OMP) REMOVE & RETAIN PLUG AN814-6S & ITS RESPECTIVE SEAL. INSTALL REDUCER AN919-4D & SEAL 462-6 TO (OMP) TORQUE 220-250 INCH LBS. - FROM PRESSURE CHAMBER PORT (PC) REMOVE PLUG AN814-4S & ITS SEAL. INSTALL REDUCER AN919-1S & SEAL 8258-473639-3 TO THE (PC.) PORT TORQUE 110-130 INCH-LBS - FROM THE OXIDIZER FEED PORT (OFP) REMOVE PLUG AN814-4S & ITS SEAL. INSTALL REDUCER AN919-1S & SEAL 462-4 TO (OFP) TORQUE 110-130 INCH-LBS. - FROM THE FUEL FEED PORT (FFP) REMOVE PLUG AN814-2D & ITS SEAL. INSTALL UNION AN815-2D & SEAL 8258-472082-2 TO THE (FFP) TORQUE 40-50 INCH LBS. - FROM THE FUEL MANIFOLD PORT (FMP) REMOVE PLUG AN814-6S & ITS SEAL. INSTALL REDUCER AN919-4D & SEAL 462-6 TO THE (FMP) TORQUE 220-250 INCH-LBS (LM-2 ONLY)

(FOR CONT SEE SHT 3.05)

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-51010	E
SCALE ——		SHEET 3.04	

ENG 72.1 6-64

39. THE LSC270-00723 CABLE ROUTING, SUPPORTING & CLAMPING TO BE DETERMINED AT INSTALLATION & APPROVED BY ENGINEERING.

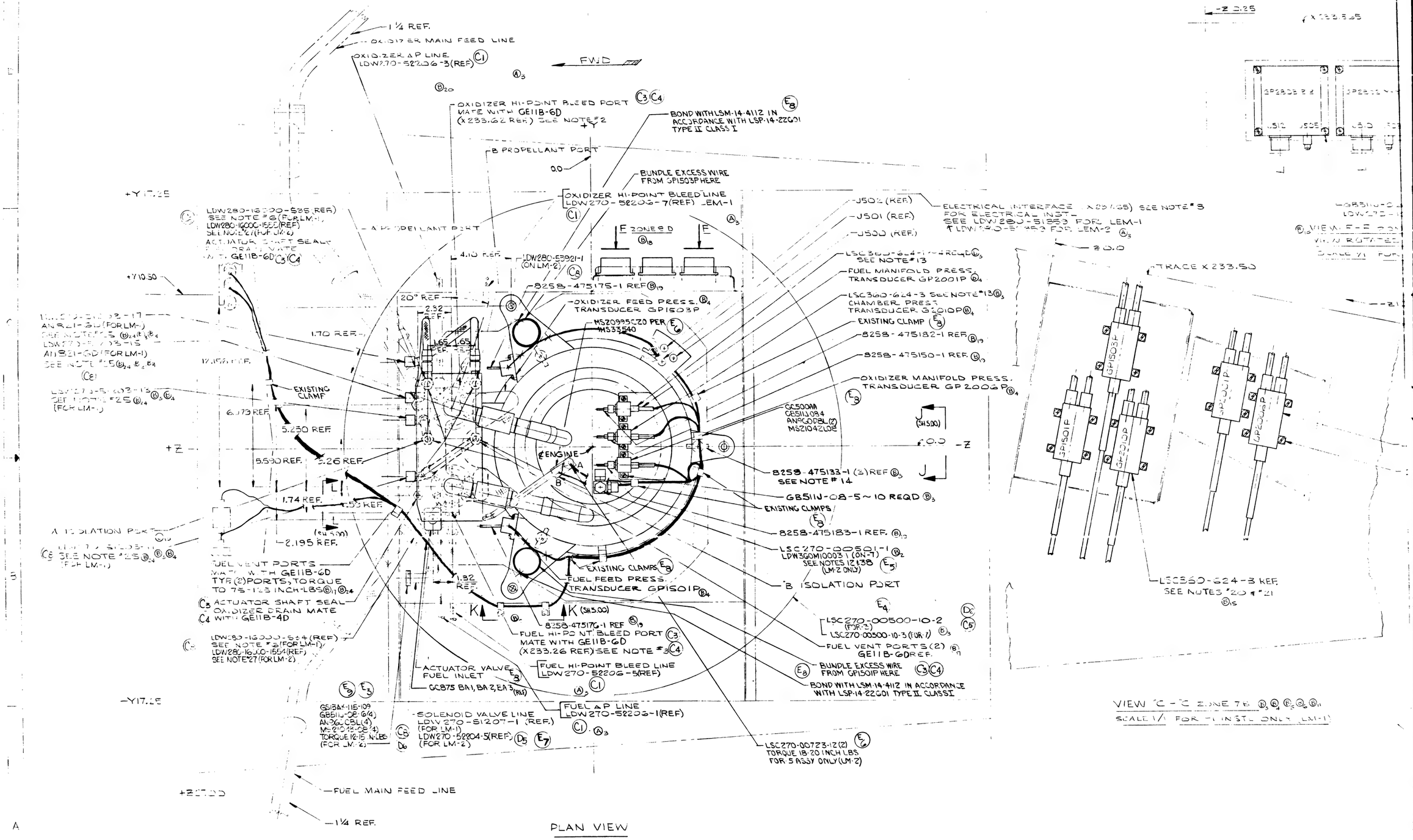
40. PRIOR TO INSTALLING BOLTS LUBRICATE WITH PR-240AC PER LSM14-6004 TORQUE 12-15 INCH-LBS.

41. AFTER COMPLETION OF CHECKOUT PROCEDURE, FINAL INSTL OF ELECT. CONNECTOR TO THE VIBRATION PICKUP & ITS ASSOCIATED FEED THROUGH FLANGE IS TO BE ACCOMPLISHED AS FOLLOWS APPLY LOCKTITE GRADE "C" PER MIL-S-22473 TO THE SENSOR & FEED THROUGH MICRODOT CONNECTOR AS FOLLOWS: ONE DROP SHALL BE APPLIED BETWEEN THE CONNECTOR CUP NUT & THE CONNECTOR BODY, (LM-2 ONLY)
MEAS* GP2801 REF P3018
GP2802 REF P3019
GP2803 REF P3020.

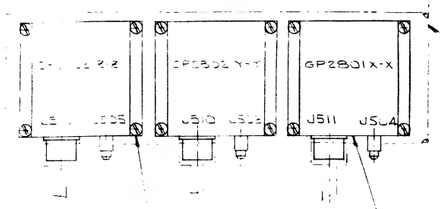
42. THIS DWG AFFECTED BY THE FOLLOWING LFM SEE LFM31 FOR EFFECTIVITY AND MODIFICATION

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-51010	E (E)
SCALE ———		SHEET 305	

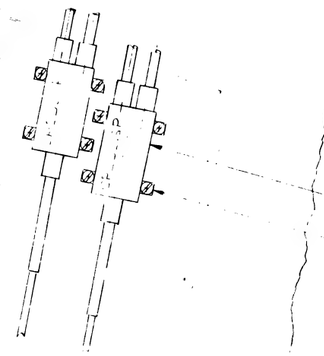
ENG 73.1 6-64

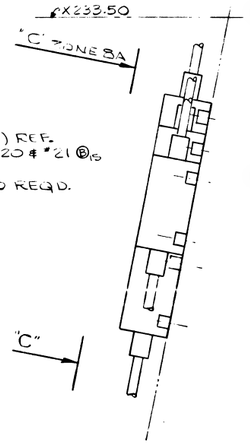

1 ¼ REF.
OXIDIZER MAIN FEED LINE
OXIDIZER AP LINE LDW270-52206-3(REF) C1
FWD
OXIDIZER HI-POINT BLEED PORT MATE WITH GE11B-6D (X233.62 REF.) SEE NOTE #2
BOND WITH LSM-14-4112 IN ACCORDANCE WITH LSP-14-22G01 TYPE II CLASS I
B PROPELLANT PORT
BUNDLE EXCESS WIRE FROM GP1503P HERE
OXIDIZER HI-POINT BLEED LINE LDW270-52206-7(REF) LEM-1
A PROPELLANT PORT
ACTUATOR SHAFT SEAL OXIDIZER DRAIN MATE WITH GE11B-6D C3 C4
LDW280-E3921-1 (ON LM-2)
8258-475175-1 REF
OXIDIZER FEED PRESS. TRANSDUCER GP1503P
MS20995C20 PER MS33540
EXISTING CLAMP
8258-475182-1 REF.
8258-475150-1 REF.
OXIDIZER MANIFOLD PRESS. TRANSDUCER GP2006P
GC500AA CBS11J084 AN960D8L(2) MS21042L08
8258-475133-1 (3) REF SEE NOTE # 14
GB511J-08-5~10 REQD
EXISTING CLAMPS
8258-475183-1 REF.
LSC270-00501-1 LDW360M10003-1 (ON-1) SEE NOTES 12,13B (LM-2 ONLY)
B ISOLATION PORT
LSC270-00500-10-2 (FOR-2) LSC270-00500-10-3 (FOR 1)
FUEL VENT PORTS (2) GE11B-6D REF.
BUNDLE EXCESS WIRE FROM GP1501P HERE
BOND WITH LSM-14-4112 IN ACCORDANCE WITH LSP-14-22G01 TYPE II CLASS I
LSC270-00723-12(2) TORQUE 18-20 INCH LBS FOR 5 ASSY ONLY (LM-2)
ELECTRICAL INTERFACE (X233.65) SEE NOTE #3
FOR ELECTRICAL INST. SEE LDW280-51853 FOR LEM-1 LDW280-51853 FOR LEM-2
J501 (REF.)
J500 (REF.)
LSC360-624-3 SEE NOTE #13
FUEL MANIFOLD PRESS. TRANSDUCER GP2001P
CHAMBER PRESS. TRANSDUCER GP2010P
LSC360-624-3 REF.
SEE NOTES #20 & #21
LDW280-16000-534 (REF.) SEE NOTE #3 (FOR LM-1) LDW280-16000-1554 (REF.) SEE NOTE #27 (FOR LM-2)
ACTUATOR VALVE FUEL INLET GC875BA1, BA2, EA3 (REF)
FUEL HI-POINT BLEED LINE LDW270-52206-5(REF)
FUEL AP LINE LDW270-52206-1(REF)
GSIBAK-11B-109 GB511J-08-6(4) AN366BBL(4) MS21042-08(4) TORQUE 12-15 IN-LBS (FOR LM-2)
SOLENOID VALVE LINE LDW270-51207-1 (REF.) (FOR LM-1) LDW270-52204-5(REF) (FOR LM-2)
FUEL MAIN FEED LINE
1 ¼ REF.
EXISTING CLAMP
FUEL VENT PORTS MATE WITH GE11B-6D TYP (2) PORTS, TORQUE TO 75-125 INCH-LBS
ACTUATOR SHAFT SEAL OXIDIZER DRAIN MATE WITH GE11B-6D
FUEL FEED PRESS. TRANSDUCER GP1501P
FUEL HI-POINT BLEED PORT MATE WITH GE11B-6D (X233.26 REF) SEE NOTE #3
ENGINE
+Y17.25
+Y10.50
-Y17.25
+Z
-Z
+Z 0.00
-Z 0.00
20° REF.
4.10 REF.
2.32 REF.
1.70 REF.
17.15 REF.
6.173 REF.
5.250 REF.
5.590 REF.
5.26 REF.
1.74 REF.
.55 REF.
2.195 REF.
1.32 REF.
F ZONE 2 D
F
K (SH 3.00)
(SH 5.00)
VIEW "F-F" ROTATED
SCALE 1/1 FOR LM-1
TRACE X 233.50
-Z 20.0
LSC360-624-3 REF. SEE NOTES "20 & "21
VIEW "C-C" ZONE 7B
SCALE 1/1 FOR LM-1 ONLY (LM-1)

PLAN VIEW

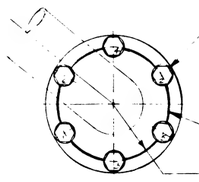


VIEW F-F ZONE 10C
VIEW ROTATED 180°
SCALE 1/1 FOR -1 INSTL ONLY (LM-1)

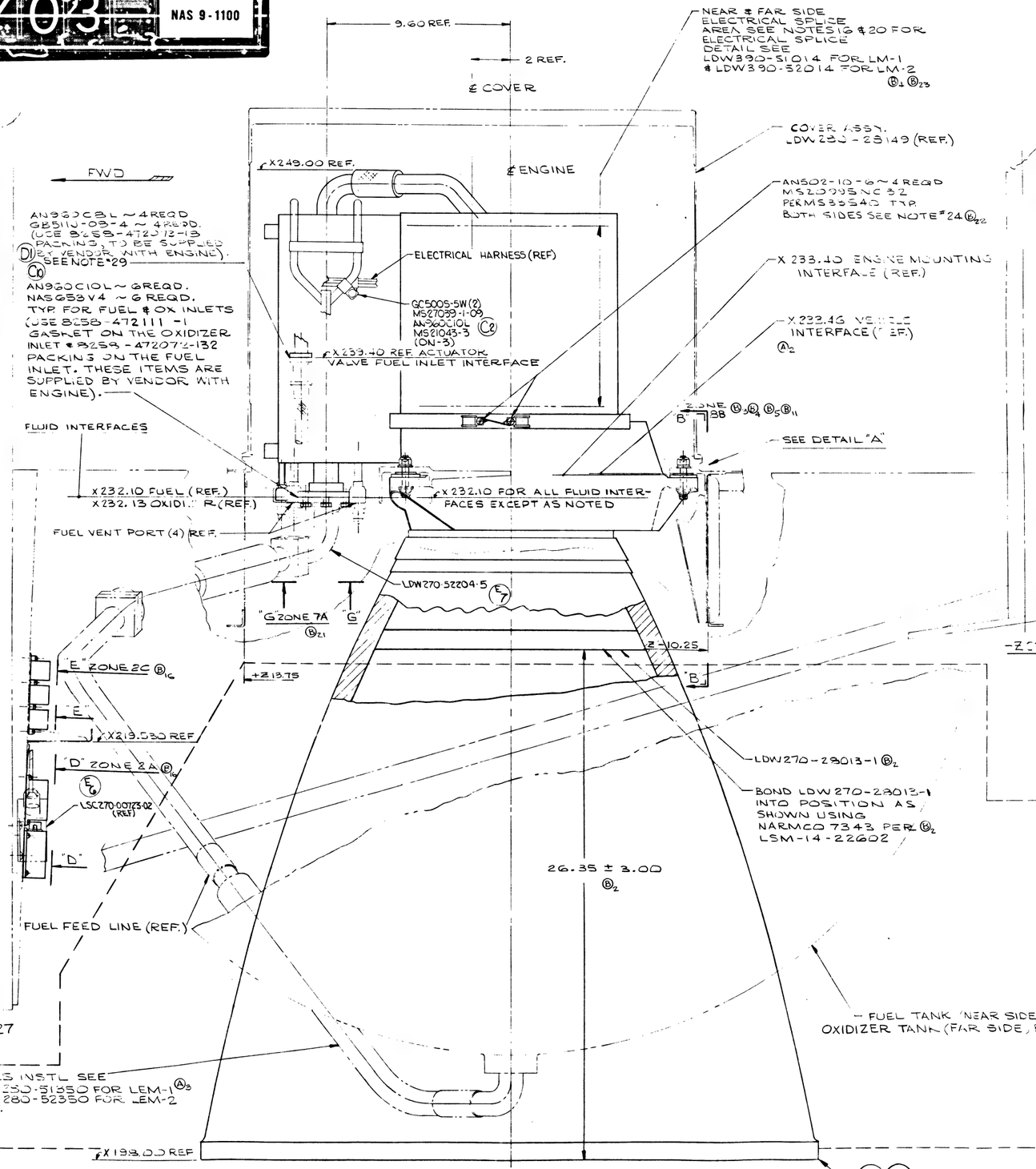




SECT B-B ZONE 5C
SCALE 1/1 FOR -1 INSTL ONLY (M-1)



VIEW "G"-"G" (FUEL PORT SHOWN)
TYP FOR FUEL & OXIDIZER PORTS
FULL SIZE ZONE 6B



SIDE ELEV.
VIEW LOOKING INBD
L.H. SIDE

-1 ENGINE INSTL.
-3 ENGINE ASSY.

-5 ENGINE INSTL.
-7 ENGINE ASSY.

CODE IDENT NO 13512
LDW270-51010 SHT 400

NEAR & FAR SIDE ELECTRICAL SPLICE AREA SEE NOTES 19 & 20 FOR ELECTRICAL SPLICE DETAIL SEE LDW390-51014 FOR LM-1 & LDW390-52014 FOR LM-2 (B)4 (B)23

COVER ASSY. LDW280-28149 (REF.)

AN502-10-6~4 REQD NAS1935 NC 3 2 PER MS33540 TYP. BOTH SIDES SEE NOTE #24 (B)22

X 233.40 ENGINE MOUNTING INTERFACE (REF.)

X 233.46 VEHICLE INTERFACE (REF.) (A)2

ZONE B (B)5 (A)1 (B)5 (B)11

SEE DETAIL "A"

FLUID INTER- NOTED

STRUCTURAL ASSY. SEE (A)3 LDW280-51002 FOR LEM-1 LDW280-52002 FOR LEM-2 REF.

Z -10.25

-Z 27

LDW270-28013-1 (B)2

BOND LDW270-28013-1 INTO POSITION AS SHOWN USING NARMCO 7343 PER (B)2 LSM-14-22602

6.35 ± 3.00 (B)2

FUEL TANK (NEAR SIDE) REF. OXIDIZER TANK (FAR SIDE) REF.

THERMAL-SHIELD LDW280-28150 & LDW280-28153 (REF.)

-3 -7 (B)1

-5 ENGINE INSTL.
-7 ENGINE ASSY. (B)1

MS24665-302 INSTALL PER MS33540 (B)9

LSC360-624-1 (4) REF SEE NOTE #21

AN310C6 (B)9

AN960C616

GW502F-6P (B)9

LDW270-10011-11 (A)2

GW502F-6P (B)9

GW502F-6C (B)7 (B)8 (B)9

LDW280M11154-11 (B)9

TORQUE TO 160-190 IN-LBS SEE NOTE #9 & #10

DETAIL "A" TYP. 3 PLCS
SCALE 1/1

-Y10.50

-Y 4.75

GBS11J-06-4~20 REQD.

GP1501P

GP2001P

GP1503P

GP2006P

GP2010P

TRACE X 219.530

LSC360-624-3 REF SEE NOTE #21

(B)16 VIEW "E"-"E" ZONE 7B
SCALE 1/1 FOR -5 INSTL ONLY (LM2)
FOR ELECTRICAL INSTL SEE DWG LDW280-52359

+Y 4.750 (REF)

+Y10.50 REF.

TRACE X 219.530

LDW280-11802-5 REF.

J504

GP2801 X-X

J511

J503 J510

GP2802 Y-Y

J505

GP2803 Z-Z

J512

GBS11J-06-3~12 REQD. LDW270-10012-11~12 REQD

LSC270-00500-200~3 REQD SEE NOTE #22 (B)10

FOR ELECTRICAL INSTL SEE DWG. LDW280-52359

(E)6 SEE DETAIL H (SH. 5.00)

(B)16 VIEW "D"-"D" ZONE 7B
SCALE 1/1 FOR -5 INSTL ONLY (LM2)

RECORD DATA		
MODULE	ECNO	EFFECTIVITY
LM	E1	LM-1

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.

PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.

FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010; .063R TO .250R ± .015; OVER .250R ± .030

DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.

EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.

DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.

MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.

DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING

HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.

ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES

125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10

200 FOR ALL DRILLED HOLES

REMOVE ALL BURRS. BREAK ALL EDGES .015-.031

INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS

SYMBOL ✓ DENOTES SURFACE TO BE MACHINED

UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32

LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.

TOLERANCE ON LOFTED DELINEATIONS IS

DWG SIZE 34 X 120 SQ. FT.
PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X) SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL)
PRINT TRIM LINE

03/03

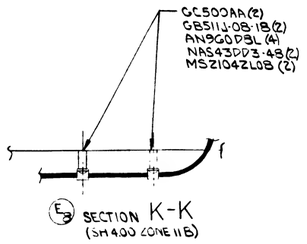
NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LEM	SIZE J	CODE IDENT NO. 26512	LDW270-51010 E
MODEL OR END ITEM	SCALE 1/2		SHEET 4.00

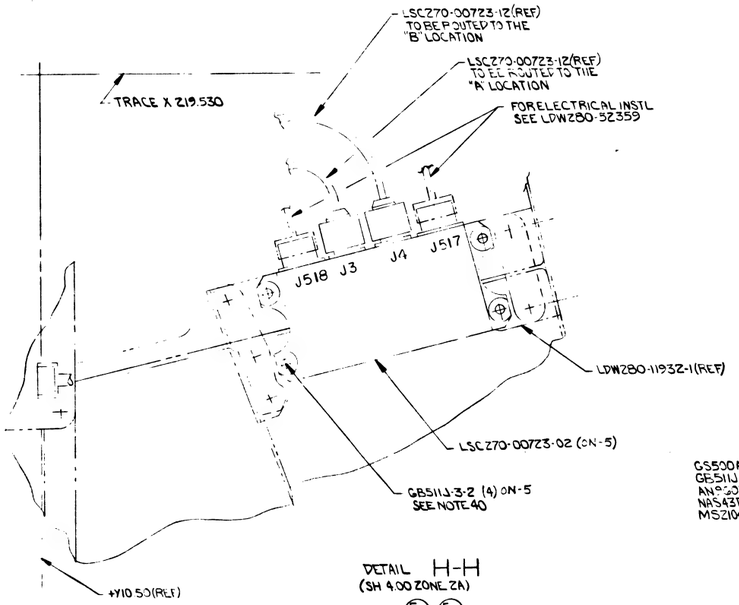
CODE IDENT No 26512
LDW270-51010 SHT. 4.00

LDW270-51010 E
LDW270-51010 E
LDW270-51010 E

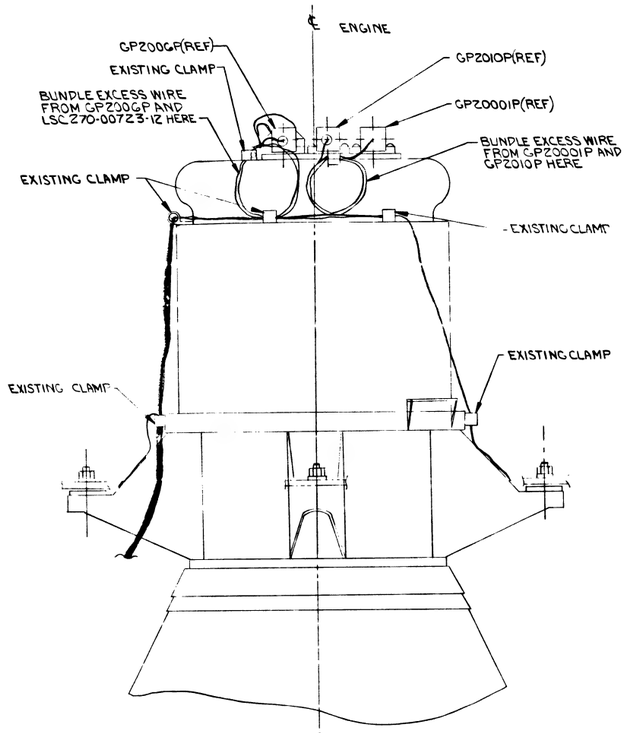
5 4 3 2 1



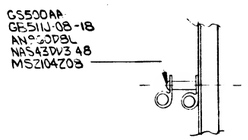
E8 SECTION K-K
(SH 4.00 ZONE 11B)



DETAIL H-H
(SH 4.00 ZONE 2A)
E6 E12



E8 VIEW J-J
(ROTATED 90° CW)
(SH 4.00 ZONE 9C)



E8 SECTION L-L
(SH 4.00 ZONE 11B)

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

- PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY.
- FILLET AND INSIDE CORNER RADII TOLERANCES .010R TO .062R ± .010; .063R TO .250R ± .015; OVER .250R ± .030
- DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.
- EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
- DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
- MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
- DIAMETERS MARKED ⌀ MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
- HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
- ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
- 125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
- 250 √ FOR ALL DRILLED HOLES
- REMOVE ALL BURRS. BREAK ALL EDGES .015-.081
- INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
- SYMBOL ⌐ DENOTES SURFACE TO BE MACHINED
- UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
- LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
- TOLERANCE ON LOFTED DELINEATIONS IS

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK		
LM	SIZE F	CODE IDENT NO. 26512	LDW270-51010 E
MODEL OR END ITEM	SCALE HALF		SHEET 5 OF 5

LDW270-51010 E

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LED-270 | no. 66
CONTROL INFO NO. LM270-1186

TO DWGS LISTED BELOW ADD NOTE Δ (Δ USE NEXT AVAILABLE NOTE No.)

DWG. NUMBER	DWG. TITLE	EFFECT	CHANGE No.
LDW270-51010	ASCENT ENGINE INSTL	LM-2 ONLY	F1
LDW270-53020	ASCENT ENGINE INSTL	LM-3	A7

Δ LSC270-00723-02 CONTROL UNIT SHALL BE BONDED PER LSP-14-13334, CL "D", FIGURE 4.

DETAIL SPEC REQ | CL II ENGRG CHG | ✓ CL I ENGRG CHG | LCD2458 | 06 5

REASON FOR EO: ADDED BONDING INFO

DESCRIPTION OF EO: ADDED NOTE Δ

GAEC EO RELEASE: HF 2/1/66

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM2 (32)	
		LM3 (33)	

DRAWING CHANGE REQD: ✓ REVISE DWG | RECORD EO
DISPOSITION OF PARTS: ✓ REWORK | SCRAP

APPROVED BY									
DATE	2/1/66			2/1/66					
	PROP	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ. ENGRG		
							MHD		
							2/1/66		

PRIORITY: C
DRAWING TITLE: SEE ABOVE
DRAWING NO.: LED-270
EO NO.: 66

ISSUED BY S. SCIARROTTA X1471 SECTION PROPULSION GROUP NO. 345 PL 25

01 A

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	2, 3	8C					E.O. A1	ON -1 : NAS 654 V7 WAS NAS654V6 & REMOVED C.L. REQUIREMENTS. SH 1 OF 5 WAS 1 OF 3, ADDED SH 1.10 & 2.01	LM-1	✓		E. RIMMAUDO 20 MAY 1967		
	2	2, 3	6D 8D 2B 8D 2A					E.O. A2	FROM -1 INSTL: REMOVED: LDW 270-51458-5, -11, -13, -15 (1) NAS 654 V9 (8) NAS654V7; ADDED TO -1 INSTL: LDW 270-23101-1, LDW 270-51458-17 & -19; (2) 815-4C; (19) NAS 654 V8; LDW 280M17469-3 WAS LDW 28CM17469-1; (4) LDW 270-51458-9 WAS (1) LDW 270-51458-9; REMOVED FROM -1 INSTL: (8) MS 21043-4; ADDED TO -1 INSTL: (1) GS13AJ-504; DELETED NOTES # 2 & #4 ADDED NOTE #5						
	3	2, 3	5B 5C 2C 2D 2A					E.O. A3	TO -1 INSTL ADDED: LDW270M10031-11, LDW270M10032-11, -12, (2) LDW270M10033-11, AN 310C5; (3) AN960C416L; (2) AN960C516L; AN960C516; (3) MS21043-4, MS21043-5, MS24665-153; NAS 674V4; NAS675V12D; NAS675V20; ADDED SHIM NOTE						
	4	3	2A					E.O. A4	ADDED TO NOTE 5, "PLUG RING WILL BE INSTALLED AT K.S.C."		NOT	REQD			
	5	2, 3	6D 10B 10C					E.O. A5	REF E.O. A2, TO -1 INSTL: ADDED (4) LDW 270-51458-21 HOSE ASSY. (4) AN815-6C; REMOVED FROM -1 INSTL: (4) LDW 270-51458-9 HOSE ASSY		✓				
	6	2, 3	6B					E.O. A6	ON -1 INSTL: REMOVED AN 919-1C AND ADDED LDW 270M10034-11						
	7	2, 3	2A					E.O. A7	IN B/M REMOVED ALL DETAILS FROM -1 INSTL EXCEPT LDW 270-23101-1, CREATED -3 INSTL; IN NOTES: DELETED REF. TO TOOL FOR POSITIONING ENGINE FOR GIMBAL ACTUATOR ADJUST.						
	8	2, 3	3D					E.O. A8	IN -3 ASSY: LSC 270-00600-20 WAS LSC 270-00600-14						

FOR CONTINUATION OF REVISIONS SEE SHEET _____

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW 270-51100	A

SCALE NONE | SHEET 1.10

ENG 77.3 5-65

01 NAS 9-1100

QTY PER ASSEMBLY -1	QTY PER ASSEMBLY -3	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
	2		LDW270M10033-11	E	BOLT	SEE DWG						
	1		LDW270M10032-12	E	PLATE	SEE DWG						
	1		LDW270M10032-11	E	PLATE	SEE DWG						
	4		NAS1272H34	E	BOLT	STD PART						
	4		NAS1272H11	↕	↕	↕						
	10		NAS654V18									
	19		NAS654V8		BOLT							
	2		AN815-4C		UNION							
	24		MS21043-4		NUT							
	AS REQD		MS20995NC32		LOCKWIRE							
	8		AN960D516L		WASHER							
	29		AN960D416		WASHER	↓						
	1		AN919-3C		REDUCER	STD PART						
	2		LDW270M10034-11		REDUCER	SEE DWG						
	2		G-C500A-9		CLAMP	GRUMMAN STD						
	1		GS13AJ-505		O-RING	↕						
	2		GS13AJ-504		O-RING							
	2		GS13AJ-502	↓	O-RING	↓						
	2		GB511J-08-2	E	BOLT	GRUMMAN STD						
	1		LSC270-00600-20	S	DESCENT ENG	SEE NOTE #1						
	2		LDW280M17469-3	E	PLATE	SEE DWG						
	1		LDW270M10031-11	E	FITTING	SEE DWG						
1			LDW270-23101-1	E	THERMAL PLUG	SEE DWG						
	1		LDW270-51458-19	E	HOSE ASSY	↕						
	1		-17	↕	↕							
	4		-21									
	1		-7									
	1		-3			↓						
	1		LDW270-51458-1		HOSE ASSY	SEE DWG						
1			LDW270-51100-3	↓	INSTL-DES. ENG							
			LDW270-51100-1	E	INSTL-DES. ENG.							

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

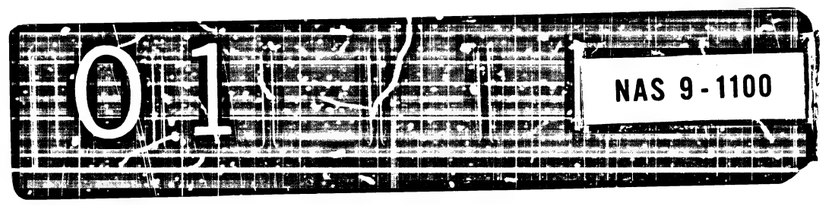
I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

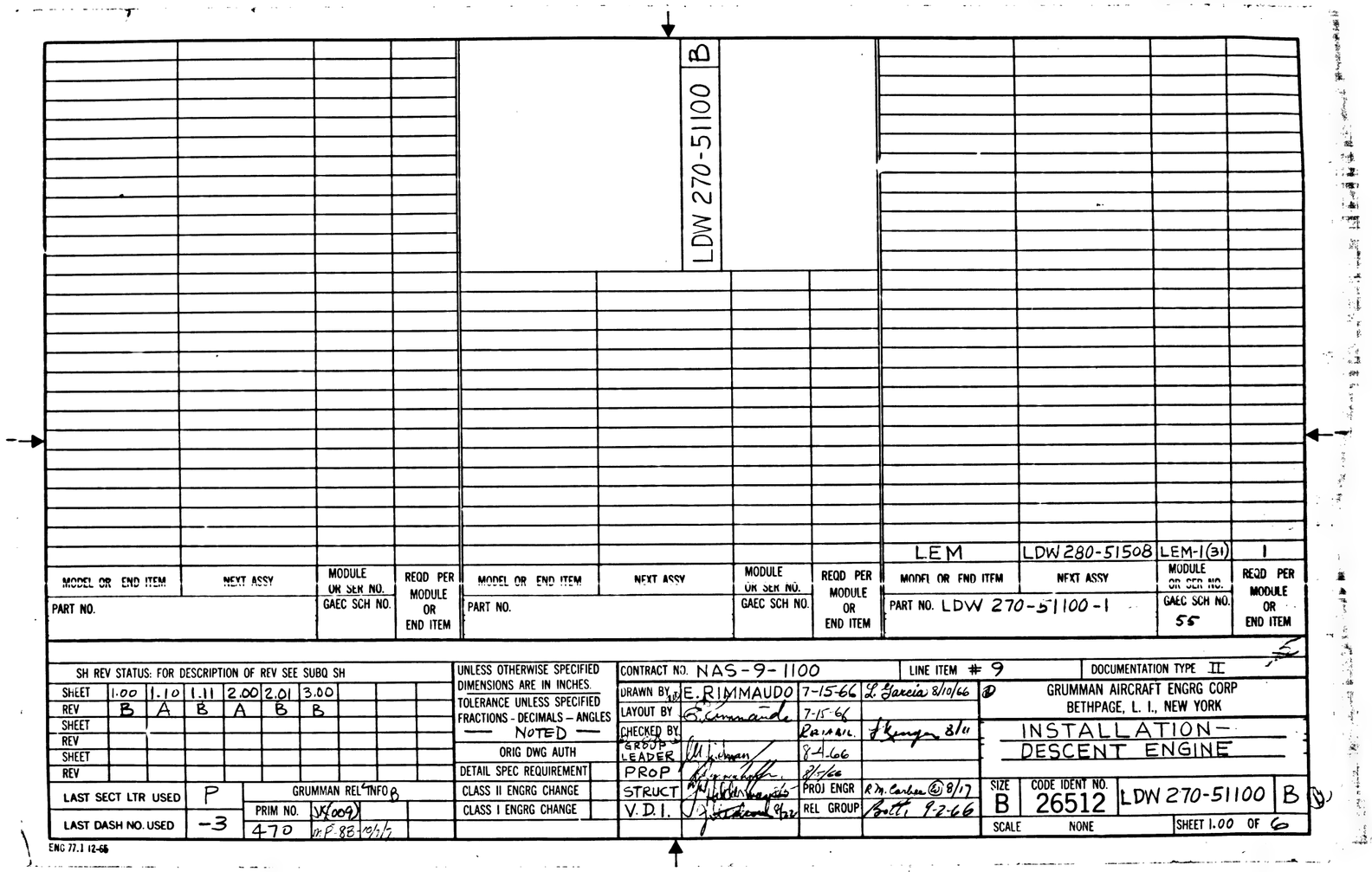
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51100	A

SCALE NONE SHEET 2.00

ENG 77.2 7-65





MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LEM	LDW 280-51508	LEM-1(31)	1
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW 270-51100-1		GAEC SCH NO. 55	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	1.10	1.11	2.00	2.01	3.00			
REV	B	A	B	A	B	B			
SHEET									
REV									
SHEET									
REV									
LAST SECT LTR USED	P								
LAST DASH NO. USED	-3								

GRUMMAN REL INFO B
PRIM NO. VS(009)
470 WP-88 10/17

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES — NOTED —

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS-9-1100 LINE ITEM # 9 DOCUMENTATION TYPE II

DRAWN BY	E. RIMMAUDO	7-15-66	L. Garcia 8/10/66
LAYOUT BY	E. Rimmaudo	7-15-66	
CHECKED BY		RAMAIL.	J. Kruger 8/11
GROUP LEADER		8-4-66	
PROP		8/5/66	
STRUCT		PROJ ENGR	R.M. Carlson 8/17
V.D.I.		REL GROUP	Bolt 9-2-66

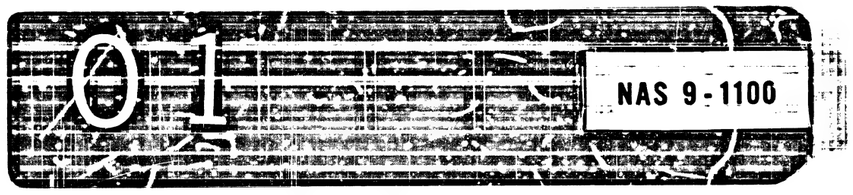
GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

INSTALLATION-
DESCENT ENGINE

SIZE	CODE IDENT NO.		
B	26512	LDW 270-51100	B

SCALE NONE SHEET 1.00 OF 6

ENG 77.1 12-66



REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	SH CHG LTR	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
B	1	3.00 2.01	GA 7A					V	EO B1 LCD 1576	ADDED PR-240 AC LUBRICANT TO PROPELLANT INTERFACE FLANGE BOLTS & TORQUE PATTERN TO FLD (DET. "N") ADDED SH 1.11	LM-1(31)	✓		G. ENGEL 10-4-67 S.V.		
	2	1.11					✓		EO B2 LCD 10549	CANCELLED BY EO B3	LM-1	✓				
	3	1.11					V		EO B3 LCD 10549B	CANCELLED EO LDW270-51100 B2	LM-1	NOT	REQ'D			
	4	1.11 3.00					V		LEO270-57 LCD-1894	ADDED NOTE 8	LM-1		✓			

FOR CONTINUATION OF REVISIONS SEE SHEET

ENG 77.3 5-64

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51100	B
SCALE NONE		SHEET 1.11	

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
AS REQD		PR-240AC	E	LUBRICANT		LSM14-6004					
4		AN815-6C	E	UNION	STD PART						
1		NAS675V20		BOLT							
1		NAS675V12D		BOLT							
1		NAS674V4		BOLT							
1		MS24665-153		COTTER							
1		MS21043-5		NUT							
1		AN960C516		WASHER							
2		AN960C516L		WASHER							
3		AN960C416L		WASHER							
1		AN310C5	E	NUT	STD PART						
-3											

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

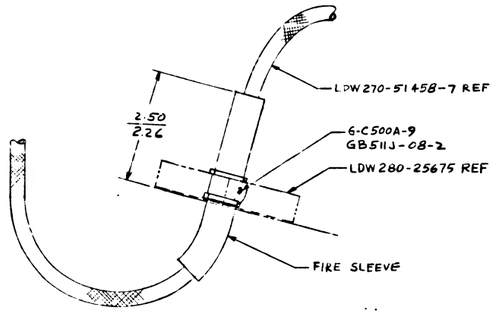
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51100	B

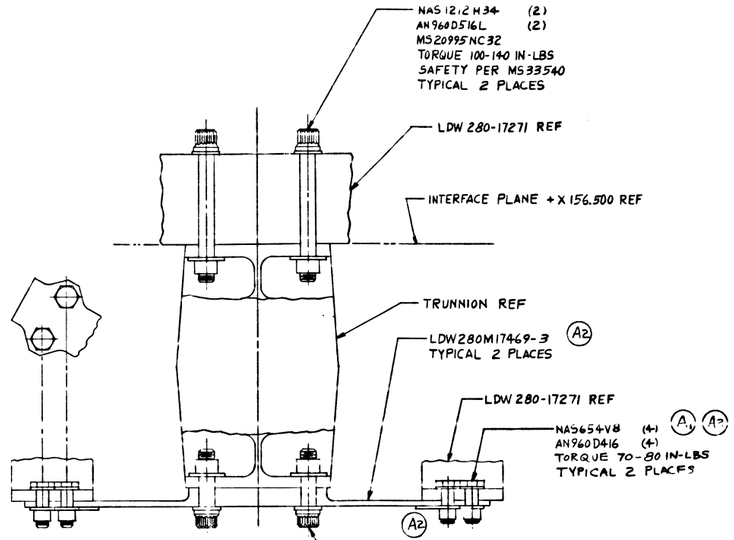
SCALE NONE SHEET 2.01

ENG 77.2 7-65

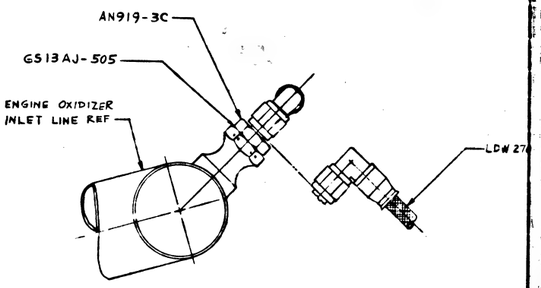
NAS 9-1100



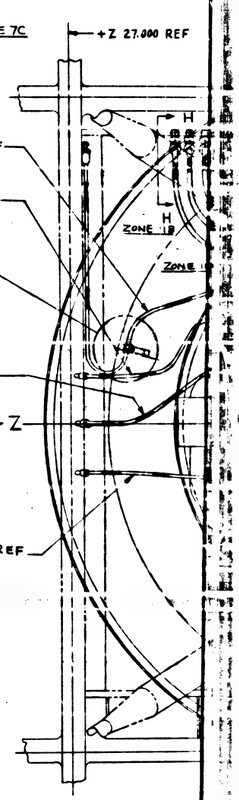
DETAIL L ZONE 7C
FULL SIZE

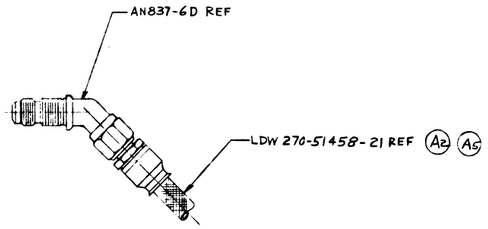


SECTION E-E FULL SIZE ZONE 7B
ENGINE SUPPORT HARDWARE

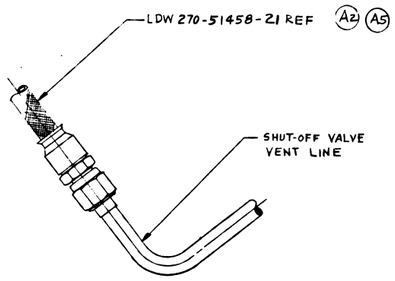


SECTION D-D FULL SIZE ZONE 7C
ENGINE OXIDIZER LOW POINT
DRAIN CONNECTION

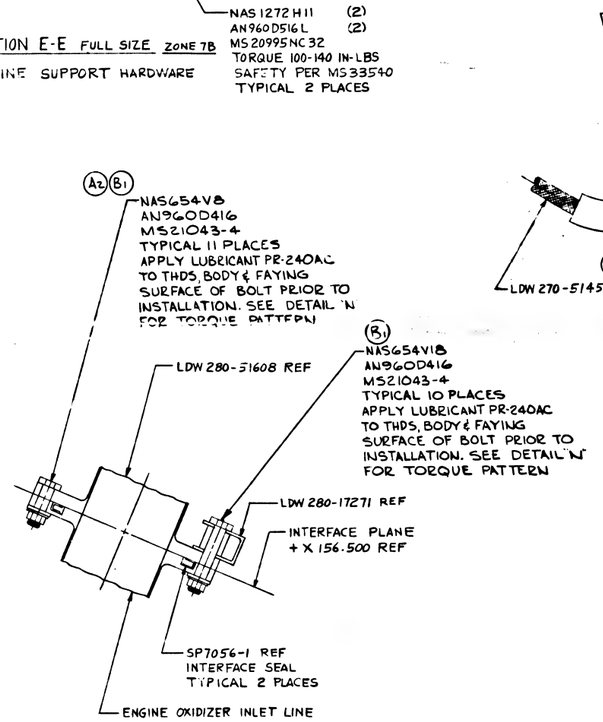




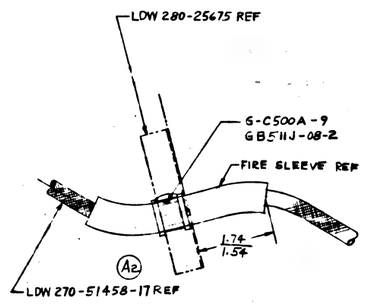
VIEW H-H FULL SIZE ZONE 7C
TYPICAL HOSE CONNECTION
4 PLACES



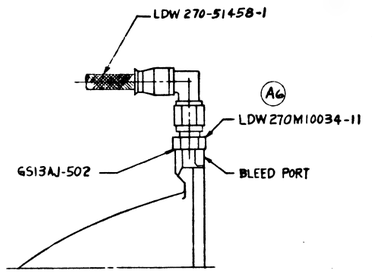
VIEW J-J FULL SIZE ZONE 7C
TYPICAL HOSE CONNECTION
4 PLACES



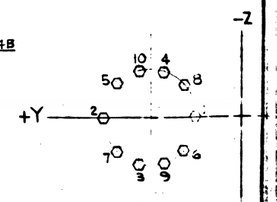
SECTION C-C FULL SIZE ZONE 6C
PROPELLANT LINES INTERFACE CONNECTION
AND SUPPORT HARDWARE



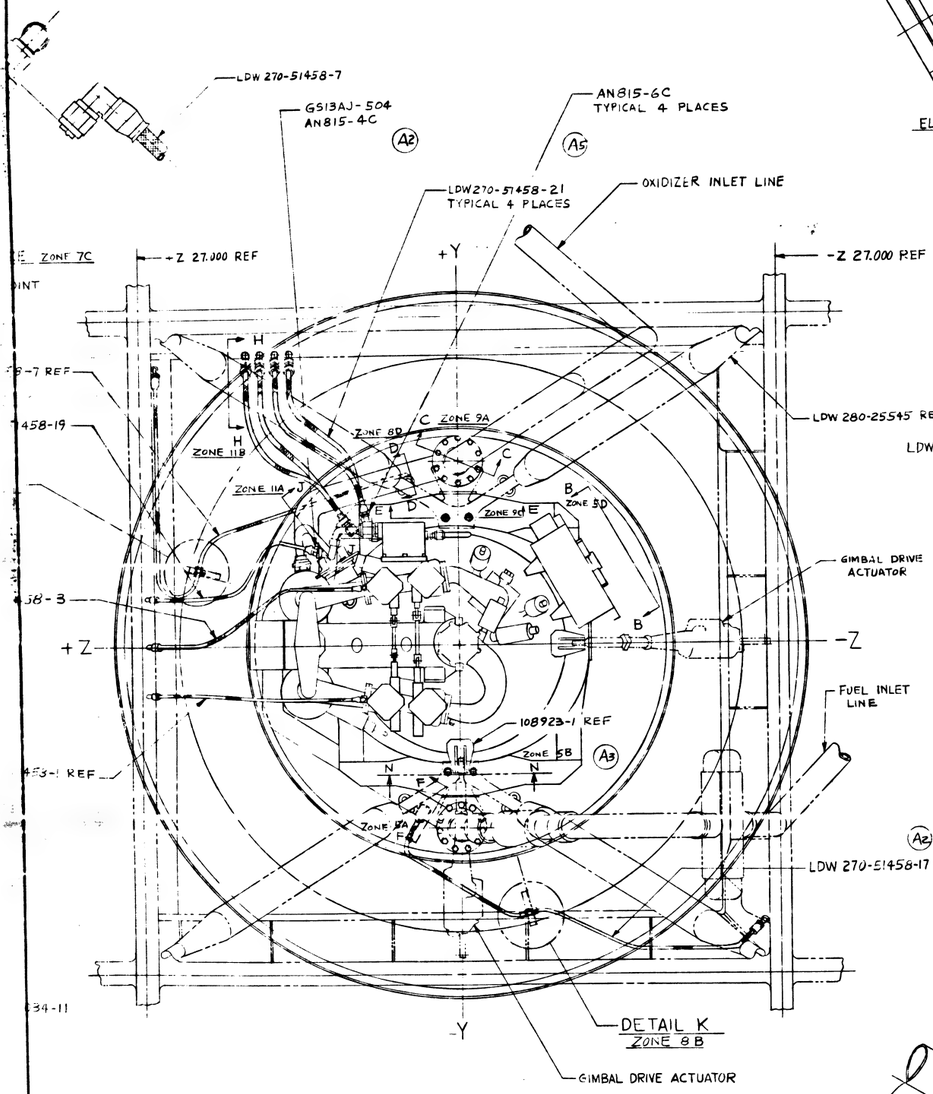
DETAIL K ZONE 9B
FULL SIZE



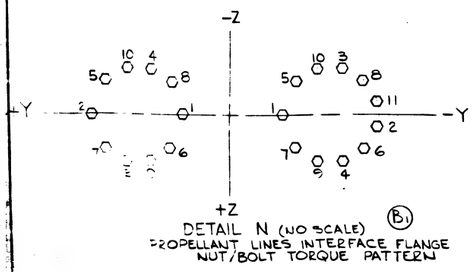
DETAIL G - FULL SIZE ZONE 4B
ENGINE OXIDIZER HIGH POINT
BLEED PORT SHOWN.
TYPICAL FOR ENGINE FUEL
HIGH POINT BLEED PORT



104703 NAS 9-1100

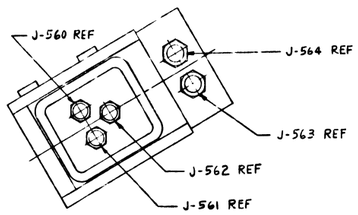


VIEW A-A ZONE 4D



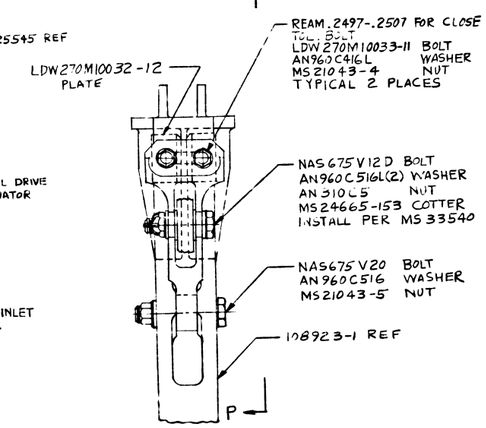
DETAIL N (NO SCALE) B1
PROPELLANT LINES INTERFACE FLANGE NUT/BOLT TORQUE PATTERN

B1 INSTALL ALL NUTS FINGER TIGHT AND TORQUE IN SEQUENCE AS FOLLOWS:
A) PHYSICAL LOCATION FOR START OF SEQUENCE (*1 NUT/BOLT) IS OPTIONAL FOR EACH FLANGE.
B) TORQUE ALL NUTS/BOLTS PER SEQUENCE SHOWN IN DETAIL 'N' TO 15 IN-LBS.
C) REPEAT STEP 'B' APPLYING 30 IN-LBS.
D) REPEAT STEP 'B' APPLYING 45 IN-LBS
E) REPEAT STEP B APPLYING 70-80 IN-LBS FOR FINAL TORQUE.

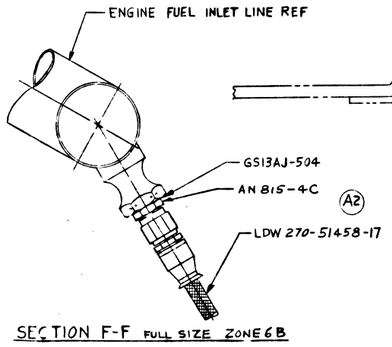


ELECTRICAL J-BOX
VIEW B-B ZONE 6C

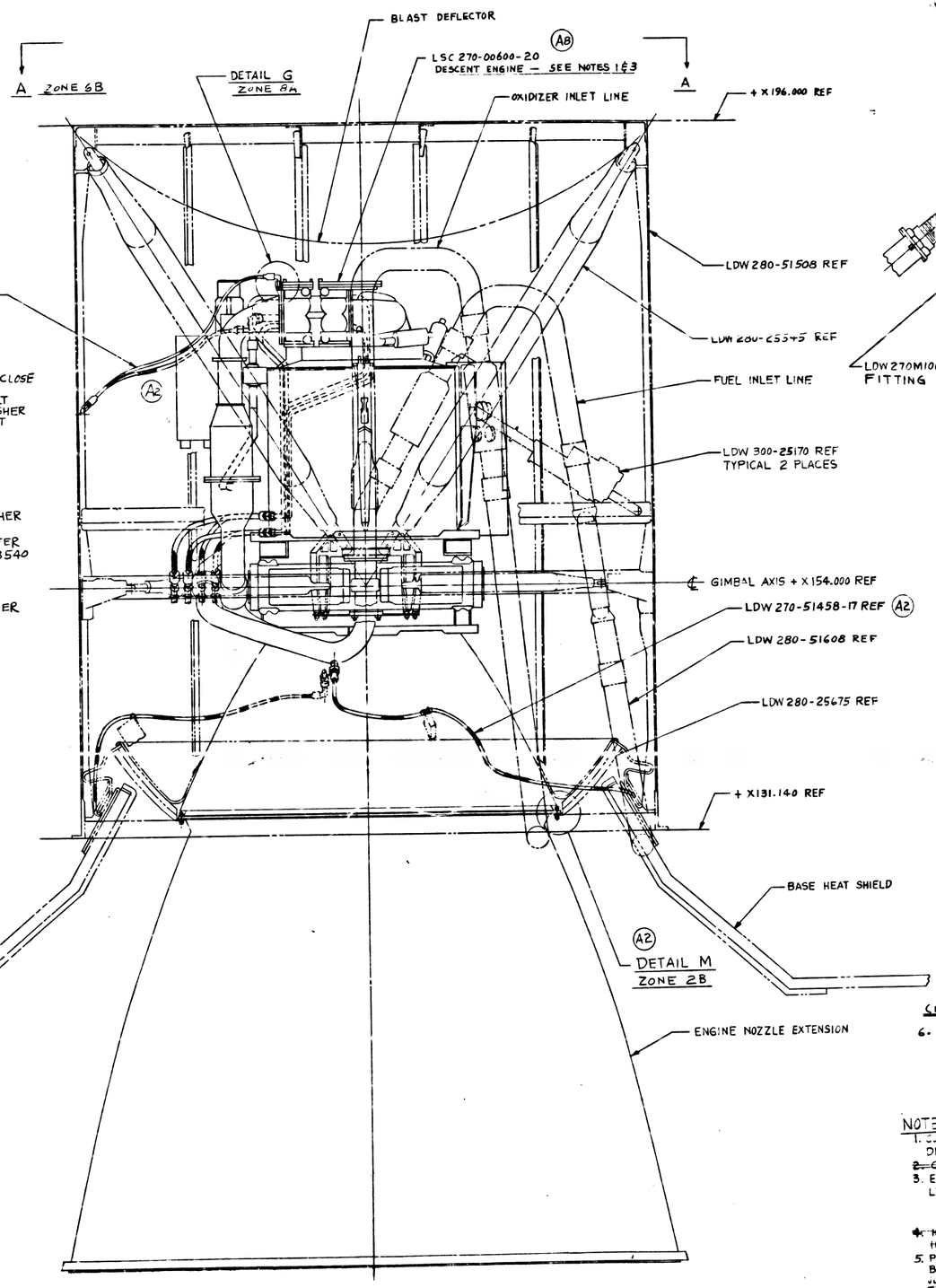
ZONE 2C P

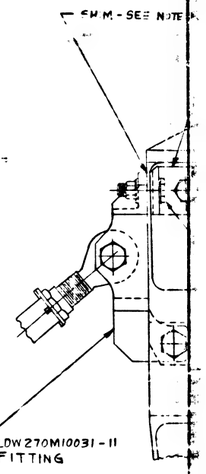


A3 VIEW N-N FULL SIZE ZONE 6B



SECTION F-F FULL SIZE ZONE 6B
ENGINE FUEL LOW POINT DRAIN CONNECTION





A3 VIEW

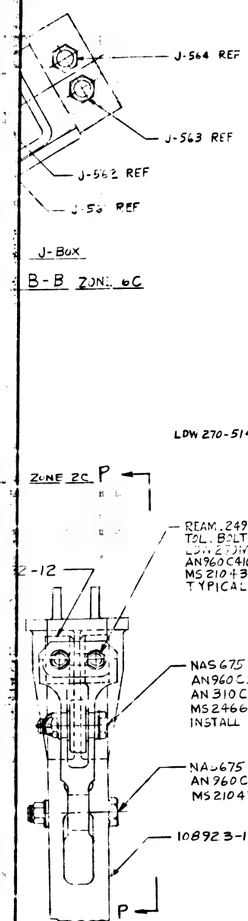
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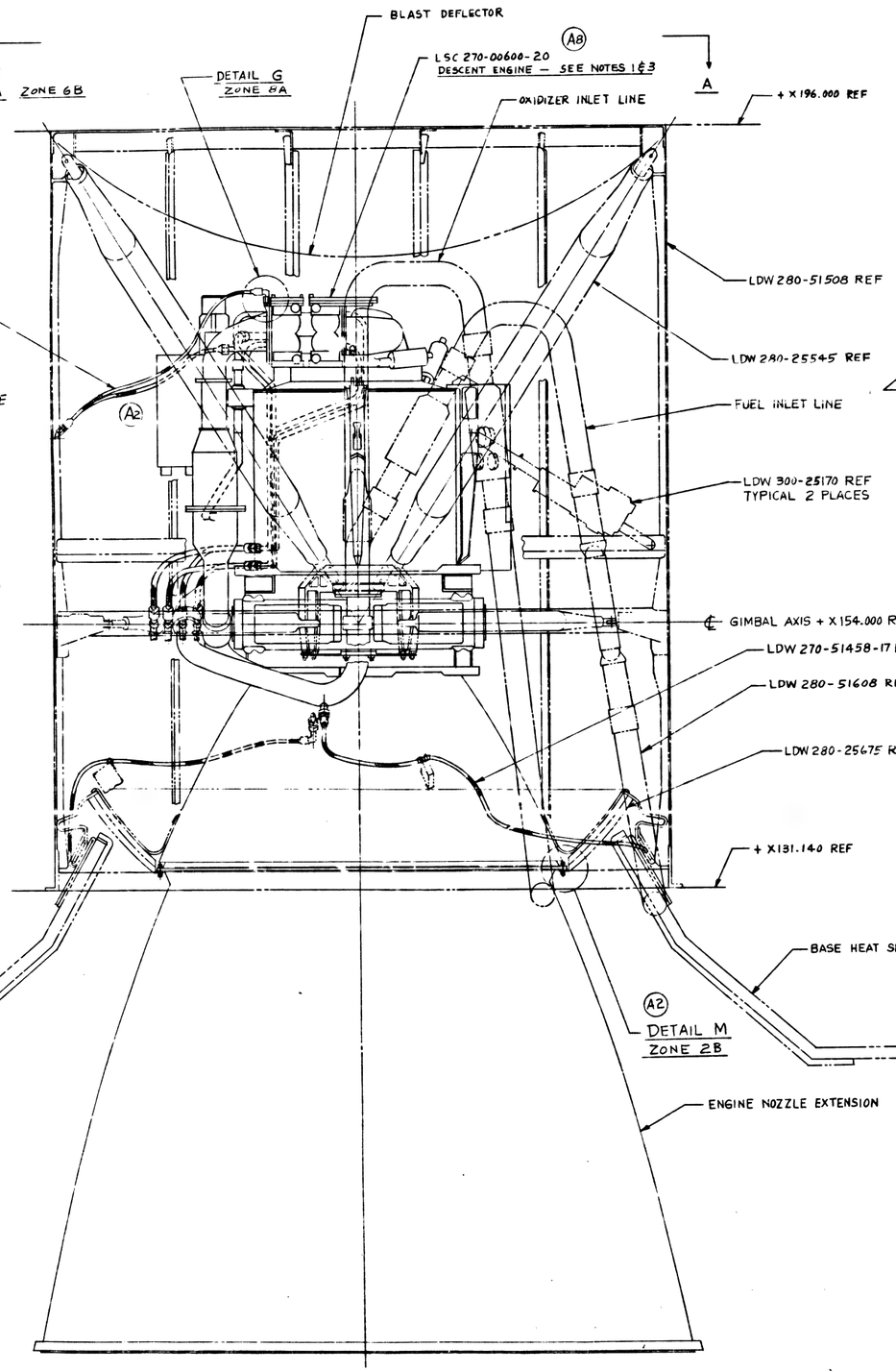
LDW 27
SEE NO

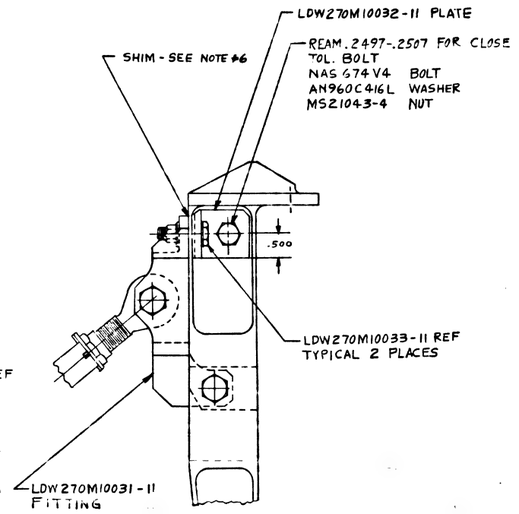
NOTES CONTINUE

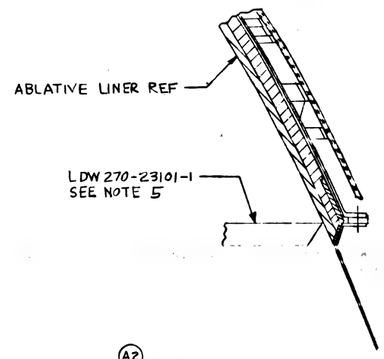
6. SHIM AS REQ'D
301-MIL-S-

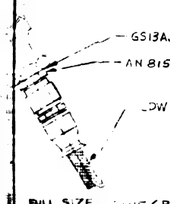
NOTES
1. COMMERCIAL PA
DRAWING NO. L
~~2. CLEAN & INST~~
3. ENGINE TO BE IN
LTP-279-67
~~4. HOSE ASSY LEN~~
~~INSTL & ENGINE~~
5. PLUG RING WIL
BUILDING (GSE) AT
JUST UPSTREAM OF
TO THE ABLATI
CARE MUST BE TA











NE FUEL INLET LINE REF

FULL SIZE NE 6B

W POINT ION

(NOTES CONTINUED)

6. SHIM AS REQD (.060 MAX) USING ST STL SHEET 301-MIL-S-5059 OR 321-MIL-S-6721

NOTES:

1. COMMERCIAL PART - SEE SPECIFICATION CONTROL DRAWING NO. LSC 270-00600-20
2. ~~CLEAN & INSTL IN ACCORDANCE WITH LSP-14-0011~~
3. ENGINE TO BE INSTALLED IN ACCORDANCE WITH LTP-279-27 PARA. 6.12.
4. ~~HOSE ASSY LENGTH TO BE DETERMINED ON INSTL & ENGINEERING NOTIFIED.~~
5. PLUG RING WILL BE INSTALLED AT THE MANNED SPACE OPERATIONS BUILDING (O&Q) AT KENNEDY SPACE CENTER. INSTALL PLUG RING JUST UPSTREAM OF THE ABLATIVE NOZZLE EXTENSION JOINT AND BOND TO THE ABLATIVE LINER OF THE COMBUSTION CHAMBER PER LSP-14-22602. CARE MUST BE TAKEN ON INSTALLATION TO AVOID GETTING ANY ADHESIVE ON NOZZLE EXTENSION

NOTES CONT'D:

7. TORQUE NUT COUPLING ON SHUT-OFF VALVE VENT LINE TO UNION 75-125 IN-LBS, TYPICAL 4 PLACES. TORQUE ALL -4 HOSE ASSY END FITTINGS 70-120 IN-LBS. TORQUE ALL-6 HOSE ASSY END FITTINGS 100-250 IN-LBS. CAUTION: DURING TORQUING OPERATION, RETAIN STATIONARY FITTING WITH WRENCH.
8. IN THE EVENT THAT EITHER OR BOTH MAIN PROPELLANT LINE INTERFACE FLANGES ARE DISCONNECTED, REMOVE THE EXISTING SEAL, TRW PART NO. SP7056-1 AND REPLACE WITH A NEW SEAL OF THE SAME PART NO. DO NOT REUSE OLD SEAL.

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

- PART NUMBER AND ALL OTHER MARKINGS IN RECESS MARKED ▭ USE BOTH SIDES IF NECESSARY.
- FILLET AND INSIDE CORNER RADII TOLERANCES .0005 TO .125 ± .010; .126 TO .250 ± .015; OVER .250 ± .030
- DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 MIN THDS. BEYOND PERMISSIBLE.
- EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
- DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
- MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
- DIAMETERS MARKED ⌀ MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
- HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
- ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
- SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
- FOR ALL DRILLED HOLES
- REMOVE ALL BURRS. BREAK ALL EDGES .005-.015
- INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
- SYMBOL ∱ DENOTES SURFACE TO BE MACHINED
- UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
- LENGTHS OF ANL, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
- TOLERANCE ON LOFTED DELINEATIONS IS

PRINTING INFO ONLY
FULL SIZE SHEET AREA (25 X 36)
1/4 SIZE SHEET AREA (1/4 OF FULL)
PRINT TRIM LINE

0371103

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L.I., NEW YORK

SIZE	CODE IDENT NO.	DWG NO.	REV
J	26512	LDW 270-51100	B

LEM
SCALE 1/8 WHEN D
SHEET 3 OF 00

LDW 270-51100 B

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.2 REV 3-65

DWG. NO. LDW270-51100 | EO NO. C1
CONTROL INFO NO. LM83-2131

THIS IS A REVISION OF EO B1

-3 INSTALLATION
ON SHEET NO 3.00 ZONE 9A IN SECTION C-C: REVISE CALLOUT

IS NAS 654 V8
AN960 D416
MS21043-4
TYPICAL 11 PLACES
TORQUE 75-85 IN-LBS
ABOVE LOCKING FEATURE
SEE DETAIL N FOR
TORQUE PATTERN

WAS NAS 654 V8
AN 960 D416
MS21043-4
TYPICAL 11 PLACES
APPLY LUBRICANT PR240AC
TO THDS, BODY & FAYING
SURFACE OF BOLT PRIOR
TO INSTALLATION. SEE DETAIL
N FOR TORQUE PATTERN

IS NAS 654 V18
AN 960 D416
MS21043-4
TYPICAL 10 PLACES
TORQUE 75-85 IN-LBS
ABOVE LOCKING FEATURE
SEE DETAIL N FOR
TORQUE PATTERN

WAS NAS 654 V18
AN 960 D416
MS21043-4
TYPICAL 10 PLACES
APPLY LUBRICANT PR240AC
TO THDS, BODY & FAYING
SURFACE OF BOLTS PRIOR
TO INSTALLATION. SEE DETAIL
N FOR TORQUE PATTERN

REVISE DETAIL N AS FOLLOWS:
INSTALL ALL NUTS FINGER TIGHT AND TORQUE IN SEQUENCE AS FOLLOWS:
TORQUE VALUES IN DETAIL N (A THRU F) ARE VALUES ABOVE THAT NECESSARY TO OVERCOME LOCKING FEATURE OF NUTS
A) PHYSICAL LOCATION FOR START OF SEQUENCE (#1 NUT/BOLT) IS OPTIONAL FOR EACH FLANGE
B) TORQUE ALL NUTS/BOLTS PER SEQUENCE SHOWN IN DETAIL N TO 15 IN-LBS
C) REPEAT STEP B APPLYING 30 IN-LBS
D) REPEAT STEP B APPLYING 45 IN-LBS
E) REPEAT STEP B APPLYING 60 IN-LBS
F) REPEAT STEP B APPLYING 75-85 IN-LBS FOR FINAL TORQUE
G) TOTAL TORQUE NOT TO EXCEED 130 IN-LBS.

ON SHEET NO 2.00 REMOVE
PR 240 AC LUBRICANT

NAS 9-1100

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	LCD 1894	83
REASON FOR EO: REVISED TORQUE VALUE TO OVERCOME LOCKING FEATURE OF NUTS.			DESCRIPTION OF EO: REF EO B1 ON -3 INSTALLATION REMOVED PR240AC LUBE FROM BOLTS. INCREASED BOLT TORQUE BY VALUE OF LOCKING FEATURE. CHANGED TORQUE SEQUENCE	GAECO EO RELEASE: SK 11/17

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	RB		ADC		WS PE	Plumb
LM		LM-1-31		✓		✓		DATE: 10/26	11/16/67		10/25/67		BPA	26 Oct
									SYS. ENGR SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	[illegible]	PROJ ENGRG

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	INSTALLATION - DESCENT ENGINE	LDW270-51100	C1

ISSUED BY R. ENGLEHART X3106 SECTION PROJ ENG, KSC GROUP NO. 816 PL 83

LDW270-51200 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-51001	LEM-1(31)	1
PART NO. LDW270-5120C-1		GAEC SCH NO. 45	5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	1.10	2.00	3.00	3.01	4.00			
REV	A	A	A	A	A	A			
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL^ INFO_A		
LAST DASH NO. USED	-1	PRIM NO.	FS(609)	
		-463	MP 12	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGR^ CHANGE	

CONTRACT NO. NAS9-1100 LINE ITEM 9 DOCUMENTATION TYPE II

DRAWN BY	J. PAVLICA / S.R.	RELIAB.			
LAYOUT BY					
CHECKED BY	S. R. HACK				
GL.	J. Perett 5/27/66				
PROP	M.N. Dley 5/27/66				
STRESS	[illegible]		PROJ ENGR	Plunkett 15 Jun 66	
STRUCT.	Silverman 6/3		REL GROUP	[illegible] 6/15/66	
WEIGHTS	L. Harris 6/14/66				

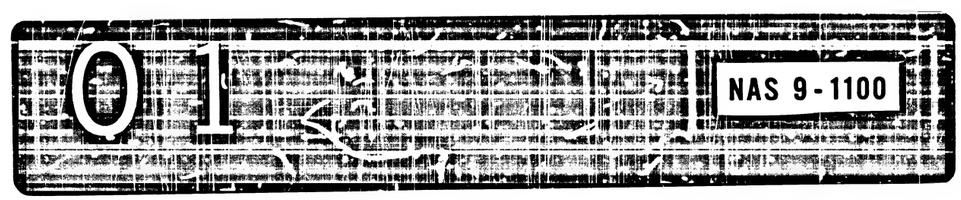
GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

MODULE INSTALLATION
ASCENT PROPULSION
PRESSURIZATION SUB-SYSTEM

SIZE	CODE IDENT NO.	
B	26512	LDW270-51200 A

SCALE NONE SHEET 100 OF 6

ENG 77.1 12-65



REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00, 1.10, 3.00, 3.01						EOA1	ADDED SH 1.10 & SH 3.01. SH 1.00 OF 6 WAS SH 1.00 OF 4. ADDED NOTE #4 (FOR LEAK CHECK OF HELIUM PRESSURIZATION SYSTEM.)	LEM-1	✓		C.ARMAS 8-4-66		
	2	1.10, 2.00 & 4.00	5B 7B						CHANGED COMMERCIAL CALLOUT TO G.A.E.C. VENDOR APPROVED EQUIVALENT	NOT REQD	NOT	REQD			

CHG APPROVED	LTR	GROUP LDR	PROPULSION	STRESS	STRUCTURES	WEIGHTS	RELIABILITY

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51200	A

SCALE NONE SHEET 1.10

ENG 77.15 3-66

01 NAS 9-1100

LEVEL	QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM (SEE NOTE #)	FINISH NO.	ZONE
C	4		GS570W-1	E	SEAL	GRUMMAN STD						
C	12		MS21043-3	E	NUT	STANDARD PART						
C	12		AN960C10L	E	WASHER	STANDARD PART						
C	12		GB511J-3-8	E	BOLT	GRUMMAN STD						
L	4		LSC269-205-8	E	CAP	SEE NOTES #1&3						
C	4		LDW270M10027-1	E	PLUG	SEE DWG						
A			LDW270-51202-2	E	TANK INSTL	SEE DWG						
A	1		LDW270-51202-1	E	TANK INSTL							
K	1		LDW270-51201-3	S	MODULE ASSY							
K	1		LDW270-51201-1	S	MODULE ASSY	SEE DWG						
A			LDW270-51200-1	E	MODULE INSTL							

CLEANLINESS LEVEL PER LSP14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51200	A

SCALE NONE SHEET 2 OF 3

2 7-65

01 NAS 9-1100

NOTES:

1 AFTER COMPLETION OF ALL COLD FLOW TESTS IN COLD FLOW FACILITIES, BYPASS LINES LDW280-16000-716ASH-8 & -721ASH-8 SHALL BE CUT AND CAPPED AS SHOWN. EXTREME CARE SHALL BE TAKEN NOT TO CONTAMINATE THE FLUID LINES AND COMPONENTS DURING THE CUTTING AND BRAZING OPERATIONS. THE CAPS SHALL BE BRAZED IN ACCORDANCE WITH LSP14-6303.

2. TORQUE REQUIREMENT ON PLUG - 100 INCH-POUNDS
3. COMMERCIAL PART: SEE SPEC. CONTROL DRAWING BEFORE ORDERING.
4. TEST PREPARATION:
   (a) VERIFY RCS INTERCONNECT (FUEL & OXIDIZER) AND RCS MAIN (FUEL & OXIDIZER) SHUTOFF VALVES ARE CLOSED.
   (b) VERIFY HELIUM PRIMARY & SECONDARY LATCHING SOLENOID VALVES ARE OPEN.

OPERATION PROCEDURE:

(a) CONNECT HELIUM SUPPLY LINE TO GP9401.
(b) APPLY 50 ± 2 PSIG (SLOWLY).
(c) CLOSE HELIUM SUPPLY, MONITOR LEAKAGE FOR 15 MIN, NO DETECTABLE DECAY.
(d) IF LEAKAGE IS EVIDENT, RELIEVE PRESSURE, CORRECT AND RETEST.
(e) SLOWLY REDUCE PRESSURE TO 10 ± 5 PSIG TO MINIMIZE DIRT INGRESS. ATTACH A WARNING TAG TO INDICATE THAT THE SYSTEM IS CHARGED WITH 5 TO 15 PSIG.
(f) CONNECT HELIUM SUPPLY LINE TO GP3402.
(g) REPEAT STEPS (b) THRU (e).

CAUTION: LATCHING SOLENOID VALVES MUST BE OPEN.

(FOR CONTINUATION OF NOTES SEE SHEET 3.01)

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-51200	A
SCALE NONE		SHEET 3.00	

ENG 73.1 6-64

01

NAS 9-1100

NOTES: (CONTINUED FROM SH 3.00)

OPERATION PROCEDURE (CONTINUED FROM SH 3.00)

(h) CONNECT HELIUM SUPPLY LINE TO GP 9442 & GP 9443.

(i) APPLY 50 ± 2 PSIG (SLOWLY).

CAUTION: GAGE AT GP 9425 SHOULD NOT INDICATE ANY PRESSURE. IF PRESSURE IS INDICATED RELIEVE PRESSURE SUPPLY AT ONCE.

(j) CONNECT HELIUM SUPPLY LINE TO GP 9406.

(k) APPLY 50 ± 2 PSIG (SLOWLY).

(l) CLOSE HELIUM SUPPLY, MONITOR LEAKAGE ON FUEL & OXIDIZER SYSTEM FOR 15 MIN. NO DETECTABLE DECAY.

(m) REPEAT STEP (d)

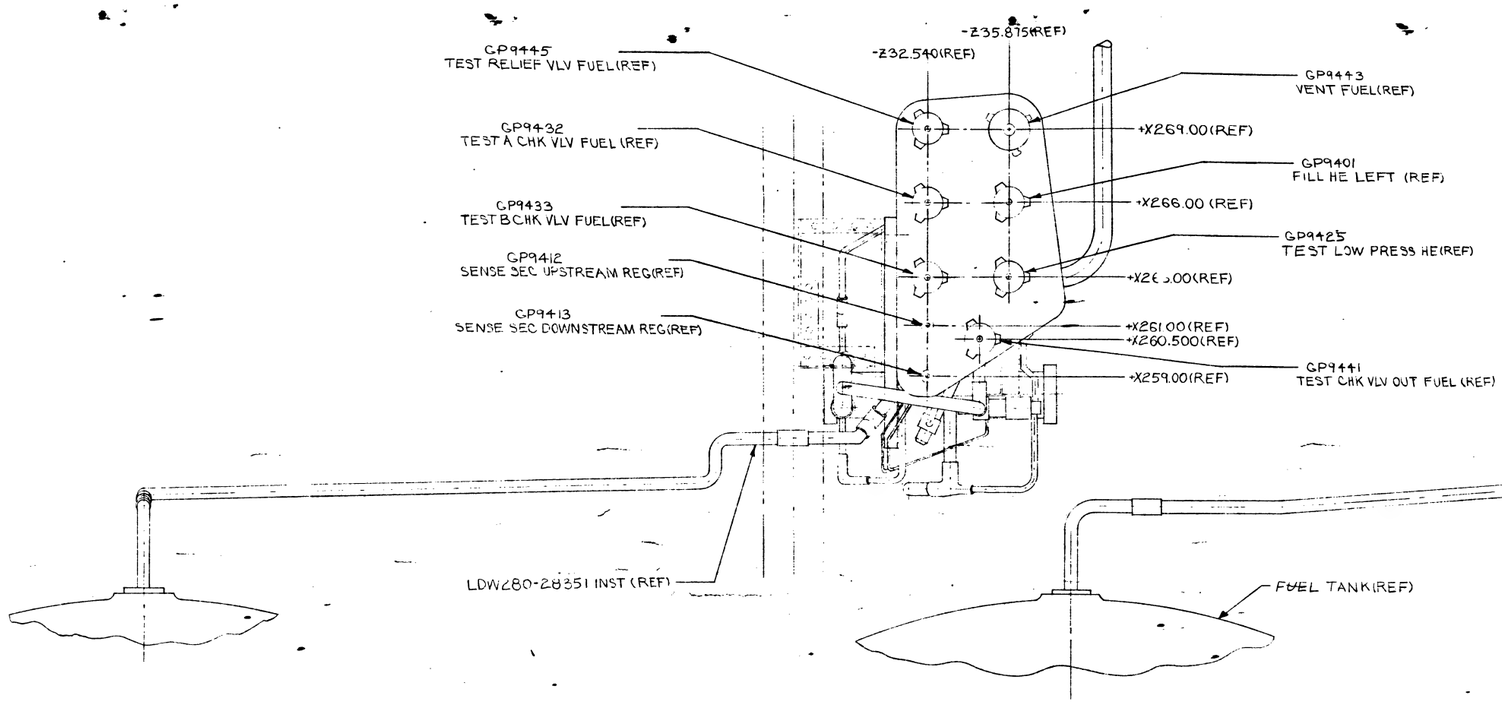
CAUTION: DO NOT RELIEVE PRESSURE THRU HELIUM SUPPLY VALVE. RELIEVE DOWNSTREAM OF PRESSURE REDUCING VALVES.

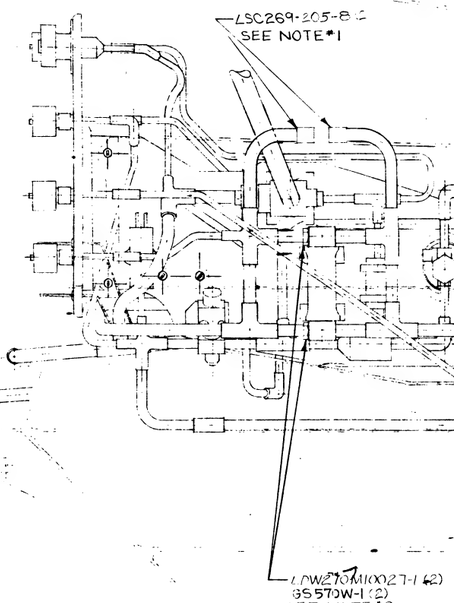
(n) REPEAT STEP (e)

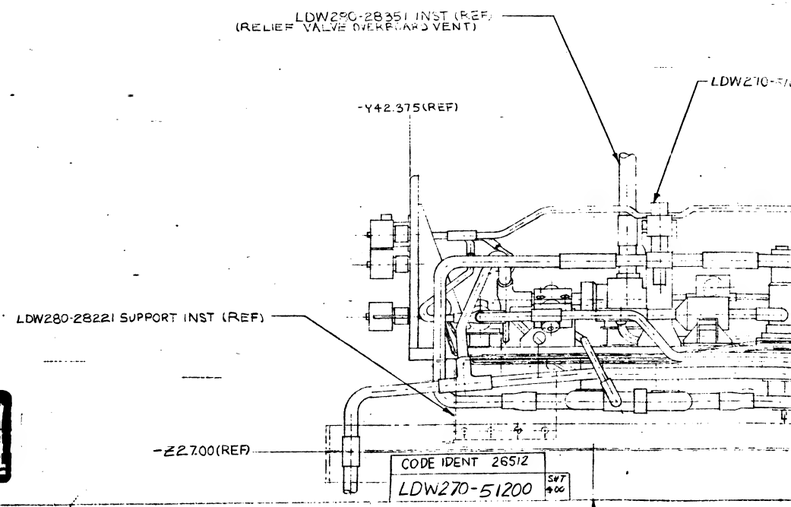
GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW 270-51200	A
SCALE		SHEET 3.01	

ENG 78.1 6-64

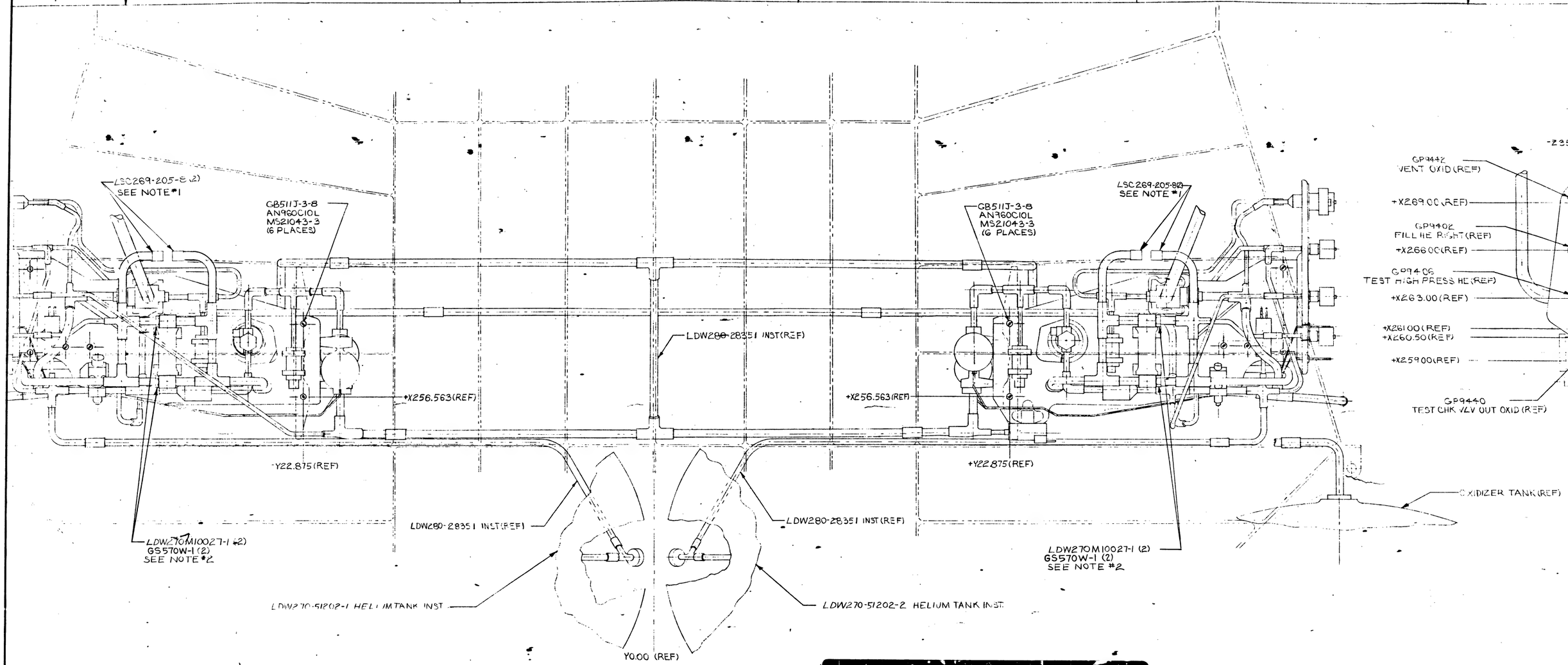
NAS 9-1100





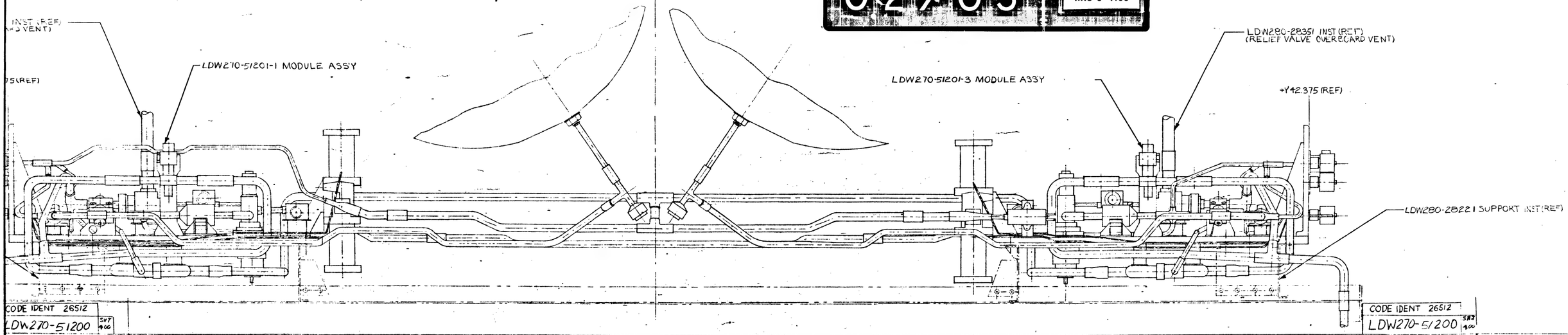


01-03 NAS 9-1100



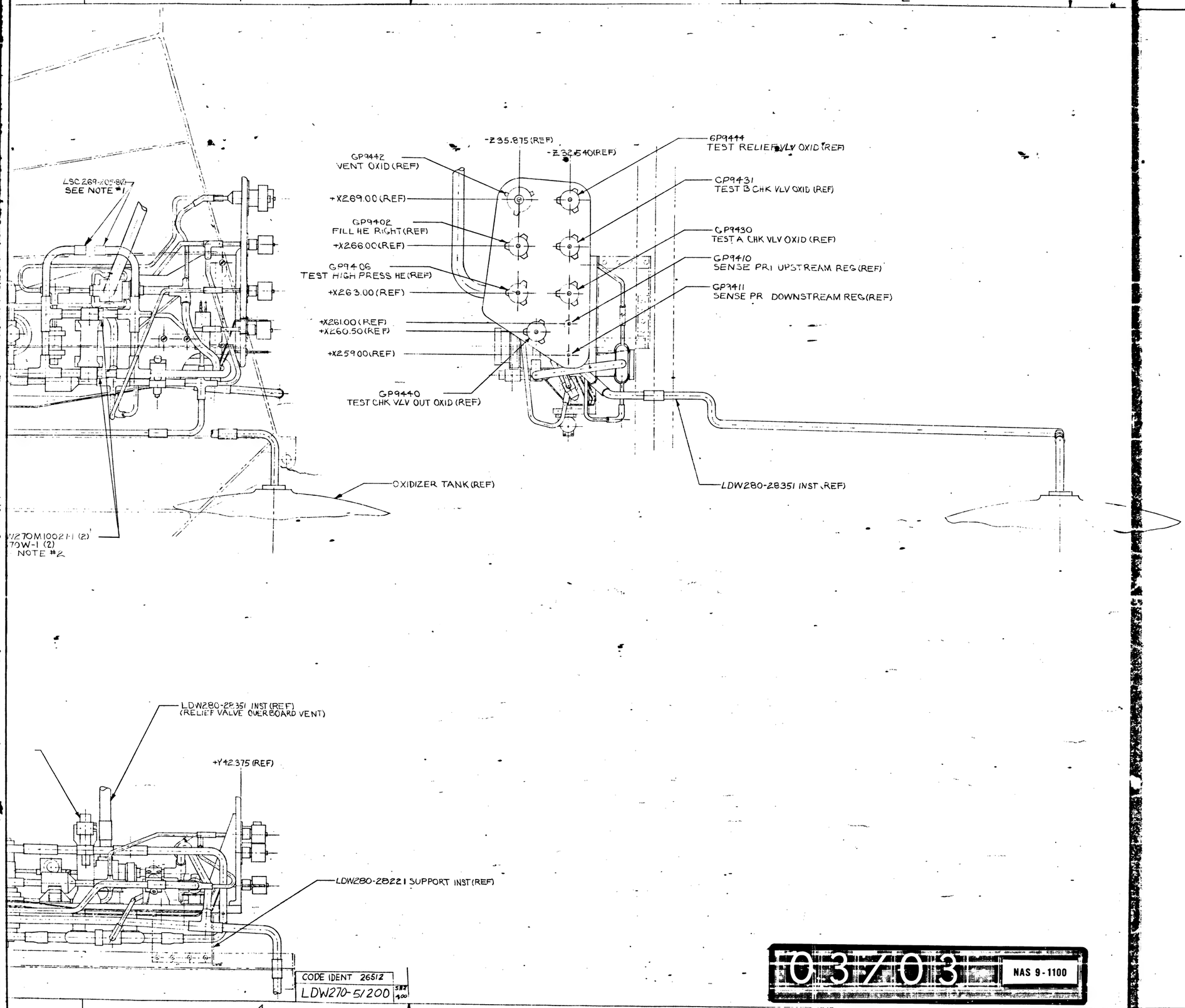
LDW270-51200-1 SUBSYSTEM INSTALLATION

02/03 NAS 9-1100



CODE IDENT 26512
LDW270-51200 SHT 1 OF 2

CODE IDENT 26512
LDW270-51200 SHT 1 OF 2



MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2.3 IMP THDS. BEYOND PERMISSIBLE.
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
250 FOR ALL DRILLED HOLES
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
SYMBOL $\sqrt{}$ DENOTES SURFACE TO BE MACHINED
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
TOLERANCE ON LOFTED DELINEATIONS IS

DWG SIZE 34 X 121

PRINTING INFO ONLY
FULL SIZE SHEET AREA (OK X1.35)= 34 SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL)= 8½ SQ. FT.
PRINT TRIM LINE

LDW270-51200 A

LDW270-51200 A

CODE IDENT 26512	LDW270-51200	SHT 4.00

03703

NAS 9-1100

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L I, NEW YORK			
LEM	SIZE J	CODE IDENT NO. 26512	LDW270-51200	A
MODEL OR END ITEM	SCALE 1/2		SHEET 4.00	

THIS IS AN ORIG DWG!

LEVEL	QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM (SEE NOTE 1)	FINISH NO.	ZONE
C	4		GS570W-1	E	SEAL	GRUMMAN STD						
C	12		MS21043-3	E	NUT	STANDARD PART						
C	12		AN960C10L	E	WASHER	STANDARD PART						
C	12		GB5111J-3-8	E	BOLT	GRUMMAN STD						
L	4		LSC269-205-8	E	CAP	SEE NOTES 1&3						
C	4		LDW270M10027-1	E	PLUG	SEE DWG						
A			LDW270-51202-2	E	TANK INSTL	SEE DWG						
A	1		LDW270-51202-1	E	TANK INSTL							
K	1		LDW270-51201-3	C	MODULE ASSY							
K	1		LDW270-51201-1	S	MODULE ASSY	SEE DWG						
A			LDW270-51200-1	E	MODULE INSTL							

CLEANLINESS LEVEL PER LSP14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW270-51200

SCALE NONE SHEET 2.00

72 7-65

01

NAS 9-1100

ENG 32.1 REV 3-65 B

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO.	LDW270-51200	EO NO.	B5
CONTROL INFO NO.	LM270-836		

IN FIELD & B/M FOR -1 INSTL

LDW270-51201-5 WAS LDW270-51201-1

LUW270-51201-7 WAS LDW270-51201-3

(5)

DETAIL SPEC REQ		CL II ENGRG CHG	√	CL I ENGRG CHG		LCD -1031

REASON FOR EO: REGULATOR CHANGENECESSITATING DASH NO. CHANGE

DESCRIPTION OF EO: IN FLD & B/M LDW270-51201-5 WAS -1, LDW270-51201-7 WAS -3

GAEC EO RELEASE: 16 3/16/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
LM		LM 1(31)		√		√	

APPROVED BY: DATE 3/15/67 — 1 PROP — SUPPORT — RELIAB. GROUP — GROUP LEADER — STRESS GROUP — LIAISON ENGRG — PROJ ENGRG

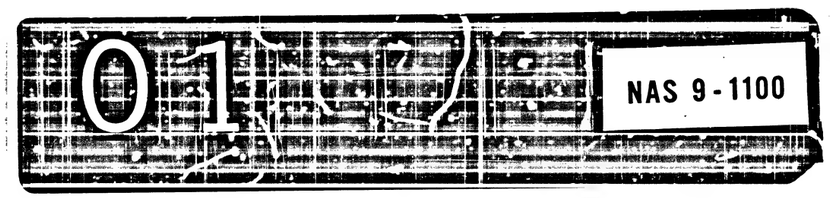
PRIORITY: C

DRAWING TITLE: MODULE INSTALLATION-ASCENT PROP. SUB-SYSTEM HELIUM PRESSURIZATION

DRAWING NO.: LDW270-51200

EO NO.: B5

ISSUED BY J. PAVLICA x1471 SECTION LM PROPULSION GROUP NO. 357 PL 35



ENG 32.1 REV 3-66

GRU' .MAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-51200 | EO NO. B6
CONTROL INFO NO. LM270-892

THIS EO CANCELS EOB5 IN
ITS ENTIRETY

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	LCD 1031
		✓	

REASON FOR EO: REMOVE FAIRCHILD MODULES & SUBSTITUTE STERER -(FAIRCHILD REG. FAILED PIT)

DESCRIPTION OF EO: CANCELLED EO B5

GAEC EO RELEASE: JK 5/26/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM		LM1(31)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		✓	

	APPROVED BY								
DATE	5/17/67			5/17/67					5-24-67
	1.	PROP	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ. ENGRG	DATE

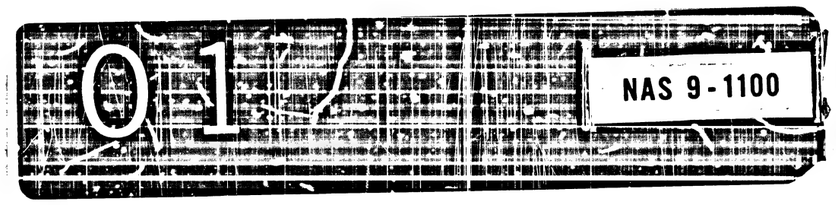
PRIORITY: C

DRAWING TITLE: MODULE INSTALLATION-ASCENT PROPELLANT PRESSURIZATION SUB-SYSTEM

DRAWING NO.: LDW270-51200

EO NO.: B6

ISSUED BY J. PAVLICA x1471 SECTION LM PROPULSION GROUP NO. 270 PL 25



LFM

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-51200 | EO NO. B7
CONTROL INFO NO. LM270-1007

IN FIELD & B/M FOR -1 INSTL

LDW270-51201-7 WAS LDW270-51201-3
LDW270-51201-5 WAS LDW270-51201-1

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG		LCD 1031

REASON FOR EO: INST FAIRCHILD REG-MODULE DASH NO. CHANG

DESCRIPTION OF EO: IN FLD & B/M LDW270-51201-7 WAS -3 LDW270-51201-5 WAS -1

GAEC EO RELEASE: JK 5-4-67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM #15 EI	LM1 (31)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: REWORK ✓ | SCRAP
PRIORITY: C

APPROVED BY									
				5/6		HEG JRM KSC			
DATE	5/3/67			5/3/67		5/3/67	5/4/67		
	1.	PROP	GR/QE	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	ASSIGNED ENGRG	PROJ ENGRG	COMP

DRAWING TITLE: MODULE INSTL ASCENT PROPELLANT PRESSURIZATION SUB SYSTM
DRAWING NO.: LDW270-51200
EO NO.: B7

ISSUED BY J. PAVLICA

GROUP LM PROPULSION PLT25 DEPT357

221

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1,1.10 2.03 4 & 5						EO A1	ADDED SH 1.10: SH 1 OF 10 WAS SH 1 OF 9. IN FLD & B/M FOR-1 ASSY NAS1133V2 (WAS) GB511J-3-2 (ALL PLACES) NAS1133V4 (WAS) GB511J-3-4 (ALL PLACES) IN FLD & B/M FOR-3 ASSY: NAS1133V2 (WAS) GB511J-3-2 (ALL PLACES) NAS1133V4 (WAS) GB511J-3-4 (ALL PLACES)	LEM-1 (31)	✓		P. HOCHLING 8-16-66		
	2	1,1.10,2 & 4					✓	EO A2	LDW 280-16000-1155 ASH-4 WAS LDW 280-449 ASH-4	LEM-1 (31)	✓				
	3	1,1.10.2.01 4 & 5						EO A3	IN FLD & B/M FOR-1 ASSY LDW 280-16000-1117 ASH-4 (WAS) -445 ASH-4, -1118 ASH-4 (WAS) -446 ASH-4, -1119 ASH-4 (WAS) -447 ASH-4 IN FLD & B/M FOR-3 ASSY LDW 280-16000-1120 ASH-4 (WAS) -473 ASH-4, -1121 ASH-4 (WAS) -474 ASH-4, -1122 ASH-4 (WAS) -475 ASH-4,	LEM-1 (31)	✓				
	4	1,1.10.2.02 2.03 4 & 5						EO A4	FOR-1 ASSY IN FLD & B/M LSC 270-715-7-1 (WAS) LSC 270-715-7 FOR-3 ASSY IN FLD & B/M LSC 270-715-5-1 (WAS) LSC 270-715-5	LEM-1 (31)	✓				
	5	1,1.10.2.02 & 5						EO A5	FOR-3 ASSY IN FLD LSC 269-218-4 (WAS) LSC 269-224-4, LSC 269-228-4 (WAS) LSC 269-204, LSC 269-226-4 (WAS) LSC 269-227-4. IN B/M REMOVED LSC 269-204-4, LSC 269-224-4, LSC 269-227-4. ADDED LSC 269-218-4, LSC 269-226-4, LSC 269-228-4	LEM-1 (31)	✓				
B	1	1,1.10.2.02 & 4						EO B1	FOR-1 ASSY IN FLD LSC 269-218-4 (WAS) LSC 269-224-4 (2 PLACES) LSC 269-228-4 (WAS) LSC 269-204-4, LSC 269-226-4 (WAS) LSC 269-227-4. IN B/M REMOVED LSC 269-204-4, LSC 269-224-4 (2), LSC 269-227-4 ADDED LSC 269-218-4 (2), LSC 269-226-4, LSC 269-228-4	LEM-1 (31)	✓				
	2							EO B2	E O B2 SUPERSEDED BY E O B7	NOT REQD	NOT	REQD			
	3							EO B3	E O B3 SUPERSEDED BY E O B7	NOT REQD	NOT	REQD			
	4							EO B4	E O B4 SUPERSEDED BY E O B7	NOT REQD	NOT	REQD			
	5	1,1.10.2.03 & 5						EO B5	IN FLD & B/M FOR-1 & -3: GC-501G-62-231 (WAS GC-501D-56-231C	LEM-1 (31)	✓				
	6							EO B6	E O B6 SUPERSEDED BY E O B7	NOT REQD	NOT	REQD			
	7	1,1.10						EO B7	SUPERSEDES & CANCELLED E O'S B2, B3, B4, & B6	NOT REQD	NOT	REQD			

CHG APPROVED	LTR	GROUP LDR	PROP.	VEH. DES. INT.	STRESS	RELIABILITY	WEIGHTS
	B						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51201	B

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

LDW1270-51201 D

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	LEM	NEXT ASSY	LDW270-51200	MODULE OR SER NO.	LEM(31)	REQD PER MODULE OR END ITEM	1
PART NO.	LDW270-51201-7			GAEC SCH NO.			

MODEL OR END ITEM	LEM	NEXT ASSY	LDW270-51200	MODULE OR SER NO.	LEM-1(31)	REQD PER MODULE OR END ITEM	1
PART NO.	LDW270-51201-5			GAEC SCH NO.	45		

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	1.11	1.12	2.00	2.01	2.02	2.03	2.04
REV	D	B	D	D	D	D	D	D	D
SHEET	3.00		4.00	5.00					
REV	D		D	D					
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO B	
LAST DASH NO. USED	-7	PRIM NO.	JK1009
		463	MP16D-72117

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100 LINE ITEM 9 DOCUMENTATION TYPE II

		WEIGHT.	
DRAWN BY	P. CAPPELLI 1/18		L. Garcia 5/17/66
LAYOUT BY	P CAPPELLI 3/29		
CHECKED BY	S HACK 4/19/66		
PROP.			
VDI			
STRESS		PROJ ENGR	Office/RAC 5/18
		REL GROUP	C. Cusumano 5/21
RELIABILITY			

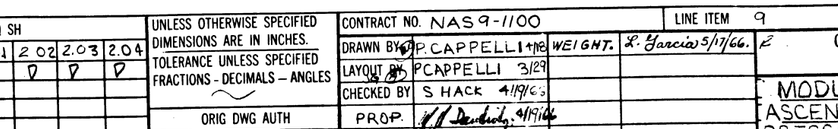
GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

MODULE ASSEMBLY
ASCENT PROPELLANT
PRESSURIZATION SUB-SYSTEM

SIZE	CODE IDENT NO.	
B	26512	LDW270-51201 D

SCALE NONE SHEET 1.00 OF 12

ENG 77.1 12-65



REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET 1.12

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
C	1	2.01, 2.02, 4&5	5B 6B					EOC1	IN F/D & B/M FOR-1&3 ASSY'S ADDED LDW280M11156-1&2, GB511J-3-14. REMOVED GB511J-3-13(4) ADDED NOTE 12 ADDED SH 1.11	LM-1	✓		P BURTON 10-16-67		
	2	2.03 4&5	6C				✓	EOC2	ON-3 REMOVED LSC270-717-3 ADDED LSC270-717-5	LM-1	✓				
	3	2.03 4&5	6C 5C				✓	EOC3	ON-1 ASSY-REMOVED LSC270-717-4 ADDED-6. ON-3 ASSY REMOVED LSC270-717-5 ADDED-7	LM-1	✓				
	4	2.02 4&5	3A					EOC4	FOR-1 MODULE ASSY REMOVE LSC270-715-7-1 REGULATOR ADD LSC270-715-7-2 REGULATOR FOR-3 MODULE ASSY REMOVE LSC270-715-5-1 REGULATOR ADD LSC270-715-5-2 REGULATOR	LM-1	✓				
	5	2.02 4&5	6A 5A					EOC5 LCD 892	IN B/M & F/D FOR-1&3 ADDED LSC269-110-12 FLANGE		✓				
	6	1					✓	EOC6 LCD 1031	CANCELED BY E.O. C7	LM-1	✓				
	7	1.00 2.00 3.00 4&5					✓	EOC7 LCD 1031	CANCELLED EOC6	LM-1	✓				
	8						✓	EOC8 LCD 1031	CANCELED BY EOD3	LM-1	✓				

A5

CHG APPROVED	LTR	GROUP LDR		STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY
	D						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51201	D

SCALE NONE SHEET 1.11

ENG 77.16 3-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
C	9						✓	EOC9 LCD1031	CANCELLED BY EOD3 ADDED SH 1.12	LM-1	✓		P BURTON 10-16-67		
	10	2.04 3.00 4&5	6A 6B				✓	EOC10 LCD1571	ADDED NOTE 13, REMOVED NOTE 5 ADDED TO B/M LDW270M-10039-11 & GS570W-14 REQD FOR-1&-3	LM-1	✓				
D	1	2.01, 2.02 4&5	4A 6B				✓	EOD1	IN B/M & FLD LDW360-512G4-3 WAS LDW360-212G4-3, LDW360-512G4-1 WAS LDW360-212G4-1 LDW360-512G2-3 WAS LDW360-212G2-3 LDW360-512G2-1 WAS LDW360-212G2-1 IN B/M LDW280-28205-3 & 4 1&T "S" WAS "E"	LM-1	NOT	REQD			
	2						✓	EOD2 LCD1031	CANCELLED BY EO. D3	LM-1	NOT	REQD			
	3	2.00, 2.01 2.02, 2.03 4&5					✓	EOD3 LCD 1031	CANCELLED E.O.'S C8, C9, D2	LM-1	✓				
	4	1.00, 2.00 2.01, 2.02 2.03, 2.04 4&5					✓	EOD4 LCD 1031	REMOVED LDW270-51201-1 & -3 CREATED LDW270-51201-5&-7 REVISED NOTE 1&2	LM-1	✓				
	5						K	LCD 1031	REF EO D4: LDW280-1600-1115 ASH-4 S/B LDW280-1600-1155 ASH 4	LM-1	✓				
	6						✓	LCD 1031	REF EO D3 & EOD4 ADDED NOTE 14	LM-1			A.C. 10-23-67		

C+D

CHG APPROVED	LTR	GROUP LDR	STRUCTURES	STRUCTURES	WEIGHTS	RELIABILITY
	D					

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51201	D

SCALE NONE SHEET 1.12

ENG 77.16 3-66

01

NAS 9-1100

LEVEL	QTY PER ASSEMBLY -7	QTY PER ASSEMBLY -5	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
L		1		LDW280-16000-1121ASH-4	E	TUBE	SEE DWG						
L		1		-1120ASH-4									
L		1		-472ASH-4									
L		1		-471ASH-4									
L		1		-470ASH-8									
L			1	-467ASH-8									
L			1	-466ASH-6									
L			1	-465ASH-6									
L		1		1992ASH-2									
L		1		1991ASH-2									
L			1	1990ASH-2									
L		1		1988ASH-2									
L			1	1989ASH-2									
L		1		-456ASH-6									
L		1		-455ASH-6									
L		1		-453ASH-6									
L			1	-451ASH-6									
L			1	1155ASH-4									
L			1	-448ASH-4									
L			1	1984ASH-4									
L			1	-1118ASH-4									
L			1	-1117ASH-4									
L			1	-444ASH-4									
L			1	LDW280-16000-443ASH-8	E	TUBE	SEE DWG						
K				LDW270-51201-7	S	MODULE ASSY (OX)					NONE	NONE	
K				LDW270-51201-5	S	MODULE ASSY (FUEL)					NONE	NONE	

CLEANLINESS PER LSP-14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

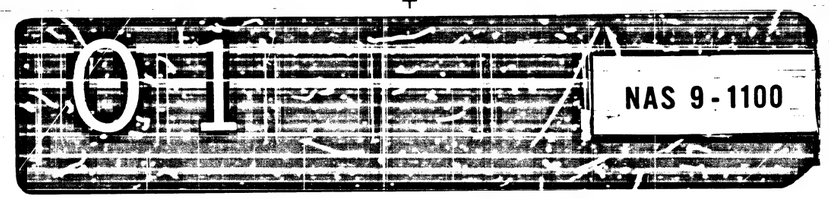
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : LPC-19-2 (GRUMMAN) LPC-19-3 (VENDOR

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51201	D (2)

SCALE NONE SHEET 2.00

ENG 77.2 7-65



LEVEL	-7	-5	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
						QTY PER ASSEMBLY							
C		1		LDW280-28205-4	S	PLATE ASSY	SEE DWG						
C	1			LDW280-28205-3	S	PLATE ASSY							
C		2		LDW270-10025-11	E	WASHER							
C	2	2		LDW270P10001-1		GROMMET							
C	1	1		LDW270P10000-1		INSERT							
	2	2		LDW280M11153-1		BLOCK							
	2	2		LDW280M11156-2		BLOCK							
L		1		LDW280-16000-829ASH-6		TUBE							
L	1			-828ASH-6									
L		1		1985ASH8									
L		1		-721ASH-8									
L		1		-720ASH-4									
L		2		-719ASH-8									
L		1		-718ASH-8									
L		1		-717ASH-8									
L	1			-716ASH-8									
L	1			-715ASH-4									
L	2			-714ASH-8									
L	1			-713ASH-8									
L	1			-712ASH-8									
L		1		-482ASH-8									
L	1			-479ASH-8									
L	1			-477ASH-8									
L	1			-476ASH-4									
L	1			LDW280-1600D-1122ASH-4	E	TUBE	SEE DWG						

CLEANLINESS PER LSP-14-C011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

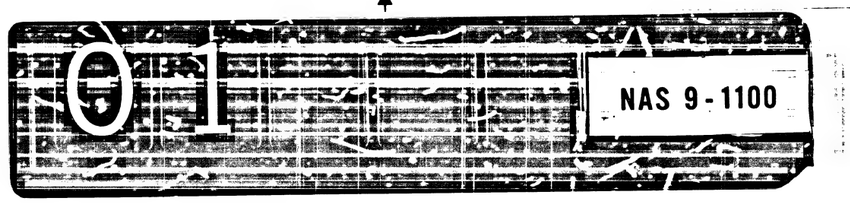
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : LPC-19-2 (GRUMMAN) LPC-19-3 (VENDOR)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51201	D

SCALE NONE SHEET 2.01

ENG 77.2 7-65



LEVEL	QTY PER ASSEMBLY -7	QTY PER ASSEMBLY -5	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
L	1			LSC 270-7211	S	REGULATOR	SEE NOTE 1						
L	1	1		LSC 270-714-3	S	EXPLOSIVE VA	SEE NOTE 1,10 & 13						
L	1	1		LSC 270-712-1	S	FILTER	SEE NOTE 1 & 10						
L	1	1		LSC269-228-4		TEE							
L	1	2		LSC 269-218-4		UNION							
L	1	1		LSC269-258-2	E	TEE							
L	1	1		-255-3		CROSS							
L	1			-255-2		CROSS							
L	2	2		-234-19		TEE							
L	1	1		-231-2		CROSS							
L	2	2		-230-1		UNION							
L		1		-228-6		TEE							
	1	1		-227-4		45° ELBOW							
L	3	3		-226-6		90° ELBOW							
L	3	3		-226-4		90° ELBOW							
L	4	3		-224-4		UNION							
L	4	4		LSC269 -204-8	E	TEE	SEE NOTE 1 & 10						
	1	1		LSC269-110-12	E	FLANGE	SEE NOTE 1 & 10						
L													
L													
L	1	1		LDW390-51070-1	S	SOLENOID VALVE	SEE DWG						
L	1			LDW360-51264-3	E	TRANSDUCER INSTL							
L		1		LDW360-51264-1	E	TRANSDUCER INSTL							
L	1			LDW360-51262-3	E	TRANSDUCER INSTL							
L		1		LDW360-51262-1	E	TRANSDUCER INSTL	SEE DWG						

CLEANLINESS PER LSP14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

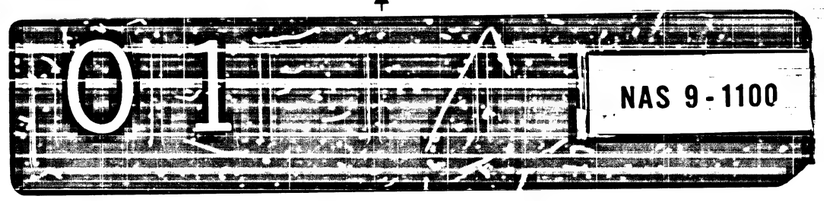
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : LPC-19-2 (GRUMMAN) LPC-19-3 (VENDOR)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51201	D (D)

SCALE NONE SHEET 2.02

ENG 77.2 7-65



LEVEL	QTY PER ASSEMBLY		CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
	-7	-5											
C	1	1		GC 5016-62-231	E	CLAMP	GRUMMAN STD						
C	1	1		GC12H-21									
C	2	2		GC12H-8									
C	1	1		GC12H-6									
C		1		GC12H-4		CLAMP							
C	4	4		GBS11J-3-14		BOLT							
C	4	4		NAS1133V4		BOLT							
C	29	30		NAS1133V2		BOLT	GRUMMAN STD						
C	4	4	84911	TA716W032552	E	CLAMP	COMML PART						
L	2	2		LSC270-819-9	S	EXPLOSIVE VA	SEE NOTE 1 & 13						
L		1		LSC270-817-4		CHECK VA	SEE NOTE 1						
L	1			LSC270-817-3		CHECK VA							
L	4			LSC270-813-25		DISCONNECT COUP							
L		4		LSC270-813-24									
L		1		LSC270-813-23									
L	2	1		LSC270-813-21									
J	1			LSC270-805-2									
J		1		LSC270-804-2		DISCONNECT COUP							
L		1		LSC270-717-6		RELIEF VALVE							
L	1			LSC270-717-7		RELIEF VALVE							
L		1		LSC270-721-3	S	REGULATOR	SEE NOTE 1						

CLEANLINESS PER LSP19-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

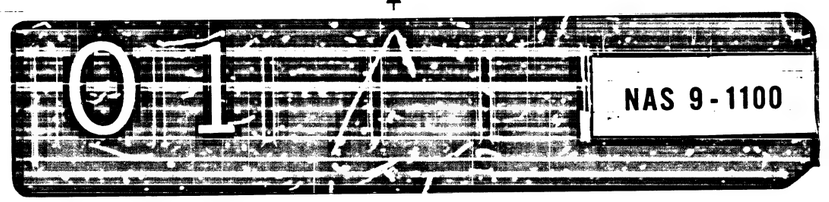
I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : LPC-19-2 (GRUMMAN) LPC-19-3 (VENDOR)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51201	D (V)

SCALE NONE SHEET 2.03

ENG 77.2 7-65



LEVEL	QTY PER ASSEMBLY			CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
L			1		LDW280-16000-1983 ASH 9	E	TUBE	SEE DWG						
L		2	2		MS28778-2	E	PACKING	STD PART						
L		2	2		AN924-2C	E	NUT	STD PART						
L		2	2		AN833-2C	E	ELBOW	STD PART						
L			1		LSC269-200-4	E	UNION	SEE NOTE 1						
C		2	2		GB511J-3-3	E	BOLT	STD PAR						
C			2		GB511J-3-4	E	BOLT	STD PART						
C		2			GB511J-3-9	E	BOLT	STD PART						
		4	4		GS570W-1			SEE NOTE 13						
		4	4		LDW270M10039-11			SEE NOTE 13						
C		28	39		MS21043-3	E	NUT	STD PART						
C														
C		✓	✓		MS20995C20		SAFETY WIRE							
C		40	41		AN960C10L	E	WASHER	STD PART						
		-7	-5											

CLEANLINESS PER LSP 14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : LPC-19-2 (GRUMMAN) LPC-19-3 (VENDOR)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51201	D

SCALE NONE SHEET 2.04

ENG 77.2 7-65

01A

NAS 9-1100

NOTES:

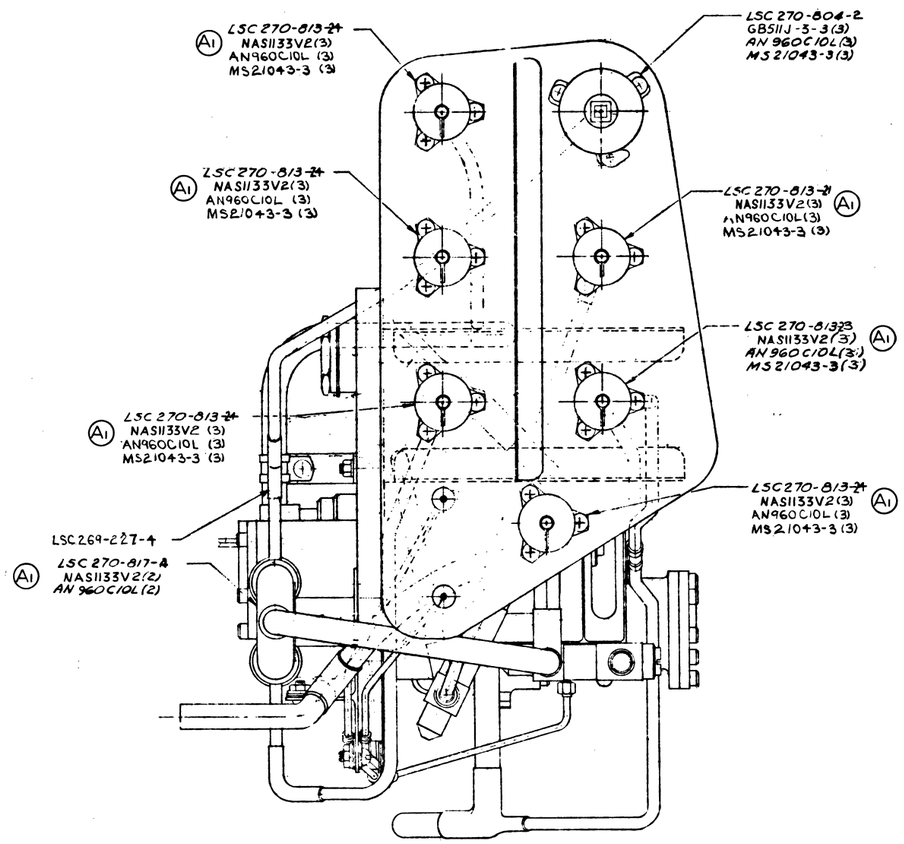
1. COMMERCIAL PART SEE SPECIFICATION CONTROL DRAWING.
   LSC270-712, LSC270-713, LSC270-714, LSC270-721 LSC270-717
   LSC270-804, LSC270-805, LSC270-813, LSC270-819, LSC269 BEFORE ORDERING
2. FOR MOCKUP OF THIS ASSEMBLY USE THE FOLLOWING MOCK UP PARTS.
   - LMU270-70712 FILTER
   - LMU270-70713 SOLENOID VALVE
   - LMU270-80014 EXPLOSIVE VALVE
   - ~~LMU270-70715 REGULATOR~~
   - LMU270-70717 RELIEF VALVE
   - LSK270-3015 DISCONNECT COUP
   - LMU270-80010 DISCONNECT COUP
   - LMU270-80008 CHECK VALVE
3. INDUCTION BRAZING OF FITTINGS SHALL BE IN ACCORDANCE WITH LSP-14-6303
4. MODULE ASSEMBLIES SHALL BE TESTED PER LTP 270-010 "APS HELIUM PRESSURIZATION MODULE P.T".
5. DO NOT REMOVE EXPLOSIVE VALVE INITIATOR PORT PLUGS UNTIL INSTALLATION OF INITIATORS
6. TUBE STUBS SHALL BE CAPPED PER LSP-14-009 FOR SHIPMENT AND STORAGE. REMOVE CAPS PRIOR TO BRAZING INTO SYSTEM.
7. TORQUE MECHANICAL FITTINGS 50-60 INCH LBS.
8. FITTING THREADS TO BE LUBRICATED WITH DRILUBE TYPE 822 MMSN306A
9. SAFETY WIRE PER MS 33540.
10. FITTINGS SHALL BE CLEANED PER LSP-14-7072 AND SHALL CONFORM TO CLEANLINESS LEVEL "L" OF LSP-14-0011.
11. ASSEMBLIES SHALL BE CLEANED PER LSP-14-7072.
12. INSTALL RADIUS BLOCK LDW280M11156-1 OR LDW280M11156-2 IN FRONT OF NUT DURING INSTALLATION OF LSC270-819-9 EXPLOSIVE VALVE ON MOUNTING BRACKET.
13. LDW270M10039-11 & GS570W-1 SHALL BE INSTALLED IN LSC270-714-3 & LSC270-819-9 EXPLOSIVE VALVE INITIATOR PORTS HAND TIGHT FOR SHIPMENT & STORAGE
14. THIS DWG AFFECTED BY THE FOLLOWING LFM. SEE LFM-15 FOR EFFECTIVITY & MODIFICATION

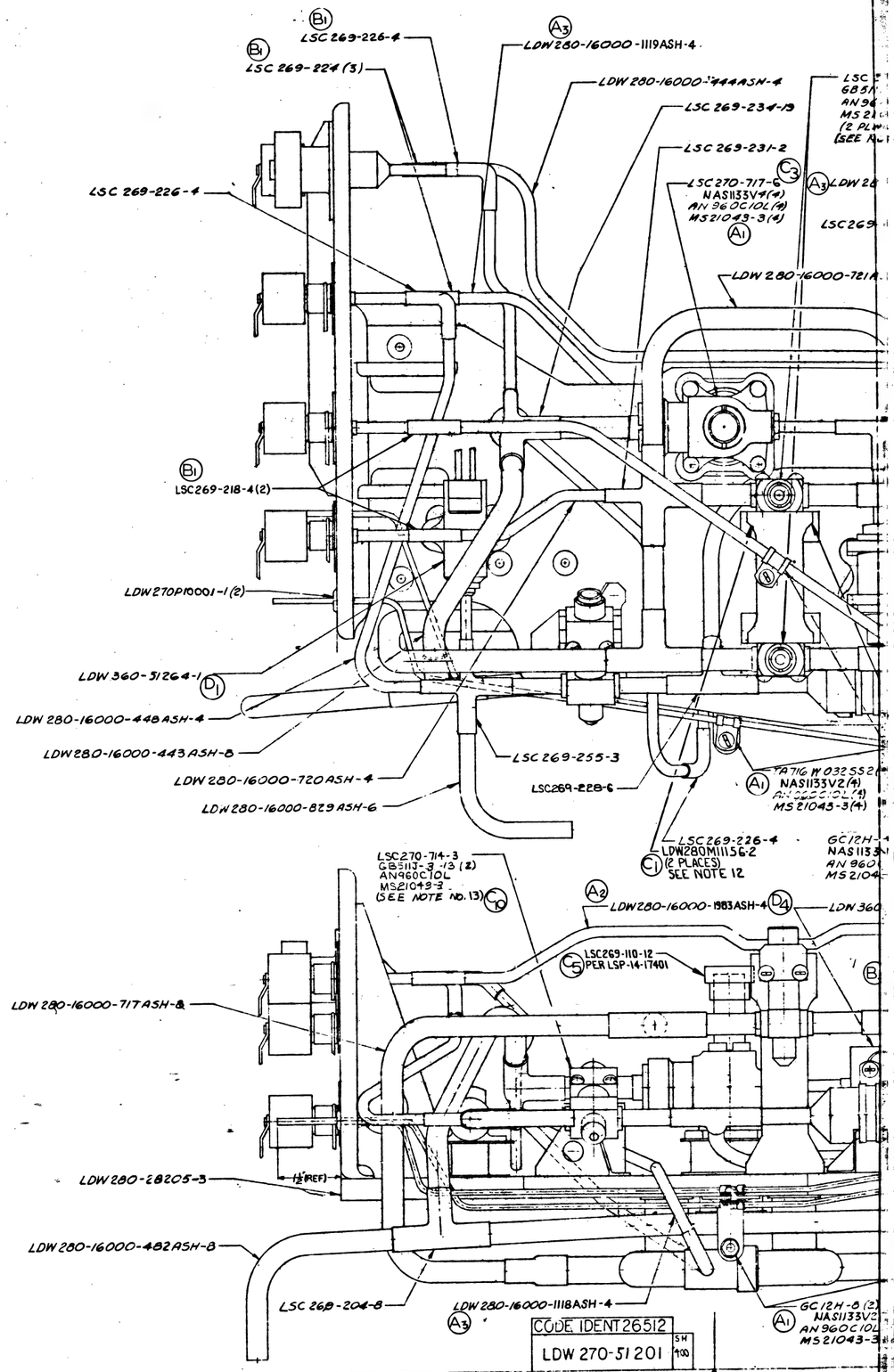
GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW 270-51201	D
SCALE NONE		SHEET 3.00	

ENG 73.1 6-64

01A

NAS 9-1100





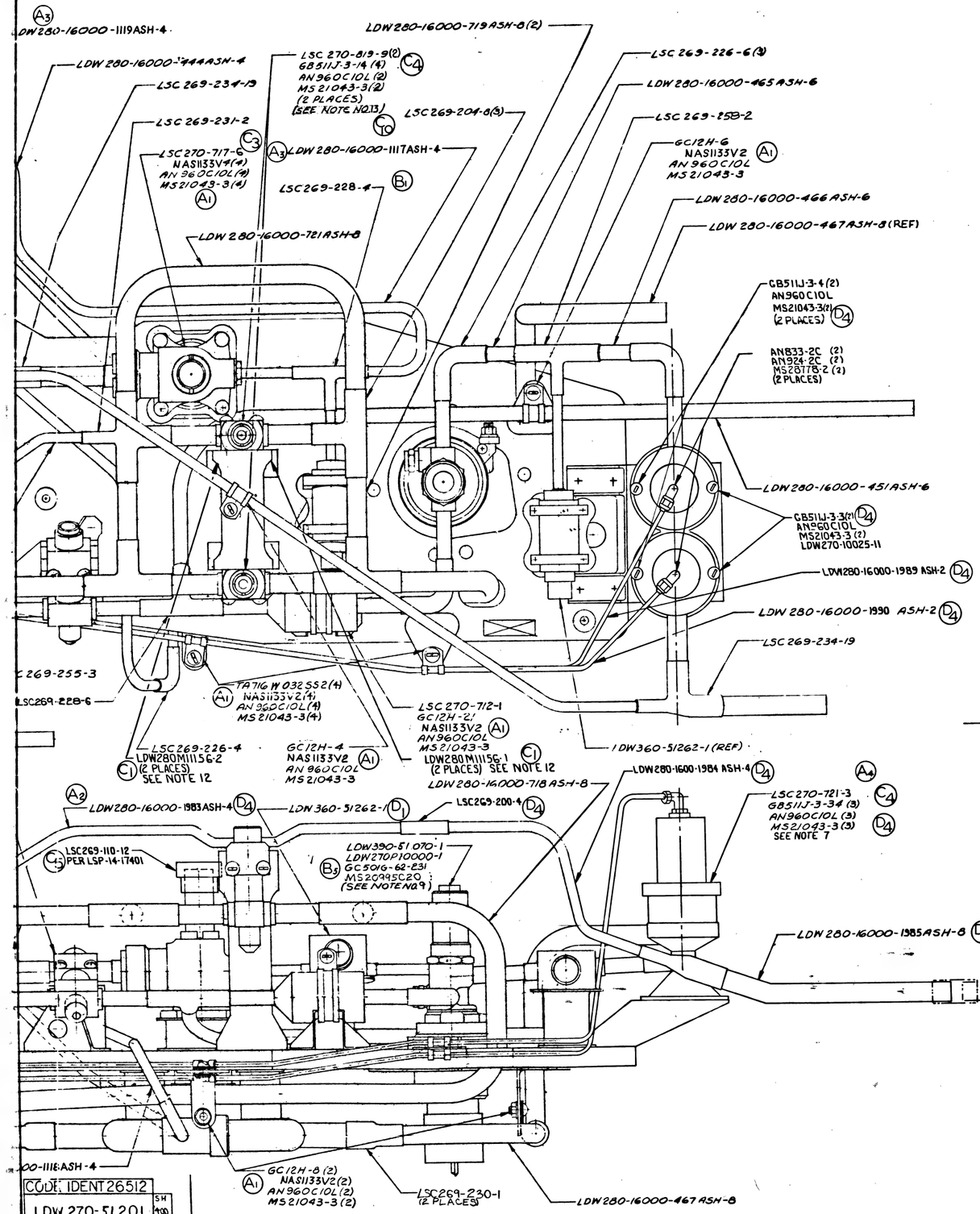
01/02

NAS 9-1100

CODE IDENT 26512

LDW 270-51201

SH 100



LDW270-51201-5 MODULE ASSEMBLY(FUEL)

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN RED IN BLANK USE BOTH SIDES IF NECESSARY.	√
FILLET AND INSIDE CORNER RADII TOLERANCES .060R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 MIN THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS PER MIL-STD-10	
250 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL F DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, MS & NAS 6 1/2 & ALL RIVETS SHORTER THAN 1 1/2 ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

SIZE A4 297 X 210 MM

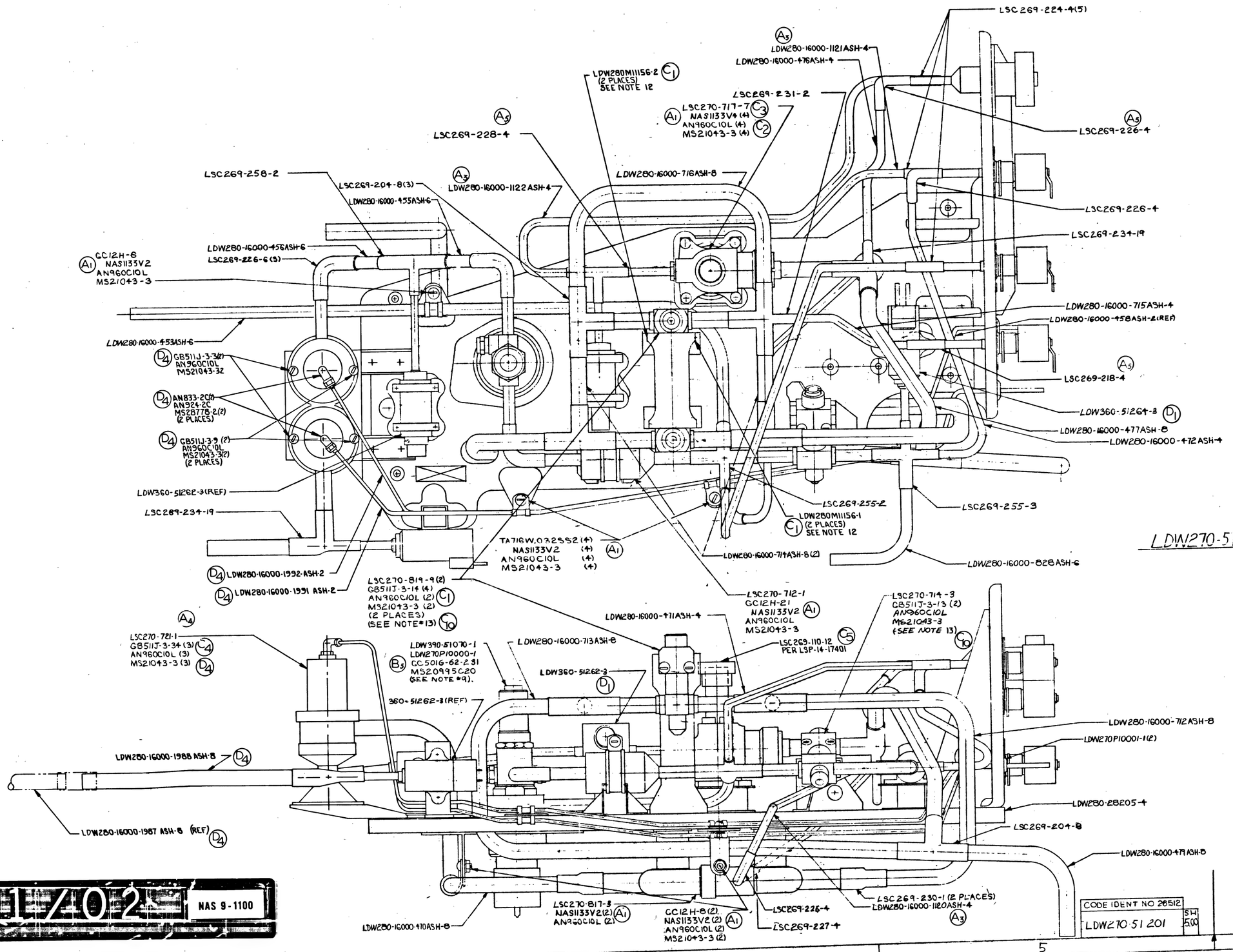
Q27/02

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L.I., NEW YORK			
LEM	SIZE J	CODE IDENT NO. 26512	LDW270-51201 D
MODEL OR END ITEM	SCALE FULL		SHEET 4 OF

CODE IDENT 26512
LDW 270-51201 SH 100

LDW270-51201D


LSC269-224-4(5)
LDW280-16000-1121ASH-4
LDW280-16000-476ASH-4
LDW280M11156-2 (2 PLACES) SEE NOTE 12
LSC269-231-2
LSC270-717-7 NAS1133V4 (4) AN960C10L (4) MS21043-3 (4)
LSC269-228-4
LSC269-226-4
LSC269-258-2
LSC269-204-8(3)
LDW280-16000-1122ASH-4
LDW280-16000-455ASH-6
LDW280-16000-716ASH-8
LDW280-16000-456ASH-6
LSC269-226-6(5)
CC12H-6 NAS1133V2 AN960C10L MS21043-3
LSC269-234-19
LDW280-16000-715ASH-4
LDW280-16000-458ASH-2(REF)
LDW280-16000-453ASH-6
GB511J-3-3(2) AN960C10L MS21043-32
LSC269-218-4
AN833-2C(2) AN924-2C MS28778-2(2) (2 PLACES)
LDW360-51262-1 (D1)
LDW280-16000-477ASH-8
LDW280-16000-472ASH-4
GB511J-3-9 (2) AN960C10L MS21043-32(2) (2 PLACES)
LDW360-51262-3(REF)
LSC269-234-19
LSC269-255-2
LSC269-255-3
LDW280M11156-1 (2 PLACES) SEE NOTE 12
TA71GW.032592 (4) NAS1133V2 (4) AN960C10L (4) MS21043-3 (4)
LDW280-16000-719ASH-8(2)
LDW280-16000-828ASH-6
LDW280-16000-1992-ASH-2
LDW280-16000-1991 ASH-2
LSC270-819-9(2) GB511J-3-19 (4) AN960C10L (2) MS21043-3 (2) (2 PLACES) (SEE NOTE*13)
LSC270-712-1 GC12H-21 NAS1133V2 AN960C10L MS21043-3
LSC270-714-3 GB511J-3-13 (2) AN960C10L MS21043-3 (SEE NOTE 13)
LDW280-16000-471ASH-4
LSC270-721-1 GB511J-3-34 (3) AN960C10L (3) MS21043-3 (3)
LDW390-51070-1 LDW270P10000-1 GC5016-62-231 MS20995C20 (SEE NOTE *9).
LDW280-16000-713ASH-8
LSC269-110-12 PER LSP-14-17401
LDW360-51262-3
360-51262-3(REF)
LDW280-16000-712ASH-8
LDW270P10001-1(2)
LDW280-16000-1988 ASH-8
LDW280-16000-28205-4
LSC269-204-8
LDW280-16000-1987 ASH-8 (REF)
LDW280-16000-479ASH-8
LSC270-817-3 NAS1133V2(2) AN960C10L (2)
GC12H-8(2) NAS1133V2(2) AN960C10L (2) MS21043-3 (2)
LSC269-226-4
LSC269-227-4
LSC269-230-1 (2 PLACES)
LDW280-16000-1120ASH-4
LDW280-16000-470ASH-8
LDW270-51201-7 M
01/02
NAS 9-1100
CODE IDENT NO 26512
LDW270-51201
SH 5.00

4-4(5)

(A5) LSC269-226-4

LSC269-226-4

LSC269-234-19

LDW280-16000-715ASH-4

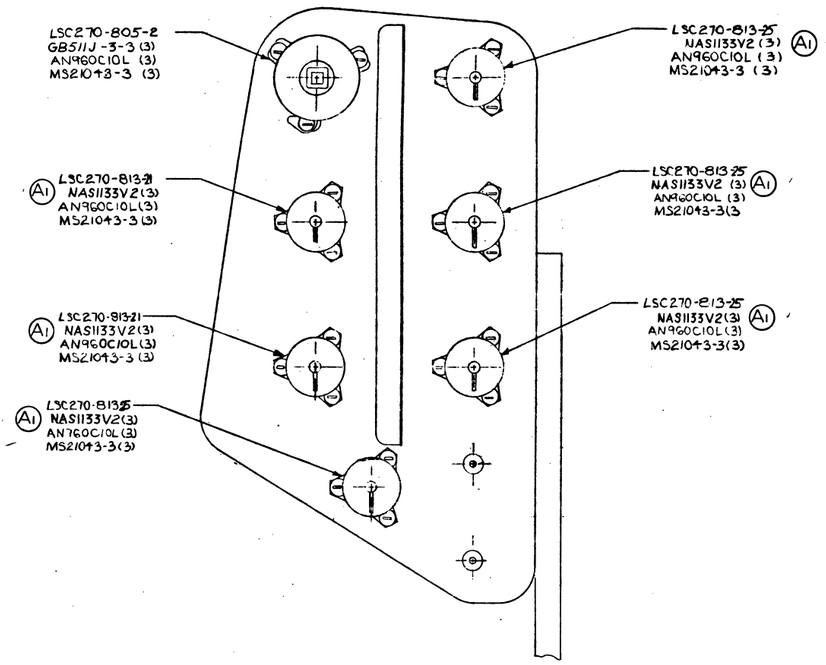
280-16000-458ASH-2(REF)

(A5) SC269-218-4

LDW360-51264-3 (D1)

W280-16000-477ASH-8

LDW280-16000-472ASH-4



MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY.	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .016 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 MIP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS [illegible] HOLES PER MIL-STD-10	
250 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
IRS[illegible]CTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ∛ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALLOY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

DWG SIZE 24 X 36.5

PRINTING INFO ONLY
FULL SIZE SHEET AREA (24 X 36)
1/2 SIZE SHEET AREA (1/4 OF FULL)

PRINT ZONE LINE

LDW270-51201P

LDW270-51201D

LDW280-16000-712ASH-8

LDW270P10001-1(2)

W280-28205-4

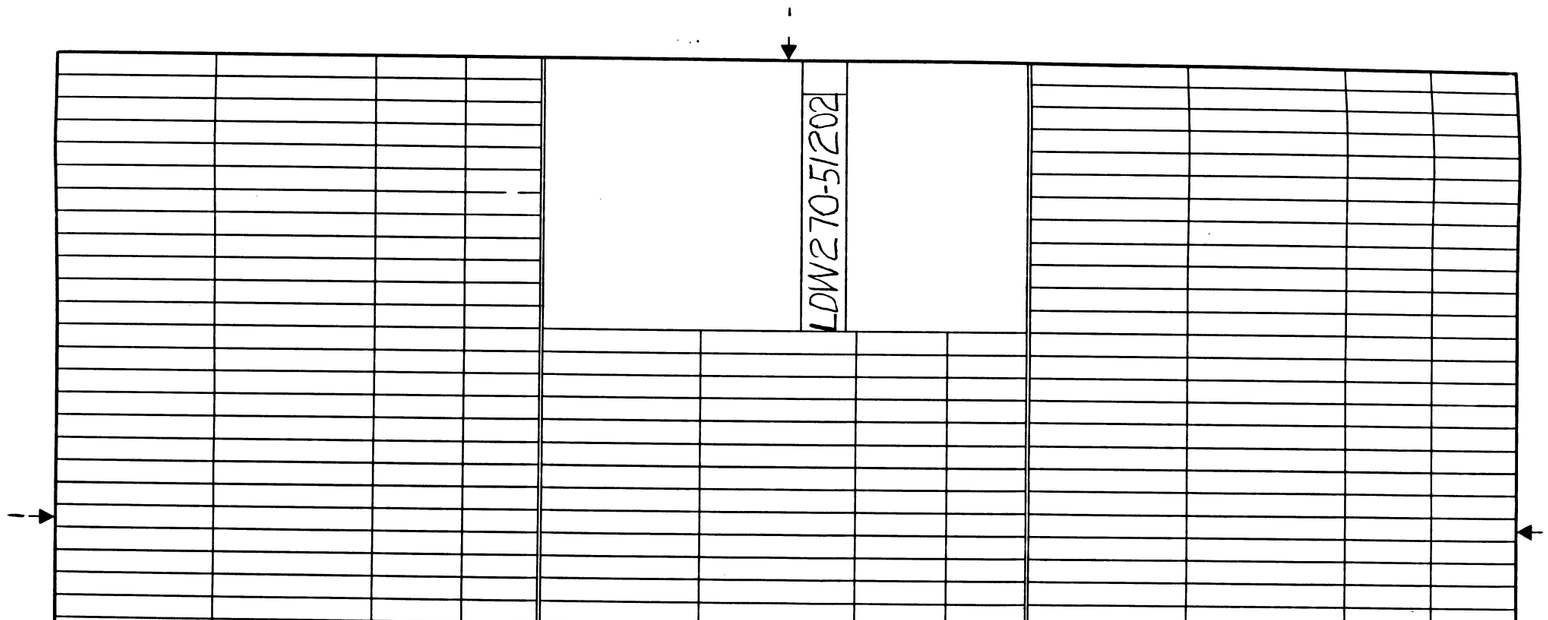
LDW280-16000-471ASH-8

02702 NAS 9-1100

CODE IDENT NO 26512	
LDW270-51201	SH 5.00

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L.I. NEW YORK			
LEM	SIZE J	CODE IDENT NO. 26512	LDW270-51201 D
MODEL OR END ITEM	SCALE 1:1	SHEET 5.00	

LDW270-51201 MODULE ASSEMBLY (OX)



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW270-52200	LEM2(32)	1 EA
LEM	LDW270-51200	LEM1(31)	1 EA
PART NO. LDW270-51202-1&2		GAEC SCH NO. 45	

3

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	200		300					
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	
LAST DASH NO. USED	-2

GRUMMAN REL INFO

PRIM NO.	1(1001)	
-463	MP17	PS 4/3

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS9-1100 | LINE ITEM 9 | DOCUMENTATION TYPE II

DRAWN BY	S HACK		
LAYOUT BY	J PAVLICA		
CHECKED BY	S HACK		
PROP			
STRUCT			
WEIGHTS		PROJ ENGR	
REL GROUP			

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

HELIUM TANK INSTL.
ASCENT PROPELLANT
PRESSURIZATION SUB-SYSTEM

SIZE	CODE IDENT NO.	
B	26512	LDW270-51202

SCALE NONE | SHEET 1.00 OF 300

ENG 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY		CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
			NAS509-10		NUT	STD PART						
1	1		MS21042L6		NUT							
✓	✓		MS20995C32		SAFETY WIRE							
			AN960D1016		WASHER							
1	1		AN960D616L		WASHER	STD PART						
1	1	01876	LDC270-711-1	S	HELIUM TANK	SEE NOTE2						
			LDW270-51202-2	E	TANK INSTL(RH)							
			LDW270-51202-1	E	TANK INSTL (LH)							
-2	-1											

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

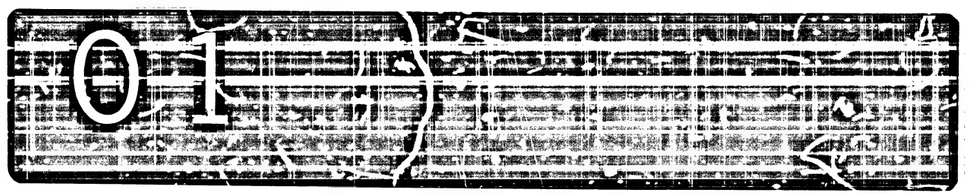
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW270-51202

SCALE NONE SHEET 2 OF 2

ENG 77.2 7-65



NAS 9-1100

LDW280-28434 (REF)

+X 253.50 (REF)

+X 246.219 (REF)

NAS 509-10
AN 960 D10-6
SEE NOTE 1

+X 253.530 (REF)

2. SAFETY WIRE PER MS33540 WITH MS20995C32 SAFETY WIRE

VIEW "B"-"B" ROTATED 34 3/4° COUNTERCLOCKWISE

MS21042L8
AN960D8L
SEE NOTE 1

+X 246.219 (REF)

VIEW "A"-A"

LDW270-51202-1
LDW270-51202-2

01 / 02 NAS 9-1100

LDW270-51202

LDW270-2P434 (REF)

-Y 17.06 (REF) FOR -1
+Y 17.06 (REF) FOR -2

-Y 5.509 (REF) FOR -1
+Y 5.509 (REF) FOR -2

B

55 1/4° (REF)

+X 246.213 (REF)

-Z 31.00 (REF)

B

MS21042L6
AN960D616L
SEE NOTE 1

-Z 39.123 (REF)

LDW270-7101-1

VIEW "B-B" ROTATED 34 3/4° COUNTERCLOCKWISE

MS21042L6
AN960D616L
SEE NOTE 1

LDW270-23434 (REF)

-Z 60.562 (REF)

+X 246.213 (REF)

A

A

+Y 20.50 (REF) FOR -1
+Y 20.50 (REF) FOR -2

LDW270-51202-1 HELIUM TANK INST'L (SHOWN)
LDW270-51202-2 HELIUM TANK INST'L (OPPOSITE)

02/02

NAS 9-1100

LDW270-51202

LDW270-51202

CODE IDENT 20512
LDW270-51202
SHEET 3.000

J 20512 LDW270-51202
3.000

THIS IS AN ORIGINAL DRAWING

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENGINEERING ORDER

DWG NO. 2DW270-51202 | EO NO. A1

CONTROL INFO NO. LM-5-964

ON-1 & -2
IN B/M. & FLD. IN VIEW B-B AN960 D1016 (1) 3/B 2 REQ'D.

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG

REASON FOR EO: NUT BOTTOMS BEFORE TIGHTENING ON FITTING.

DESCRIPTION OF EO: ON-1 & -2 IN VIEW B-B AN960D1016 (2) WAS (1) REQD.

GAEC EO RELEASE: FR

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-1 (31)	
		LM-2 (32)	

DRAWING CHANGE REQD: REVISE DWG | RECORD EO
DISPOSITION OF PARTS: REWORK | SCRAP

PRIORITY: C

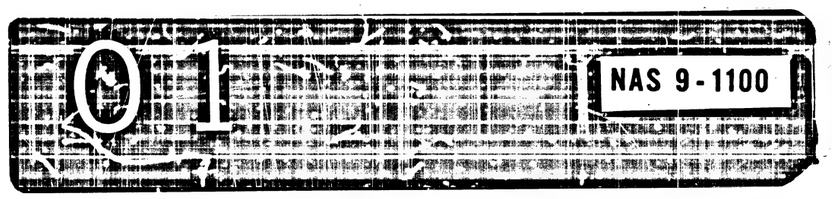
DRAWING TITLE: HELIUM TANK INSTL. AIS-PROP. PRESS SUB. SYS.

DRAWING NO.: LDW270-51202

EO NO.: A1

	APPROVED BY	DATE	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
	J. Parrott	11/3/66					11/3/66	11/10/66
1	PROP	11/3/66					11/3/66	11/3/66

ISSUED BY LIAISON J. JARVIS x 6452 SECTION PROP. GROUP NO. 270 PL 35



GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.2 REV 3-65 B

ENGINEERING ORDER

DWG. NO. LEO 270 | EO NO. 53

CONTROL INFO NO. LM270-1004

ADD NOTE * "BOND IN ACCORDANCE WITH FIGURE 7C OF LSP-14-13334" TO THE FOLLOWING DWG

DRAWING NUMBER	TITLE	EFFECTIVITY	CHANGE NO
LDW270-52100	SEE DWG	LM-2(32)	A8
-53100		LM-3(33)	A5
-54100		LM-4(34) THRU LM-15(45)	A4
-53010		LM-3(33)	A3
-54010		LM-4(34) THRU LM-15(45)	A2
LDW270-52306	SEE DWG	LM-2(32) THRU LM-15(45)	A4

ADD NOTE ** "BOND IN ACCORDANCE WITH FIGURE 7G OF LSP-14-13334" TO THE FOLLOWING DWG.

LDW270-52304	SEE DWG	LM-2(32)	A5
-53304		LM-3(33)	C4
-54304		LM-4(34) THRU LM-15(45)	A8
-52305		LM-2(32)	A1
-53305		LM-3(33)	A1
-54305		LM-4(34) THRU LM-15(45)	A1
LDW270-52309	SEE DWG	LM-2(32) THRU LM-15(45)	B3

ADD NOTE *** "BOND IN ACCORDANCE WITH FIGURE 7A & 7G OF LSP-14-13334" TO THE FOLLOWING DWG

LDW270-52200	SEE DWG	LM-2(32)	A1
LDW270-53200	SEE DWG	LM-3(33)	A2
LDW270-54200	SEE DWG	LM-4(34) THRU LM-15(45)	A2

ADD NOTE ⊗ "BOND IN ACCORDANCE WITH FIGURE 7C & 7G OF LSP-14-13334" TO THE FOLLOWING DWG

-52201	SEE DWG	LM-2(32)	B3
-53201		LM-3(33)	B3
-54201		LM-4(34) THRU LM-15(45)	B1
-52310		LM-2(32) & LM-3(33)	A6
LDW270-54310	SEE DWG	LM-4(34) THRU LM-15(45)	A1

ADD NOTE ◆ "BOND IN ACCORDANCE WITH FIGURE 7F OF LSP-14-13334" TO THE FOLLOWING DWG

LDW270-52302	SEE DWG	LM-2(32) THRU LM-15(45)	A3

ADD NOTE ⊡ "BOND IN ACCORDANCE WITH FIGURE 12 OF LSP-14-13334" TO THE FOLLOWING DWG

LDW270-53202	SEE DWG	LM-3(33) THRU LM-15(45	A2

	DWG NO	CHG NO
ADD NOTE △ "BOND IN ACCORDANCE WITH FIGURE 12 OF LSP-14-13334, EFF LM-2".	LDW270-51202	A2
ADD NOTE ▽ "BOND IN ACCORDANCE WITH FIGURE 12 OF LSP-14-13334, EFF LM-2 THRU LM-15".	LDW270-23308	B3
ADD NOTE ▼ "BOND IN ACCORDANCE WITH FIGURE 7C OF LSP-14-13334, EFF LM-2".	LDW270-51010	C9
ADD NOTE ▲ "BOND IN ACCORDANCE WITH FIGURE 7C & 7G OF LSP-14-13334, EFF LM-2 THRU LM-15".	LDW270-51453	E1

(MANUFACTURING NOTE) REWORK OF LM2 WILL NOT BE REQUIRED PROVIDED THE REQUIREMENTS OF PARAGRAPH 4.2 OF LSP-14-13334 ARE COMPLIED WITH.

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD 1961

REASON FOR EO: UPDATE DRAWINGS TO CURRENT BONDING REQUIREMENTS

DESCRIPTION OF EO: ADDED NOTES *, **, ***, ⊗, ◆, ⊡, △, ▽, ▼, ▲. (NEXT AVAILABLE NO)

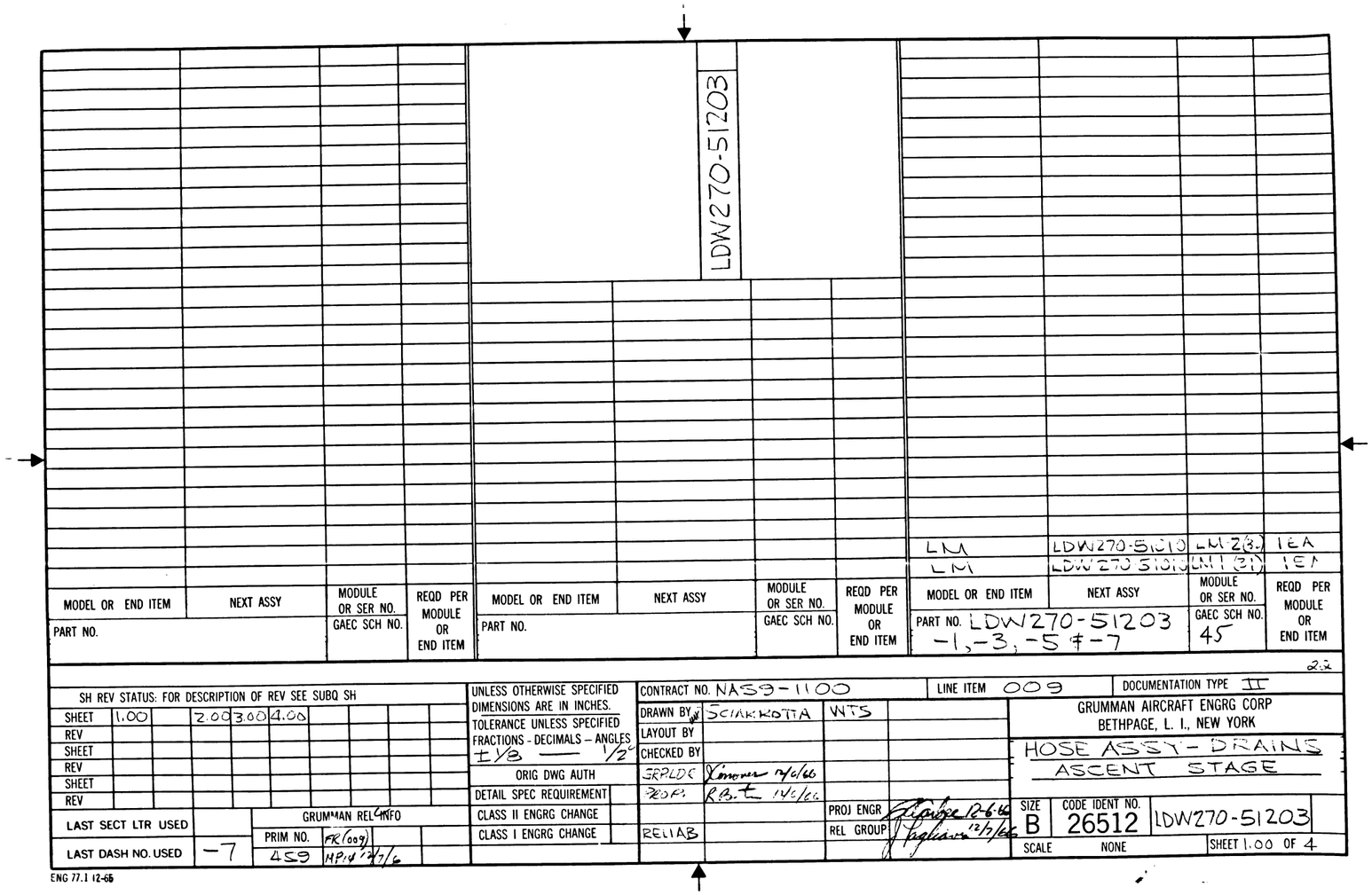
GAEC EO RELEASE: JK 8/4/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	DATE	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
LM		NOTED		✓		✓				—	—	8/3/67	—	—	8/3/67

PRIORITY: C | DRAWING TITLE: NOTED ABOVE | DRAWING NO.: LEO 270 | EO NO.: 53

ISSUED BY W KUTNER X1611 8/2/67 SECTION PROPULSION GROUP NO. 345 PL 25

NAS 9-1100



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW270-51010	LM 2(3)	1 EA
LM	LDW270-51011	LM 1(2)	1 EA
PART NO. LDW270-51203 -1,-3,-5 & -7		GAEC SCH NO. 45	

2.2

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00		2.00	3.00	4.00				
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	
LAST DASH NO. USED	-7

GRUMMAN REL INFO
PRIM NO. FR(009) 459
HP:14 12/7/66

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/8 — 1/2°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS9-1100 LINE ITEM 009 DOCUMENTATION TYPE II

DRAWN BY	SCIAKOTTA	WTS	
LAYOUT BY			
CHECKED BY			
STRUC	[illegible] 12/6/66		
PROP	R.B. [illegible] 12/6/66		
RELIAB		PROJ ENGR	[illegible] 12-6-66
		REL GROUP	[illegible] 12/7/66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

HOSE ASSY - DRAINS
ASCENT STAGE

SIZE	CODE IDENT NO.	
B	26512	LDW270-51203

SCALE NONE SHEET 1.00 OF 4

ENG 77.1 12-66

01

NAS 9-1100

QTY PER ASSEMBLY					CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
2	1		2			GE510F-6-45	E	HOSE FITTING	GRUM. STD						
	1	1				GE510F-6-90	E	HOSE FITTING	↕						
		1				GF503H-6	E	HOSE FITTING	↕						
1	1		1			GH510L-60..0	E	HOSE, TEFLON	↕						
		1				GH510L-6-0104	E	HOSE, TEFLON	GRUM. STD						

NOTES:

1. LENGTHS ARE APPROXIMATE, EXACT LENGTHS TO BE DETERMINED AT INSTALLATION AND ENGINEERING TO BE INFORMED.
2. ANGULAR ORIENTATION IS TO BE DETERMINED AT INSTALLATION AND ENGINEERING TO BE INFORMED.
3. FABRICATION OF -1, -3, -5 & -7 HOSE ASSYS SHALL BE IN ACCORDANCE WITH LSP-14-17102.
4. OPERATING PRESSURE 100 PSI
5. -1, -3, -5 & -7 HOSE ASSYS ARE VIBRATION QAULIFIED BY SIMILARITY TO LDW270-51458 HOSE ASSY'S. LDW270-51458 HOSE ASSYS ARE TESTED TO LM VEHICLE VIBRATION LEVELS.
6. ALL HOSE ASSYS SHALL BE LEAK CHECKED AT 200±5 PSIG AT ROOM TEMPERATURE FOR 3 TO 5 MINUTES, ANY EVIDENCE OF LEAKAGE OR MALFUNCTION WILL BE CAUSE FOR REJECTION.

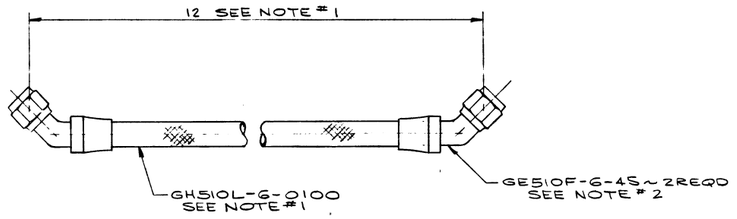
GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-51203	
SCALE ——			SHEET 3.00

ENG 73.1 6-64

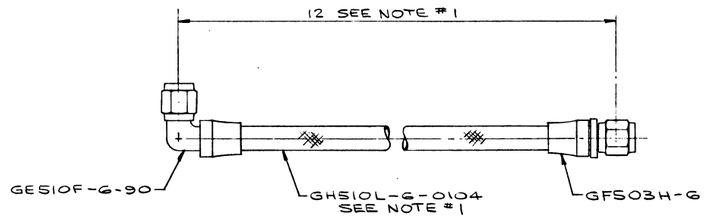
01

NAS 9-1100

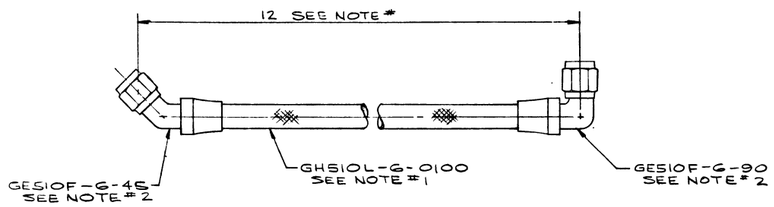
LDW270-5I203



-1 HOSE ASSY (FUEL)
-7 HOSE ASSY (FUEL)



-3 HOSE ASSY (FUEL)



-5 HOSE ASSY (FUEL)

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

PART NUMBER
AND ALL OTHER MARKINGS
IN REGION MARKED
USE BOTH SIDES IF NECESSARY.

FILLET AND INSIDE CORNER
RADII TOLERANCES
.016R TO .062R ± .010
.063R TO .250R ± .015
OVER .250R ± .030

DEPTH SHOWN FOR TAPPED
HOLES IS FULL THDS. 2.3 MIN. THDS.
BEYOND PERMISSIBLE

EXTERNAL THREAD LENGTH
SHOWN INCLUDES
2 IMPERFECT THREADS MAX.

DO NOT CADMIUM PLATE & PAINT
HOLES OR SURFACES MARKED
WITH DOUBLE ASTERISK.

MISMATCH STEP OF ± .005
PERMISSIBLE DUE TO CHANGE
OF CUTTERS AT INSIDE
INTERSECTING SURFACES.

DIAMETERS MARKED
MUST BE CONCENTRIC WITHIN
FULL INDICATOR
READING

HOLES MUST BE KEPT FREE OF
CHROME PLATING SOLUTION.

ALL DIMENSIONS SHOWN TO BE MET
AFTER CADMIUM PLATING.
THICKNESS OF PLATE .0003 MIN
TO .0005 MAX. MIN THICKNESS TO
BE .0002 ON THREADED AREAS.
NO ALLOWANCES FOR PLATING IN
HOLES

125 SURFACE ROUGHNESS
INCLUDING REAMED HOLES
PER MIL-STD-10

200 FOR ALL DRILLED HOLES

REMOVE ALL BURRS
BREAK ALL EDGES .015-.031

INSPECTION INFORMATION
MINIMUM PERMISSIBLE
AVERAGE EDGE DISTANCE
MARKED IS

SYMBOL ✓ DENOTES SURFACE
TO BE MACHINED

UNLESS OTHERWISE SPECIFIED
TOLERANCE ON FLANGES IS ± 1/32

LENGTHS OF AN, NAS & MS AL ALY
RIVETS SHORTER THAN 1 INCH ARE
NOT SPECIFIED

TOLERANCE ON LOFTED
DELINEATIONS IS

	GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK		
LM	SIZE D	CODE IDENT NO. 26512	LDW270-5I203
MODEL OR END ITEM	SCALE 1/1		SHEET 4 OF 5

DWG 753 6-64

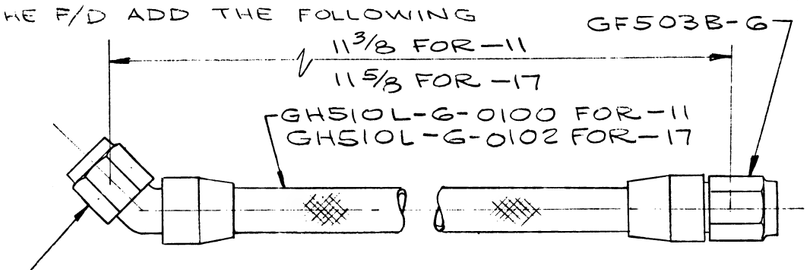
NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENG 32.2 REV 3-65 **ENGINEERING ORDER**

DWG. NO. LDW270-51203 | EO NO. A1
CONTROL INFO NO. LM270-770

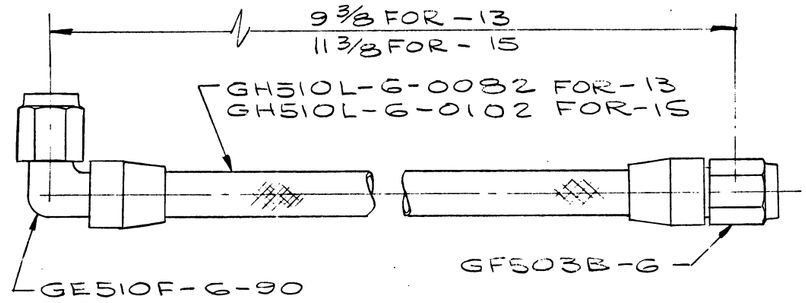
IN THE F/D, B/M & M/B DELETE -1,-3,-5 & -7 REPLACE WITH -11,-13,-15 & -17 RESPECTIVELY, CHG ART WORK & RELATED INFO.

IN THE F/D ADD THE FOLLOWING



-11 HOSE ASSY (FUEL)

-17 HOSE ASSY (FUEL)



-13 HOSE ASSY (FUEL)

-15 HOSE ASSY (FUEL)

PRE-THERMAL SHLD FINAL INSTAL.

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG		DESCRIPTION OF EO	GAEC EO RELEASE
						IN THE F/D, B/M & M/B DELETE -1,-3,-5 & -7 REPLACE WITH -11,-13,-15 & -17 RESPECTIVELY, CHG ARTWORK & RELATED INFO.	12/14/66

REASON FOR EO LCR 729
MOCK-UP CONFIGURATION DIFFERS FROM ORIGINAL CONCEPT

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM		LM-1 (31)	
		LM-2 (32)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	DATE	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
			✓		12/13/66		12/13	—	—	12/13
			1	PROP		SUPPORT				

PRIORITY: C
DRAWING TITLE: HOSE ASSY - A/S - DRAIN LINES
DRAWING NO.: LDW270-51203
EO NO.: A1

ISSUED BY S. SCIARROTTA x1471 SECTION PROPULSION GROUP NO. 345 PL 35

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-51203 | EO NO. A2
CONTROL INFO NO. LM 270-777

*DESCRIPTION OF E.O.

IN THE NOTES SHT 3.00 DELETE NOTE #2, CHG. NOTE #3 & #5 TO READ: "-11, -13, -15 & -17" WAS: "-1, -3, -5 & -7" & TO NOTE #6 ADD "(HYDROSTATIC TEST)" SO AS TO READ:

6. ALL HOSE ASSYS SHALL BE LEAK CHECKED AT 200 ± 5 PSIG AT ROOM TEMPERATURE FOR 3 TO 5 MINUTES, ANY EVIDENCE OF LEAKAGE OR MALFUNCTION WILL BE CAUSE FOR REJECTION (HYDROSTATIC TEST).

ADD NOTE ** (** USE NEXT AVAILABLE NO.)

** IF GE510F-6-90, GE510F-6-45, GF503B-6, GH510L-6-0100, GH510L-6-0102 & GH510L-6-0082 ARE NOT AVAILABLE USE GF503AA-6, GF503AB-6, GF503P-6, GH510AM-6-0100, GH510AM-6-0102 & GH510AM-6-0082 RESPECTIVELY AS ALTERNATES.

CE 2 (77)

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG

REASON FOR EO: LCR 729 — ORIGINAL PARTS NOT AVAILABLE

DESCRIPTION OF EO: * SEE ABOVE

GAEC EO RELEASE: 8 KE 1407

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-1 (31)	
		LM-2 (32)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO | REWORK | SCRAP
DISPOSITION OF PARTS: NONE
APPROVED BY: M Dankenbring — DATE: 11/30/66
PEOP | SUPPORT | RELIAB GROUP
GROUP LEADER: F. J. C. — 12/1/66
STRESS GROUP: [illegible] — 12/5/66
LIAISON ENGRG: [illegible]
PROJ ENGRG: [illegible] — 11/9/66
GOVT: 1/9/67

PRIORITY: C
DRAWING TITLE: HOSE ASSY-DRAINS A/S
DRAWING NO.: LDW270-51203
EO NO.: A2

ISSUED BY S. SCIARROTTA 12-30-66 × 1471 SECTION PROPULSION GROUP NO. 345 PL 35

01

NAS 9-1100

C

ENG 22.1 REV 3-66

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-51203 | EO NO. A3
CONTROL INFO NO. LM270-919

* {IN THE M/B, SHT 1.00, ON -11, -13, -15 & -17 DELETED LM2 EFFECT.

DETAIL SPEC REQ		CL II ENGRG CHG	√	CL I ENGRG CHG		LCD19-1572	5

REASON FOR EO: CHG DRAIN LINES TO AL. ALY. LINES

DESCRIPTION OF EO: SEE ABOVE *

GAEC EO RELEASE: C

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	'	LM-2 (32)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: REWORK | SCRAP ✓

APPROVED BY	RD							
DATE	7/1/67			7/7/67	7/24/67		7/27/67	7-27-67
	PROP	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	DATE

PRIORITY: C

DRAWING TITLE: HOSE ASSY - DRAINS ASCENT STAGE

DRAWING NO.: LDW270-51203

EO NO.: A3

ISSUED BY S. SCIARROTTA x1471 SECTION PROPULSION GROUP NO. 345 PL 25

01

NAS 9-1100

LDW270-51206 B

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
J	1	1.1.10, 2, 9,						EO A1	ADDED SHEET 1.10, SHEET 10F5 WAS SHEET 10F4 IN FIELD OF DWG & B/M. FOR -1, -3, -5 & -7 CHANGED H'DWARE. R500-4 WAS: R505-9 & R3904 CC-1 WAS: R3904-1CC	LTA-8 LEM-1	✓		J CIMINO 7-9-66		X
	2	1,1.10, 3 4						EO A2	IN FIELD OF DWG SHEET 9:00 ADDED CALLOUTS IN THE NOTES SHEET 3:00 ADDED NOTE 6 ON SHEET 1:00 ADDED EFFECT FOR -1-3 & -5	LTA-8 LEM-1 & TEST	NOT	REQD S.J.			
	3	1,1.10							CHANGED COML. CALLOUTS TO GAEC VENDOR APPROVED EQUIV.	NOT REQD	NOT	REQ'D	FOSTER 7-20-66 JF		
	1	1.10 & 3.00							ON SH 2.00 ADDED "SEE NOTE 7." ON SH 3 ADDED NOTE 7	NOT REQD	NOT	REQD			
D	2	1.00							ON SH 1.00 NEXT ASSY FOR -7 LEM-1 EFF., WAS LDW280-28350 SHOULD BE LDW280-51350	LEM-1					
	3	2.00							ON SH 2.00 ADDED GS506B-4 SOCKET 1EA ON -1, -3, -5 & -7. GE510F-4-45 ELBOW 1EA ON -5 & 7 GE510F-4-90 ELBOW 1EA ON -1 & -3. GH510L-4-0121 1EA ON -1 & -3 WAS GH510L-4-0126 GH510L-4-0154 ON -5 WAS GH510L-4-1067 GH510L-4-0146 ON -7 WAS GH510L-4-1061	LTA-8 LEM-1 VIBRATION TEST	✓		D 8-23-66 NO L. ARMANJO		
	4	3.00 4.00							ON SH 4: GE510F-4-90 WAS R4200 CC-4-90 GE510F-4-45 WAS R4200CC-4-45. GS506B-4 WAS R390 4CC-1. GH510L-4.0121, GH510L-4-0146 (ON-7) & GH510L-4-0154 (ON-5) WAS R500-4, ADDED "SEE NOTE 7", 2 PLACES (B)						

CHG APPROVED	LTR	GROUP LDR	VEH DES INT	PROP	RELIABILITY
	A				
	B				

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51206	R

SCALE NONE SHEET 1.10

ENG 77.16 3-66

NAS 9-1100

| | | |

NOTES:

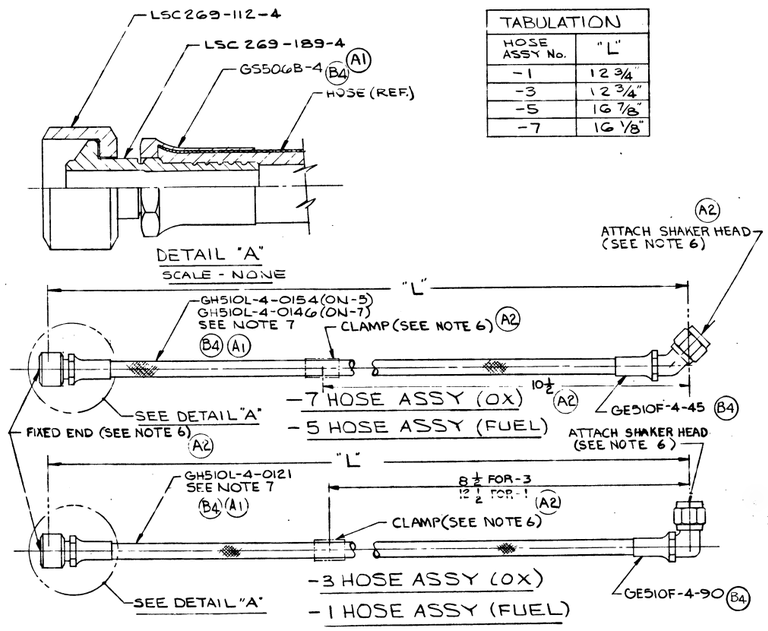
1. FABRICATION OF -1, -3, -5, & -7 HOSE ASSY'S SHALL BE IN ACCORDANCE WITH LSP-14-17102.
2. ALL HOSE ASSY'S SHALL BE LEAKED CHECKED AT 500±5 PSIG AT ROOM TEMPERATURE FOR 3 TO 5 MINUTES, ANY EVIDENCE OF LEAKAGE OR MALFUNCTION WILL BE CAUSE FOR REJECTION.
3. OPERATING PRESSURE: 260 PSI FOR -1, -3, -5, & -7 HOSE ASSY'S.
4. COMMERCIAL PART: SEE SPEC. CONTROL DRAWINGS BEFORE ORDERING.
5. CLEAN COMPONENTS PER LSP-14-7072.
6. ONE EACH OF -1, -3 & -5 HOSE ASSY TO BE USED FOR VIBRATION TEST IN ADDITION TO MEETING THE REQUIREMENTS OF LSP-19-17102. VIBRATION TEST - THE ASSY SHALL BE INSTALLED ON THE VIBRATION EQUIPMENT IN THE POSITION SIMULATING THE INSTALLATION ON THE LEM VEHICLE, SEE F/D, ONE END TO BE FIXED, CLAMPED & THE OTHER END, WHICH IS THE ENGINE INTERFACE, FIXED TO THE SHAKER HEAD & VIBRATED FOR ONE SWEEP 5-2000-5 CPS AT ONE OCTAVE PER MINUTE PER AXIS IN EACH OF THREE MUTUALLY PERPENDICULAR AXES. THE LINE SHALL BE PRESSURIZED WITH WATER TO THE OPERATING PRESSURE & THE VIBRATION LEVELS SHALL BE 5-56 CPS 0.125 DOUBLE AMPLITUDE 56-2000 CPS, 20g's.
7. HOSE LENGTHS ARE APPROXIMATE, TRUE LENGTHS TO BE DETERMINED UPON FABRICATION AND ENGINEERING TO BE INFORMED.

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51206	B
SCALE —		SHEET 3.00	

ENG 73.1 6-64

01 7/16 NAS 9-1100



TABULATION	
HOSE ASSY No.	"L"
-1	12 3/4
-3	12 3/4"
-5	16 7/8"
-7	16 7/8"

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.

PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.

FILLET AND INSIDE CORNER RADII TOLERANCE:
.015 TO .062R ± .010
.063R TO .250R ± .015
OVER .250R ± .030

DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.

EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.

DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE / .15SK.

MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.

DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING

HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.

ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES

125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10

250 FOR ALL DRILLED HOLES

REMOVE ALL BURRS. BREAK ALL EDGES .015-.031

INSPECTION INFORMATION MINIMUM PERMISSIBLE RIVERSIDE EDGE DISTANCE MARKED IS

SYMBOL ⌐ DENOTES SURFACE TO BE MACHINED

UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32

LENGTHS OF AN, MAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.

TOLERANCE ON LC TED DELINEATIONS IS

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
C	26512	LDW270-51206	B

LEM — MODEL OR END ITEM — SCALE 1/1 — SHEET 4.03

LDW270-51206B

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW270-51206		EO NO. C/
CONTROL INFO NO. LM270-784		

** IN THE NOTES SHT 3.00 CHG NOTE 2 TO READ
"2. ALL HOSE ASSYS SHALL BE LEAK CHECKED AT 500±5 PSIG AT ROOM TEMPERATURE FOR 3 TO 5 MINUTES, ANY EVIDENCE OF LEAKAGE OR MALFUNCTION SHALL BE CAUSE FOR REJECTION (HYDROSTATIC TEST)."
WAS:
"2. ALL HOSE ASSYS SHALL BE LEAKED CHECKED AT 500±5PSIG AT ROOM TEMPERATURE FOR 3 TO 5 MINUTES, ANY EVIDENCE OF LEAKAGE OR MALFUNCTION WILL BE CAUSE FOR REJECTION."
& ADD NOTE * (* USE NEXT AVAILABLE NOTE NUMBER).
IN THE M/B SHT 1.00 DELETE "VIBRATION TEST" EFFECT. FOR -1,-3 &-5.

* "-1,-3,-5 &-7 HOSE ASSYS ARE VIBRATION QUALIFIED BY SIMILARITY TO LDW270-51458 HOSE ASSYS. LDW270-51458 HOSE ASSYS ARE TESTED TO LM VEHICLE VIBRATION LEVELS."

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG

REASON FOR EO: UPDATE INFORMATION, & VIBRATION TEST NOT REQD

DESCRIPTION OF EO: SEE ABOVE **

GAEC EO RELEASE: D 12 1/14/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA-8 (18)	
		LM-1 (31	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
		—	—

APPROVED BY: DATE 1/11/67; G; PROP; SUPPORT; RELIAB GROUP; GROUP LEADER 1/11/67; STRESS GROUP 1/11/67; LIAISON ENGRG; PROJ ENGRG 1/12/67; GOVT 1/12/67

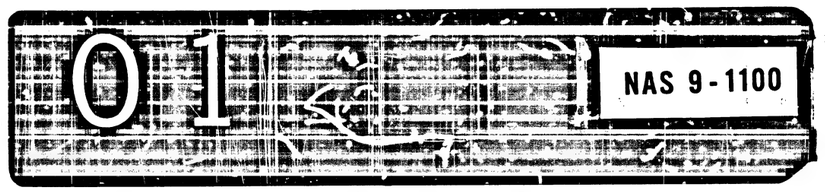
PRIORITY: C

DRAWING TITLE: HOSE ASSY-A/S ENGINE LINES

DRAWING NO.: LDW270-51206

EO NO.: C/

ISSUED BY S. SCIARROTTA X1471 SECTION PROPULSION GROUP NO. 345 PL 35



C

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-51206 | EO NO. C2
CONTROL INFO NO. LM270-878

* {IN THE M/B SHT. 1.00 DELETE REQMT OF LM-1 FROM -1, -3, -5 & -7 HOSE ASSYS

DETAIL SPEC REQ | CL II ENGRG CHG ✓ | CL I ENGRG CHG | LCD 19-1375

REASON FOR EO: -1, -3, -5 & -7 ASSYS ARE BEING REPLACED BY LDW270-52206-1; 3; 5 & 7

DESCRIPTION OF EO: SEE ABOVE *

(R) GAEC EO RELEASE: C — 4/25/67

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-1 (31)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO | REWORK | SCRAP ✓

DISPOSITION OF PARTS: APPROVED BY RB | DATE 4/24/67 | 6 PROP | SUPPORT | RELIAB GROUP

GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
4/25/67	4/26/67		4/24/67	4/26/67

PRIORITY: C

DRAWING TITLE: HOSE ASSY - A/S: ENGINE LINES

DRAWING NO.: LDW270-51206

EO NO.: C2

4-25-67 ISSUED BY S. SCIARROTTA

SECTION PROPULSION GROUP NO. 345 PL 25

Q1

NAS 9-1100

LDW270-51207B

LM	LDW280-28350	LTA8(12)	1				
LM	LDW280-51350	LM-1(31)	1				
LM	LDW280-25562	PA-1(47)	1				

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
PART NO.			

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
PART NO.			

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM
PART NO. LDW270-51207-1		45	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00	1.10	2.00	3.00	4.00					
REV	B	B	B	B	B					
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED	C
LAST DASH NO. USED	-1

GRUMMAN REL°INFO B
PRIM NO. (X(009)
450 LME-30 10/31/67

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS9-1100 LINE ITEM 009 DOCUMENTATION TYPE II

DRAWN BY	SCIARROTTA 6-7-66	STRUCT	
LAYOUT BY		WEIGHTS	L. Garcia 6/14/66
CHECKED BY			
GRP.LDR.	M. Lebowitz 6-8-66		
PROP.	H. Dawbridge 6/9/66		
V.D.I.		PROJ ENGR	15 June
RELIAB.		REL GROUP	6-18-66
STRUCT	6/10/66		

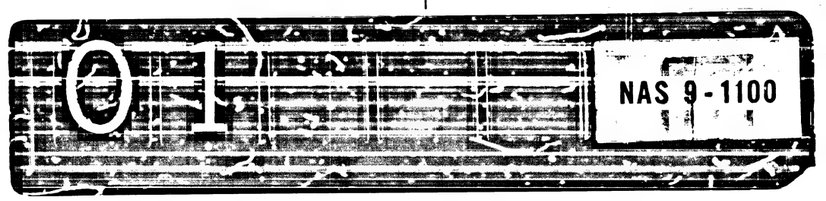
(R) GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

HOSE ASSY - A/S
ACTUATOR VALVE LINE

SIZE	CODE IDENT NO.	
B	26512	LDW270-51207 B

SCALE NONE SHEET 1.00 OF 5

ENG 77.1 12-65



REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A1	1	1.10 & 3						EO A1	IN THE NOTES SH 3.00 CHGD NOTE #1 TO READ: ONE -1 HOSE ASSY IS TO BE USED FOR GAEC VIBRATION TEST IN ADDITION TO MEETING THE REQUIREMENTS OF MIL-H-25579 DATED 9, JANUARY, 1963 VIBRATION TEST - THE ASSY SHALL BE: ETC. WAS: -1 HOSE ASSY TO MEET THE REQUIREMENTS OF MIL-H-25579 DATED 9, JANUARY, 1963 & IN ADDITION THE FOLLOWING VIBRATION REQUIREMENTS. THE ASSY SHALL BE: ETC. ON SH 1.00 ADDED VIBRATION TEST EFF. FOR - 1. ADDED SH 1.10 SH 1.00 OF 5 WAS SH 1.00 OF 4	LTA-8 LEM-1 & -2 & TEST	NOT	REQD	C. KRAMP 9-10-66		
	2	3 & 4						EO A2	IN THE NOTES SH 3.00 DELETE NOTE 4 & ADD NOTE 5 IN THE FLD SH 4.00 ON -1 HOSE ASSY CHANGED CALLOUT 2 PLACES TO READ " SEE NOTE 5" WAS: "SEE NOTE 4.	LTA-8(18) LEM-1(31) LEM-2(32)	✓				
B1	1	1.10 4.00	5D					E.O. B1	IN THE F/D SHT 4.00, VIEW A-A CHGD CALLOUTS TO .375 & .540 WAS: .375 REF & .540 REF. ADDED DIMS .025 - .030 (2 PLACES) & .085 - .092 R TYP. ALSO CHGD CALL OUT TO READ "(4) HOLES THRU, LOCATED WITHIN .010 INCH OF TRUE POSITION" WAS "DRILL #15 (.179-.185) DIA (4) HOLES THRU, LOCATED WITHIN .010 INCH OF TRUE POSITION (REF).	LTA-8(18) LM-1(31) LM-2(32)	✓		A. HENDRICKS 10-30-68		
	2	1.10 1.00, 3.00						E.O. B2	IN THE NOTES SHT 3.00 DELETE NOTE #1 & ADD NOTE #6. IN THE M/B SHT 1.00 DELETE "VIBRATION TEST" EFFECT.			✓			
	3	1.10 1.00					✓	LE0270-41 LCD 1124	ADDED PA-1 REQ.	PA-1(W5)	NOT	REQD			
	4	1.10 1.00					✓	LE0270-44 LCD 1124	REF: NOTED CHG ON LE0270-41. (B3) REVISED NEXT ASSY WAS LTM280-25504.	PA-1(47)					
	5	1.10 1.00					✓	E.O. B5 LCD19-1572	IN THE M/B ON -1 DELETED LM-2 (32) EFFECT.	LM-2(32)		✓	H.D.		

CHG APPROVED	LTR	GROUP LDR	55 ENGR	STRUCTURES	STRUCTURES	WEIGHTS	VEH DES INT	RELIABILITY				
	B											

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51207	B

SCALE NONE SHEET 1.10

ENG 77.16 3-66

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
J											
-1		LDW270-51207-1	E	HOSE ASSY							
1	00624	AE702101-1	E	HOSE, ASSY	COM'L PART						

CLEANLINESS LEVEL PER LSP-14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51207	B

SCALE NONE SHEET 2.00

ENG 77.2 7-65

NAS 9-1100

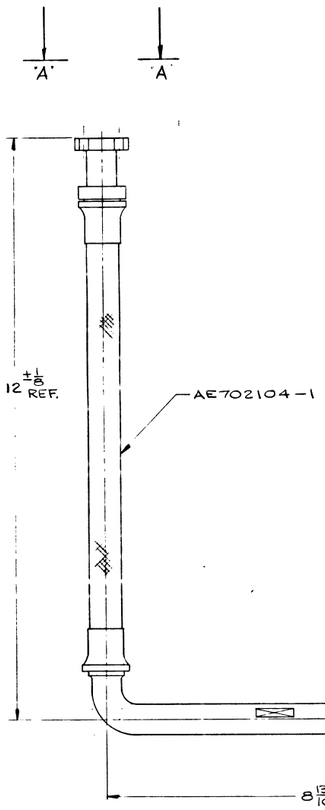
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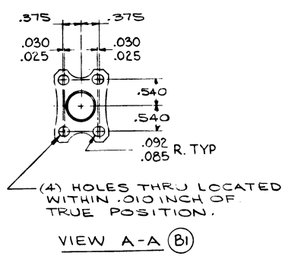
1. ONE -1 HOSE ASSY IS TO BE USED FOR GAEC VIBRATION TEST IN ADDITION TO MEETING THE THE REQUIREMENTS OF MIL-H-25579 DATED 9, JANUARY, 1963
   VIBRATION TEST —
   THE ASSY. SHALL BE INSTALLED ON THE VIBRATION EQUIPMENT IN THE POSITION SIMULATING THE INSTALL ON THE LEM VEHICLE (SEE F/D DETAIL C) ONE END SHALL BE FIXED BY BEING RIGIDLY ATTACHED AT THE CLAMP LOCATION AND THE OTHER END, WHICH IS THE ENGINE INTERFACE, FIXED TO THE SHAKER HEAD AND VIBRATED FOR ONE SWEEP FROM 5 - 2000 - 5 CPS AT ONE OCTAVE PER MINUTE PER AXIS IN EACH OF THREE MUTUALLY PERPENDICULAR AXES. THE LINE SHALL BE PRESSURIZED WITH WATER TO THE OPERATING PRESSURE AND THE VIBRATION LEVELS SHALL BE 5 TO 56 CPS 0.125 INCH DOUBLE AMPLITUDE 56-2000 CPS 20g's.
2. OPERATING PRESSURE 460 P.S.I.
3. ELECTRO-ETCH -1 HOSE ASSY LINE FUNCTION "ASF" PER LSP-14-4708.
4. ~~CLEAN PER LSP-14-7072 & PREPARE END FOR BRAZING (BRAZE SPEC -LSP-14-63063) MINIMUM LENGTH 3/4 INCH.~~
5. PREPARE END FOR BRAZING PER LSP-14-7062, MINIMUM LENGTH 3/4 INCH.
6. -1 HOSE ASSY IS VIBRATION QUALIFIED BY SIMILARITY TO LDW270-51458 HOSE ASSYS. LDW270-51458 HOSE ASSYS ARE TESTED TO LM VEHICLE VIBRATION LEVELS.

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK 3			
SIZE B	CODE IDENT NO. 26512	LDW270-51207	B
SCALE —		SHEET 3.00	

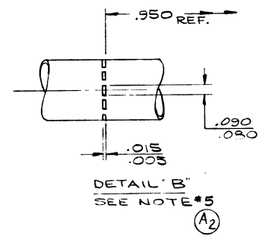
ENG 72.1 6-64

01 A
NAS 9-1100

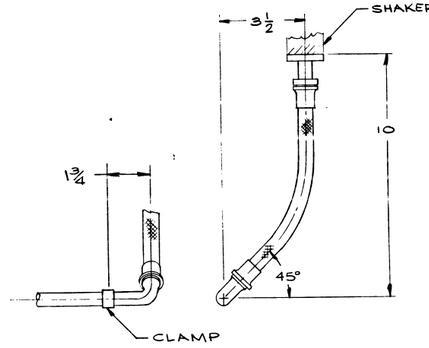




VIEW A-A (B1)



DETAIL 'B'
SEE NOTE *5
(A2)



DETAIL "C" (SEE NOTE #1)

-1 HOSE ASSY.

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
ETCH PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.	✓
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MFT AFTER CADMIUM PLATING. THICKNESS OF PLATE .0001 MIN TO .0005 MAX MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK R.E. EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL X DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED	
LENGTHS OF AL. NAS & MS AL ALY RIVETS SHOWN LESS THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

QTY	NAS 9-1100		
	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK		
LM	SIZE D	CODE IDENT NO. 26512	LDW270-51207 B
MODEL OR END ITEM	SCALE 1/1		SHEET 4 OF 5

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.	GAEC SCH NO.		

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.	GAEC SCH NO.		

MODEL OR END ITEM	NEXT ASSY	MODULF OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-51508	LEM-1 (3)	1
PART NO. LDW270-51300-1	GAEC SCH NO. 55		

6

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00	1.10	2.00	3.00						
REV	A	A	A	A						
SHEET										
REV										
SHEET										
REV										

		GRUMMAN REC INFO A		
LAST SECT LTR USED		PRIM NO.	(E6009)	
LAST DASH NO. USED	- 1	486	MP	7-11-66

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS — DECIMALS — ANGLES

ORIG DWG AUTH			
DETAIL SPEC REQUIREMENT			
CLASS II ENGRG CHANGE			
CLASS I ENGRG CHANGE			
	WEIGHT	L. Garcia 7/20/66	RELIABILITY

CONTRACT NO. NAS 9-1100 LINE ITEM 9 DOCUMENTATION TYPE II

DRAWN BY	P.A. CAPPELLI 6-17-66	RELIABILITY	7/21
LAYOUT BY			
CHECKED BY			
GR LDR A LEADER	D. Waldo J. Perotti 7/11/66		
PROP			
VDI	8-11-66		
PROJ ENGR			

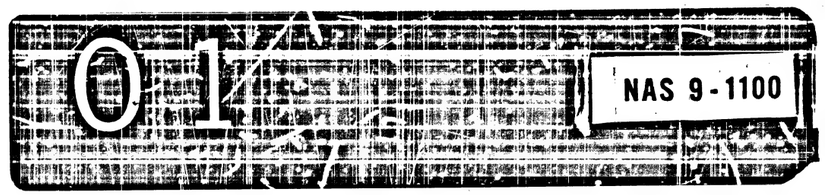
GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

INSTALLATION
PROP-HELIUM PRESSURIZATION
DESCENT STAGE-SUB-SYSTEM

SIZE	CODE IDENT NO.	
B	26512	LDW270 51300 A

SCALE NONE SHEET 1.00 OF 4

ENG 77.1 9-64



REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00, 1.10						E.O. A1	SHT. 1 OF 4 WAS 1 OF 3 ADDED SH. 1.10. CANCELLED BY E.O.A4	NOT REQ'D	NOT	REQ'D.	J. BRODA 9-15-66		
	2	1.10, 2.00, 3.00	3B					E.O. A2	ADDED "LSP" TO 14-0011. IN B/M & FLD. DWG. REMOVED LDW270-51303-3 & LDW270-51306-1. ADDED LDW270-25303-3 & LDW270-25306-1.	LEM-1	✓				
	3	1.10, 2.00						E.O. A3	IN B/M REMOVED "LDW270-51451-3. "DISC. CPL INSTL. WAS "EXPL. VALVE INSTL."	NOT REQ'D.	NOT	REQ'D.			
	4	1.10						E.O. A4	CANCELLED E.O. A1	LEM-1	✓				
	5	1.10, 2.00, 3.00	2B				✓	LE0270-11	IN B/M FOR -1 REMOVED LDW270-51451-1, -5, 7 & -13 INSTL'S. IN FLD. DWG. ADDED "REF" TO LDW270-51451-1, -5, -7 & -13 INSTLS.		NOT	REQ'D.			

CHG APPROVED	LTR	GROUP LDR	PROP	V D I	WEIGHTS	RELIABILITY
	A					

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51300	A

SCALE NONE SHEET 1. 10

ENG 77.16 3-66

01

NAS 9-1100

C.L.	QTY PER ASSEMBLY	PART NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
C	3	AN960D10L	E		WASHER	STD PART						
C	3	GB511J-3-2			BOLT	GRUMMAN STD						
K	1	LDW270-25306-1			EXPL. VALVE INSTL	SEE DWG.						
K	1	-51305-3			DISC. CPL. INSTL							
K	1	-51304-3			CHECK, RELIEF & EXPL. VALVE INSTL							
K	1	-51304-1			CHECK, RELIEF & EXPL. VALVE INSTL							
K	1	-25303-3			HEAT EXCH. INSTL							
K	1	-51302-1			TANK INSTL							
L	1	LDW270-51301-1			MODULE ASSY	SEE DWG						
K		LDW270-51300-1	E		INSTALLATION							
	-1											

CLEANLINESS LEVEL PER LSP-14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

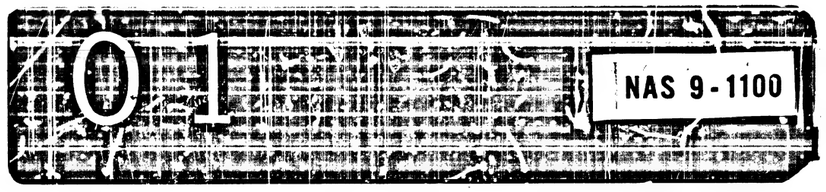
I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

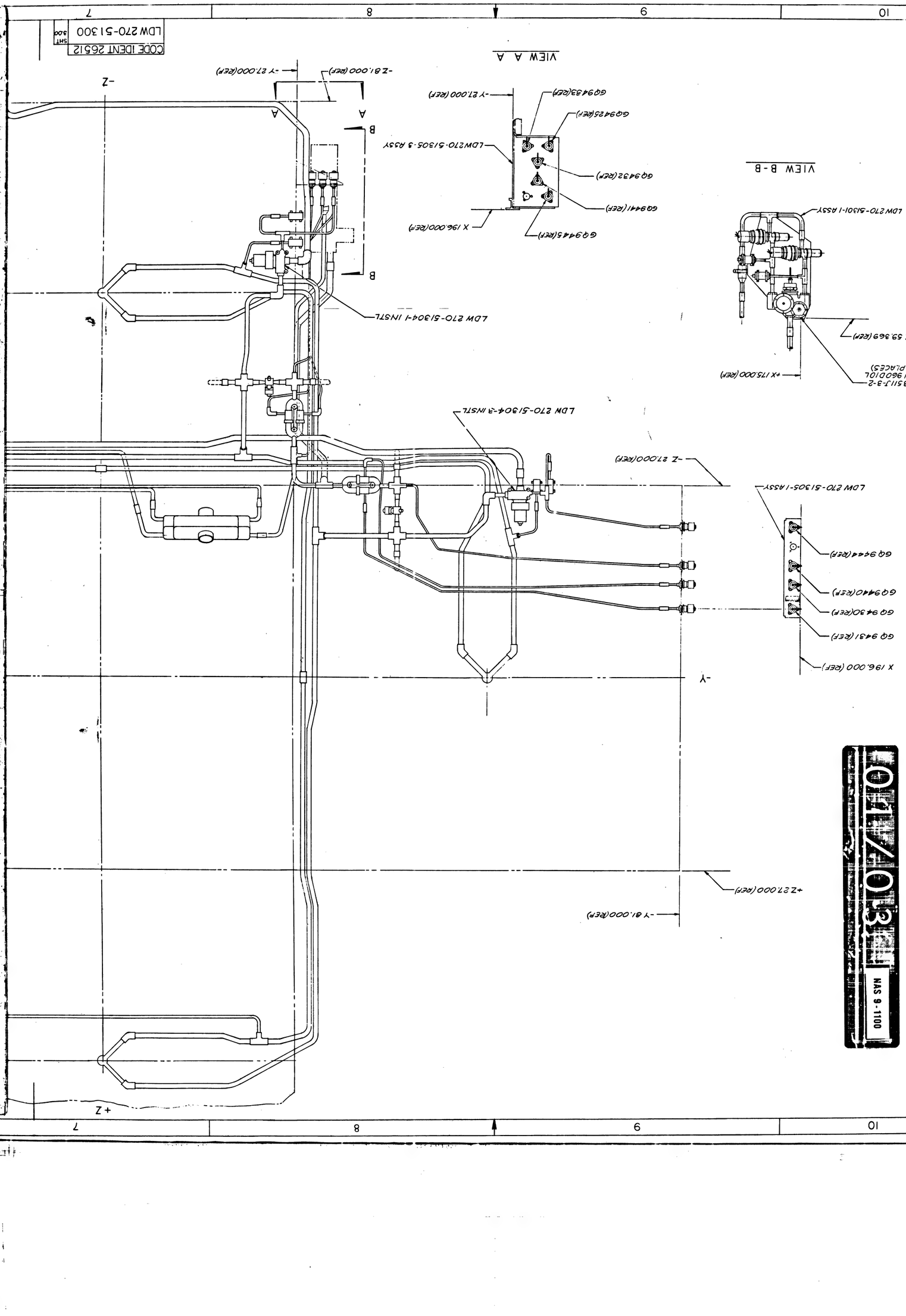
SIZE	CODE IDENT NO.		
B	26512	LDW 270-51300	A

SCALE NONE SHEET 2.00

ENG 77.2 5-64



CODE IDENT 26512	
LDW 270-51300	SHT 300



02403
NAS 9-1100

X 165.540(

X 196.000 (REF)

+Y

LDW280P1621B INSTL (REF)

+Y 81.000 (REF)

LDW 270-51302-1 INSTL

X 131.140 (REF)

GQ 9409 (REF)

GQ 9479 (REF)

LDW270-51451-7 INSTL (REF) (A5)

VIEW C-C

GQ 9405 (REF)

(A5) LDW270-51451-1 INSTL (REF)
GQ 9443 (REF)

LDW280P1621B INSTL (REF)

VIEW D-D

GQ 9442 (REF)

(A5) LDW270-51451-13 INSTL (REF)

C C

D D

+ +

NAS 9-1100

LDW 270-51303

MANUFACTURING OPERATIONS

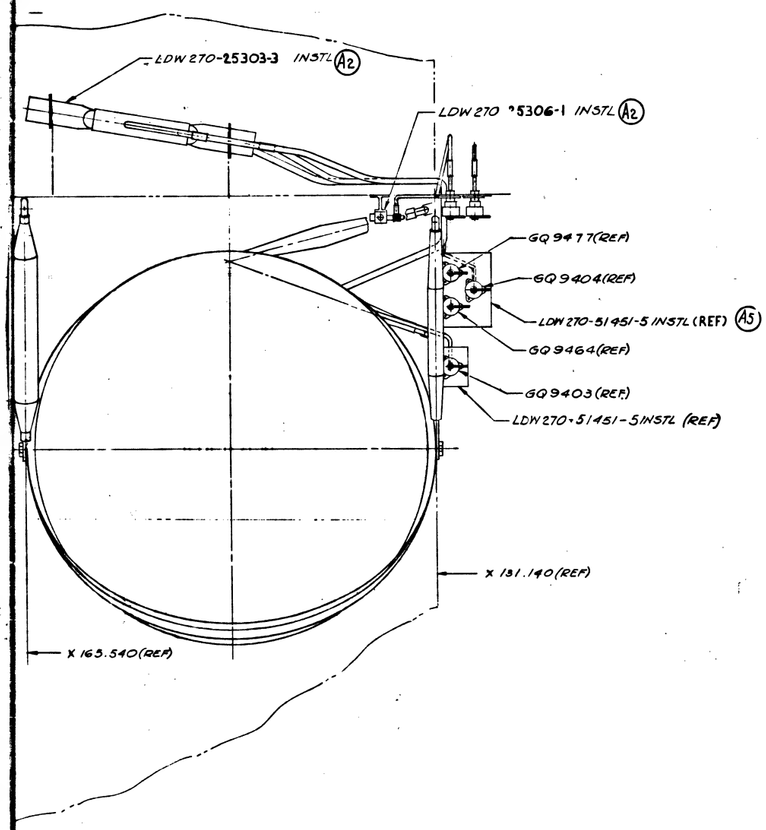
UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.

- PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED — USE BOTH SIDES IF NECESSARY.
- FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010; .063R TO .250R ± .015; OVER .250R ± .030
- DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.
- EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
- DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
- MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
- DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
- HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
- ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
- 125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
- 250 FOR ALL DRILLED HOLES
- REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
- INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
- SYMBOL DENOTES SURFACE TO BE MACHINED
- UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
- LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
- TOLERANCE ON LOFTED DELINEATIONS IS

DWG SIZE @ X 96

DRAWING REPRODUCIBLE FULL SIZE SHEET AREA 168 X 96 = 28.500 SQ. FT.
1/2 SIZE SHEET AREA 11/4 OF FULL = 7.125 SQ. FT.

FRONT TRIM LINE



LDW 270-51300A

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK		
LEM MODEL OR END ITEM	SIZE K	CODE IDENT NO. 26512	LDW 270-51300 A
	SCALE 1/4		SHEET 3.00

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO LDW270-51300 | EO NO. B1
CONTROL INFO NO. LM270-678

SH2: ON-1 INSTL, DELETE LDW270-25303-3

SH3: ZONE 3B, DELETE LDW270-25303-3
ADD LDW280-17388 (REF)

5

DETAIL SPEC REQ		CL II ENGRG CHG	X	CL I ENGRG CHG		DESCRIPTION OF EO	GAEC EO RELEASE
REASON FOR EO: EXISTING DWG IN CALLOUT HAS BEEN CANCELED (REF DCRF 323-918)						ON-1, DELETED LDW270-25303-3, ADDED LDW280-17388(REF)	FS 10-7-66

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY: DATE	PROP	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
LM		LM1(31)		✓		✓		10-3-66	PROP	—	—	10-3-66	—	—	10/6/66

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	INSTL- PROP HELIUM PRESSURIZATION DESCENT STAGE SUBSYSTEM	LDW270-51300	B1

ISSUED BY W.KUTNER X7427 N. GRAUL SECTION PROPULSION GROUP NO. 345 PL 35

01
NAS 9-1100

B

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LDW270-51300 | EO NO. B2
CONTROL INFO NO. LM270-824

SH 2: ON -1 INSTL, ADD LDW270-51310-1 MODULE ASSY, C.L. (L) & SEE NOTE #*.
FOR LDW270-51301-1 ADD, SEE NOTE #*.

SH 3: AT VIEW B-B, ZONE A9; TO CALLOUT ADD LDW270-51310-1 & SEE NOTE #*.
IN F/D, ADD NOTE #*, "LDW270-51310-1 MAY BE USED AS ALTERNATE FOR LDW270-51301-1."

* USE NEXT AVAILABLE NOTE NUMBER.

DETAIL SPEC REQ		CL II ENGRG CHG	X	CL I ENGRG CHG		LCR-19-1032	5

REASON FOR EO: TO PROVIDE ALTERNATE FOR LDW270-51301-1

DESCRIPTION OF EO: ON -1, ADDED LDW270-51310-1 AS ALTERNATE FOR LDW270-51301-1.

GAEC EO RELEASE: JK 3/14/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	DATE	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
LM		LM1(31)		✓		-1			3/13/67			3/13/67			3/13/67	3.14.67
								PROP	1							

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	INSTL-PROP. HELIUM PRESSURIZATION DESCENT STAGE - SUBSYSTEM.	LDW270-51300	B2

ISSUED BY A. HENDRICKS X1471 13 MAR 1967 SECTION PROPULSION GROUP NO. 345 PL 35

01

NAS 9-1100

B

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-51300 | EO NO. B3
CONTROL INFO NO. LM270-864

THIS EO IS A REVISION OF EO B2
(LM270-824)

REVISE FLD OF EO AS SHOWN BELOW:

SH 2: ON -1 INSTL,

LDW270-51310-1 WAS LDW270-51301-1

SH 3 AT VIEW B-B, ZONE A9

LDW270-51310-1 WAS LDW270-51301-1

DETAIL SPEC REQ		CL II ENGRG CHG	✓	CL I ENGRG CHG		LCD 1032	3

REASON FOR EO: REMOVE MODULE ALTERNATE CONDITION & INSTALL PARKER MODULE (LDW270-51310-1)

DESCRIPTION OF EO: REF EO B2 IN FIELD & B/M FOR -1 INSTL LDW270-51310-1 WAS LDW270-51301-1

GAEC EO RELEASE: JK 4/20/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM1(31)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		✓	

APPROVED BY	RB			961?			
DATE	4/14/67			4/14/67			4/19/67
	1	PROP	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG

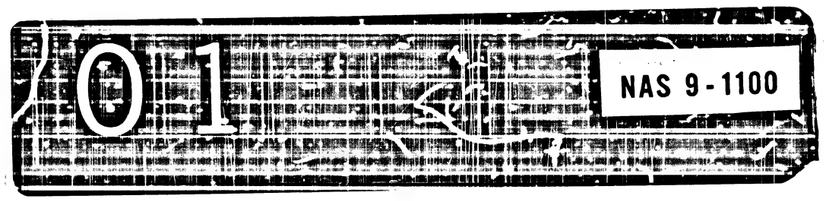
PRIORITY: C

DRAWING TITLE: INSTALLATION PROP-HELIUM PRESSURIZATION DESCENT STAGE-SUB-SYSTEM

DRAWING NO.: LDW270-51300

EO NO.: 83

ISSUED BY J. PAVLICA x1471 SECTION LM PROPULSION GROUP NO. 270 PL 25



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LEM	LDW270-51300	LEM-1(SH)	1
PART NO.	GAEC SCH NO.			PART NO.	GAEC SCH NO.			PART NO. LDW270-51301-1	GAEC SCH NO. 55		

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00	1.10	2.00	2.01	3.00	4.00				
REV	A	A	A	A		A				
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED	
LAST DASH NO. USED	-1

GRUMMAN REL° INFO A
PRIM NO. (Redo A)
486 MP 76-6K

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS — DECIMALS — ANGLES
± 1/32 — —
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100 | LINE ITEM 9 | DOCUMENTATION TYPE II

DRAWN BY	P.A. CAPPELLI 6-30-66	RELIABILITY	7/15
LAYOUT BY		INSTR.	
CHECKED BY	N. Geasl 7-1-66		
G&P LEADER			
PROPUL.			
V.D.I.			
STRESS		PROJ ENGR	RMC 7-19-66
WEIGHTS	L. Garcia 7/12/66	Reliable	Patt. 7-21-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

MODULE ASSEMBLY
DESCENT PROPELLANT
PRESSURIZATION SUB-SYSTEM

SIZE	CODE IDENT NO.		
B	26512	LDW270-51301	A

SCALE NONE | SHEET 1.000F 6

ENG 77.1 9-64

01 NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1, 1.10, 2, 4	4E 4F 6E 5G 6C					EO A1	ON-1, LDW280-17388-236 DSH-8 WAS -169 DSH-8; -245 DSH-8 WAS-170 DSH-8; -240 DSH-8 WAS- 173 DSH-8; LSC 269-382-1 WAS -381-1; LSC 270-816-11-1 WAS -11. SH 1 OF 6 WAS SH 1 OF 5 ADDED SH 1.10	LEM-1	✓		P. CARTSELOS 9-16-66		
	2	1.10, 2						EO A2	CORRECTED CLEANLINESS LEVEL "L" WAS "C" ON TUBES LDW280-17388-171V-2, -172V-2, -236 DSH-8, -240 DSH-8, 245 DSH-8						
	3	1.10, 2, 4 2.01	3D 3E 6C				✓	LEO 270-9	FOR-1, IN FIELD & B/M MS28775-011(2) WAS MS28775-002(2) LDW280-17388-246 DSH-8 WAS LDW280-17388-240 DSH-8						
	4	1.10, 2, 4	6C					EO A4	FOR-1 ASSY IN B/M & FIELD REMOVED LSC 270-816-11-1, ADDED LSC 270-816-11						
	5	1.10, 2, 4	6G					EO-A5	IN FLD & B/M FOR-1 ASSY: LSC 270-814-3 (WAS) LSC 270-814-1	LEM-1	✓		V. SIBILLA 10-3-66		

CHG APPROVED	LTR	GROUP LDR	PROPULSION	VEH DES INT	STRESS	WEIGHTS	RELIABILITY	INSTR				
	A											

ENG 77.16 3-66

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51301	A

SCALE NONE SHEET 1.10

Q1

NAS 9-1100

CL.	QTY PER ASSEMBLY	PART NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
L	1	LSC270-816-11	S		REDUCING VALVE	SEE NOTE #1						
L	1	LSC270-814-3	S		FILTER	↑						
L	2	LSC269-382-1	E		UNION							
L	2	↕ -301-1	↕		TEE							
L	1	↕ -380-1	↕		TEE	↓						
L	1	LSC269-218-8	E		UNION	SEE NOTE #1						
L	1	LDW390-28070-13	S		SOLE. LATCH VALVE	SEE DWG						
L	1	LDW390-28070-11	S		SOLE. LATCH VALVE	↑						
C	1	LDW280-23681-1	E		PLATE ASSY							
C	1	LDW280-17834-21	↕		TEE							
C	1	↕ -17			HAT							
C	1	↕ -15			HAT							
C	1	LDW280-17834-13			TEE							
L	1	LDW280-17388-246DSH8			TUBE							
L	1	↕ -172V-2			TUBE ASSY							
L	1	-171V-2			TUBE ASSY							
L	1	↕ -245DSH8			TUBE							
L	1	LDW280-17388-234DSH8			TUBE							
C	1	LDW280-17176-7			BRACKET ASSY							
C	1	↕ -17176-5			↕							
C	1	↕ -17176-3	↕		↕	↓						
C	1	LDW280-17176-1	E		BRACKET ASSY	SEE DWG						
L		LDW270-51301-1	S		MODULE ASSEMBLY							

CLEANLINESS LEVEL PER LSP-14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH LPC19-2 (GRUMMAN) LPC19-3 (VENDOR)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51301	A

SCALE NONE SHEET 2.00

ENG 77.2 5-64

01 NAS 9-1100

N				2	510790-203	E		TRANSDUCER	G.F.E							
C				2	MS 28775-011			PACKING	STD PART							
C				1	MS 21043-4			NUT								
C				8	MS 21043-3			NUT								
C				8	MS 21043-06			NUT								
C				24	MS 20470AD3			RIVET								
C				4	AN 960C10L			WASHER								
C				1	AN 960D8			WASHER								
C				2	AN 815-2C			UNION								
C				2	AN 735 D31			CLAMP	STD PART							
C				7	GR 500A-4C			RIVET (BLIND)	GRUMMAN STD							
C				1	GC 124-16			CLAMP								
C				4	GC 12H-8			CLAMP								
C				1	GB 511J-4-5			BOLT								
C				2	-3-5			BOLT								
C				6	-3-3			BOLT								
C				1	-08-3			BOLT								
C				8	GB 511J-06-16	E		BOLT	GRUMMAN STD							
				-1												
C.I.				QTY PER ASSEMBLY	PART NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE	

CLEANLINESS LEVEL PER LSP-14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH LPC 19-2 (GRUMMAN) LPC 19-3 (VENDOR)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

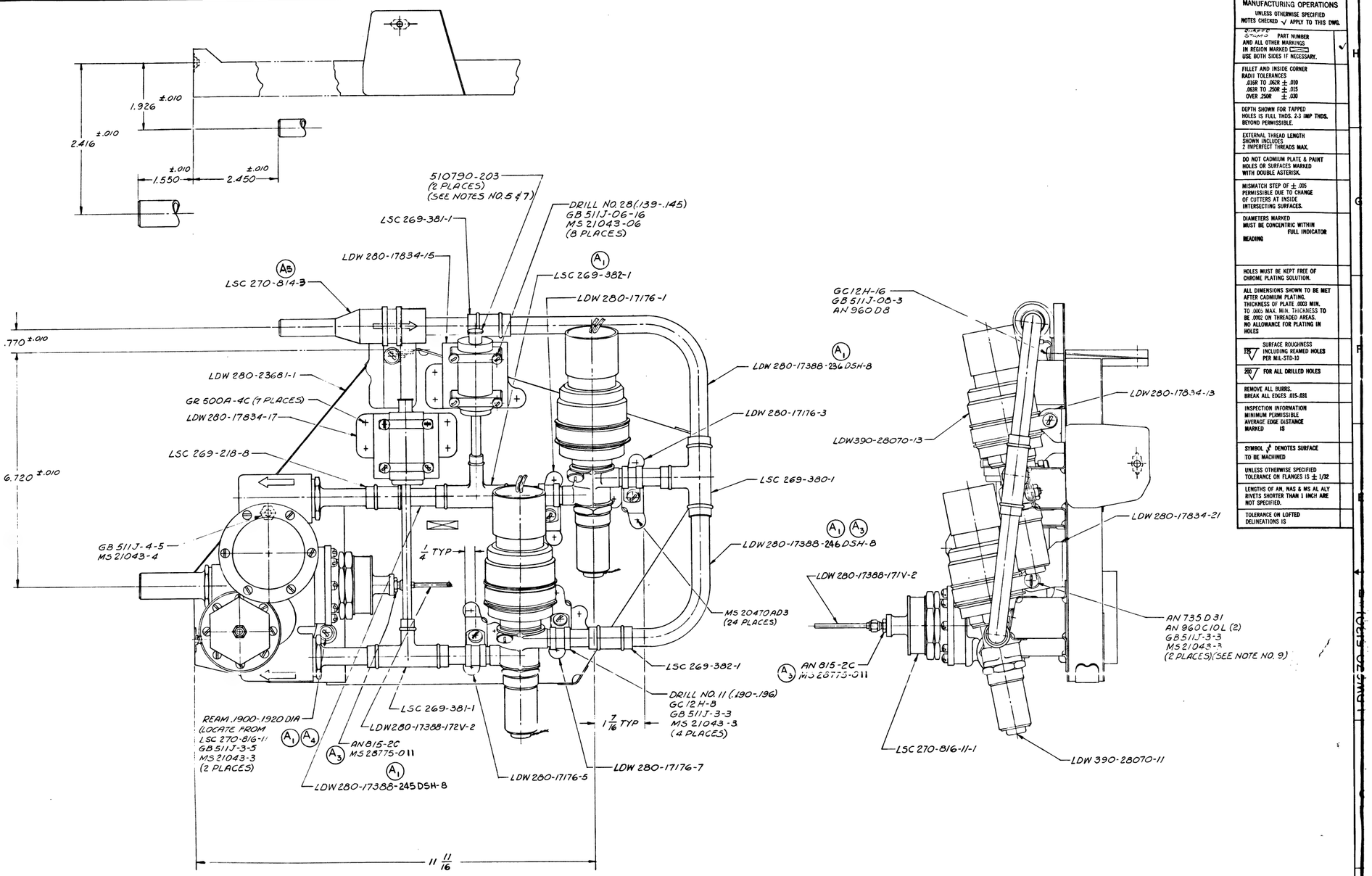
SIZE	CODE IDENT NO.		
B	26512	LDW270-51301	A

SCALE NONE SHEET 2.01

ENG 77.2 5-64

01

NAS 9-1100



MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.

- PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY. ✓
- FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010; .063R TO .250R ± .015; OVER .250R ± .030
- DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.
- EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
- DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
- MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
- DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
- HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
- ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
- 125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
- 250 √ FOR ALL DRILLED HOLES
- REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
- INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
- SYMBOL √ DENOTES SURFACE TO BE MACHINED
- UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
- LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
- TOLERANCE ON LOFTED DELINEATIONS IS

LDW 270-51301-1 HELIUM MODULE ASSEMBLY

NAS 9-1100

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK		
LEM-1 MODEL OR END ITEM	SIZE E	CODE IDENT NO. 26512	LDW270-51301 A
	SCALE FULL	SHEET 4 OF 10	

NOTES :

1. COMMERCIAL PART SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING.
2. TORQUE MECHANICAL FITTINGS 50-60 INCH-LBS.
3. INDUCTION BRAZE OF FITTINGS SHALL BE IN ACCORDANCE WITH LSP 14-6303.
4. LDW 270-51301-1 MODULE ASSEMBLY SHALL BE TESTED IN ACCORDANCE WITH LPT 270-301 "PRE-INSTALLATION TEST PLAN FOR MODULE ASSEMBLY DESCENT HELIUM PROPELLANT PRESSURIZATION SUB-SYSTEM."
5. 510790-203 TRANSDUCER SHALL BE PREPARED IN ACCORDANCE WITH LSP 14-17450 PRIOR TO BRAZING INTO SYSTEM.
6. ELECTRICALLY BOND 510790-203 TRANSDUCER IN ACCORDANCE WITH LSP 390-001.
7. FOR ELECTRICAL INTERFACE REFER TO INTERFACE CONTROL DOCUMENT LID 360-20001. FOR MECHANICAL INTERFACE REFER TO LID 360-20210. (ENGR REF. ONLY).
8. TUBE STUBS SHALL BE CAPPED PER LSP 14-009 FOR SHIPMENT AND STORAGE. REMOVE CAPS PRIOR TO BRAZING INTO SYSTEM.
9. USE ONE (1) WASHER AN960C10L ON EACH SIDE BETWEEN CLAMP AN735D31 AND BRACKET LDW280-17834 AT INSTALLATION OF SOLENOID VALVE LDW390-28070.
10. INSTALL MS20470AD3 RIVETS IN ACCORDANCE WITH LSP 14-15302. INSTALL GR500A-4C BLIND RIVETS IN ACCORDANCE WITH LSP 14-15303.

GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE, L. I., N. Y.			
CODE IDENT NO. 26512	SIZE B	LDW270-51301	
SCALE —		SHEET 3.00	

ENG 303

0-1

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-51301 | EO NO. B1
CONTROL INFO NO. LM-2-2818

ON-1 ~ IN FIELD OF DWG :

ROTATE LDW280-17176-1,-3,-5 & -7 180°

2

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG

REASON FOR EO: TO FACILITATE MANUFACTURE OF MODULE ASSEMBLY

DESCRIPTION OF EO: ON-1~IN FIELD: ROTATED LDW280-17176-1,-3,-5 & -7 180°

GAEC & EO RELEASE: C

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM		LM-1(31)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO | DISPOSITION OF PARTS: REWORK ✓ | SCRAP

APPROVED BY: JAM | DATE: 10/7/66 | 9-23-66 WTS

SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
		10-5	9-24-66	9-24-66	9-26-66

PRIORITY: C

DRAWING TITLE: MODULE ASSEMBLY DESCENT PROPELLANT PRESS. SUB-SYSTEM

DRAWING NO.: LDW270-51301

EO NO.: B1

ISSUED BY LIAISON / E. NEFF X3604 SECTION V.O.I. GROUP NO. 335 PL 35

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG NO. LDW270-51301 | EO NO. B2
CONTROL INFO NO. LM270-755

IN B/M & F/D FOR -1 MODULE ASSY:

REMOVE: LSC270-816-11 REGULATOR
ADD : LSC270-816-11-2 REGULATOR

PRE-CF-2

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG

REASON FOR EO: LSC270-816-11 REGULATOR FAILED QUAL TEST

DESCRIPTION OF EO: IN B/M & F/D FOR -1 REMOVED LSC270-816-11 ADDED LSC270-816-11-2

GAEC EO RELEASE: FR 12/6/66

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-1 (31)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	DATE	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	QUAL
✓		✓		1				RB 12/6/66			12-6-66	QC 12-6-66

PRIORITY: C
DRAWING TITLE: MODULE ASSY- DESCENT PROPELLANT PRESSURIZATION SUBSYSTEM
DRAWING NO.: LDW270-51301
EO NO.: B2

ISSUED BY J. REBHOLZ 12-6-66
SECTION PROPULSION x1471
GROUP NO. 345
PL 35

01 NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	QUALITY APPD
A	1	1.00							ON SHEET 1.00 SHEET 1 OF 4 WAS 1 OF 3. ADDED SHEET 1.10	LEM-1	NOT	REQD			
	2							(R)	DRAWING REINSTATED PER DCRF 323-917 "A" DATED 8 JUNE 1966. CANCELLATION NOTATION REMOVED FROM ALL SHEETS WHICH WAS CANC. PER DCRF 323-917 5/10/66	LEM-1	NOT	REQD			

FOR CONTINUATION OF REVISIONS SEE SHEET _____

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51302	A

SCALE NONE SHEET 1.10

ENG 77.3 5-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
✓	.	MS20995NC40	E	SAFETY WIRE	STD PART						
1		LDW270-51307-1	S	HE TANK ASSY	SEE DWG						
1		LDW280M17360-7	E	BOLT	SEE DWG						
2		LDW280M17360-5	E	BOLT	SEE DWG						
		LDW270-51302-1	E	HE TANK INSTL							
-1											

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

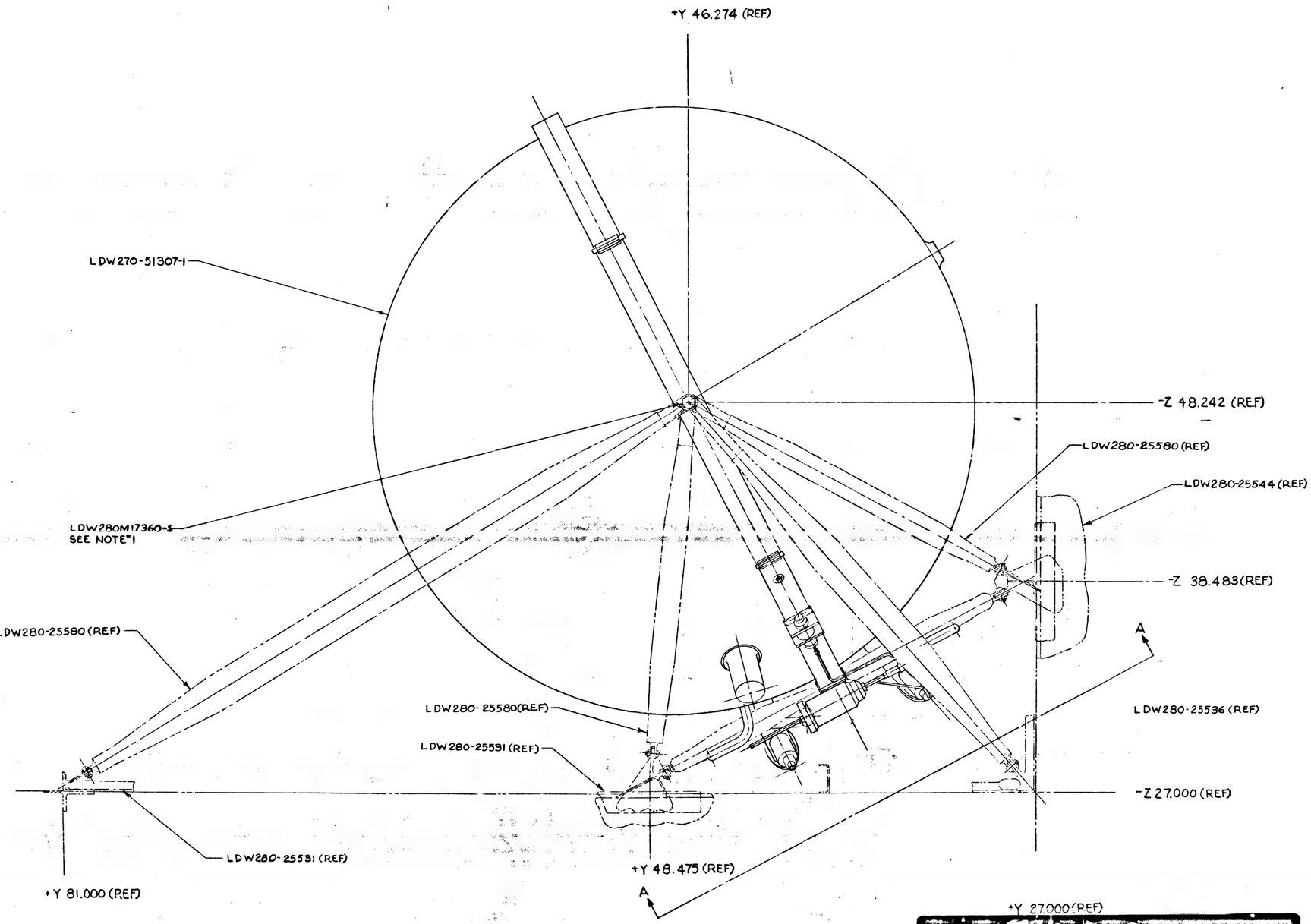
SIZE	CODE IDENT NO.		
B	26512	LDW270-51302	A

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

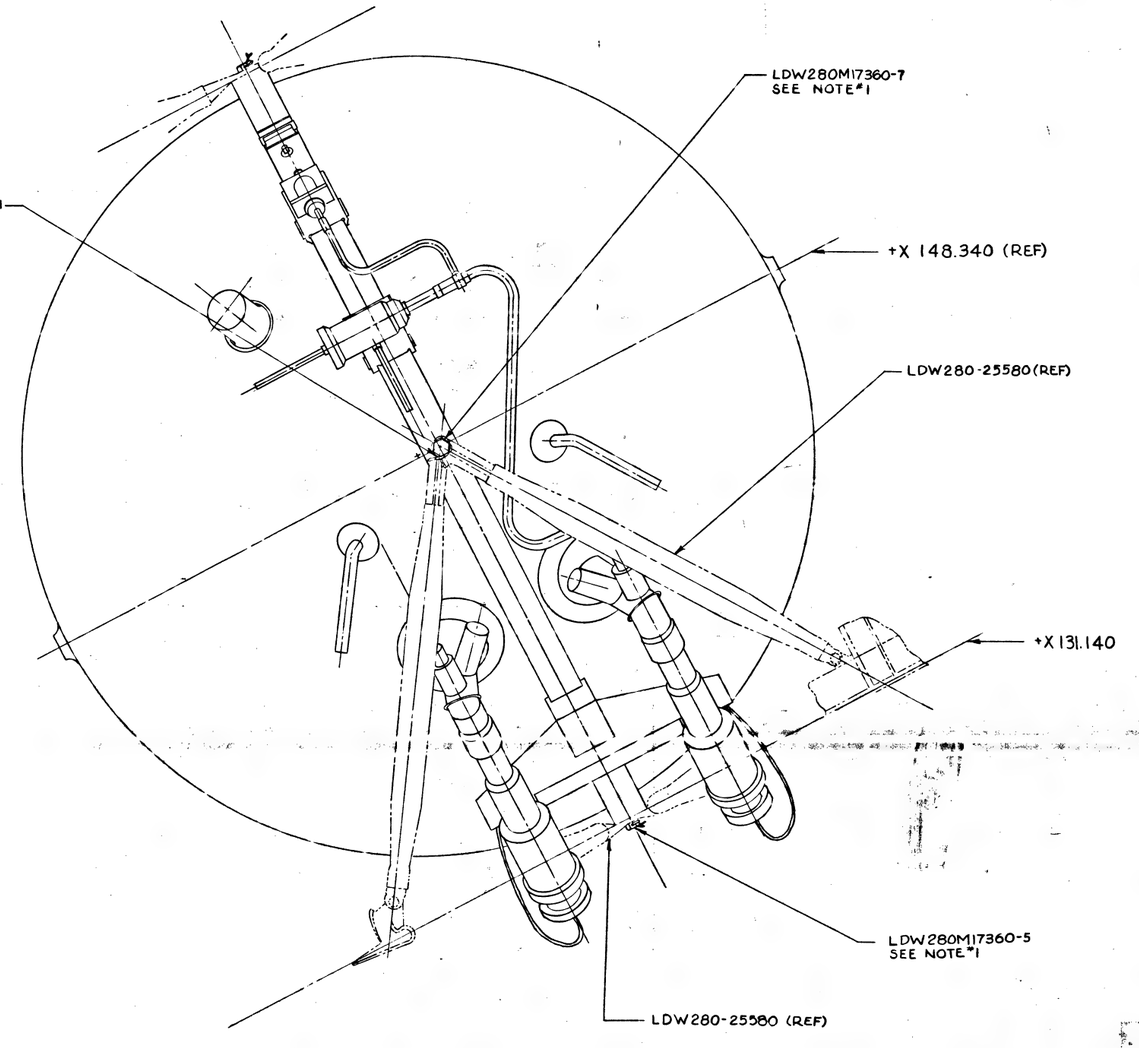


LDW270-51302-1 SUPERCRITICAL HELIUM TANK INSTALLATION

0F402 NAS 9-1100

CODE IDENT 20512

LDW270-51302 SHEET 9.00



-Z 48.242 (REF)

LDW280-25580 (REF)

LDW280-25544 (REF)

-Z 38.483(REF)

A

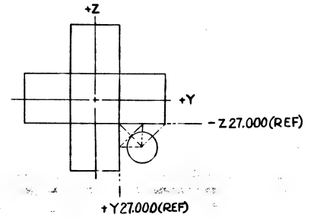
LDW280-25536 (REF)

-Z 27.000 (REF)

0(REF)

VIEW "A-A"

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.	
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	C
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
250 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL √ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
ENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
OLERANCE ON LOFTED DELINEATIONS IS	



NOTES:

1. TORQUE VALUE ON BOLT TO BE 30 TO 40 INCH LBS.

02702 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK				
LEM	SIZE J	CODE IDENT NO. 26512	LDW270-51302	A
MODEL OR END ITEM	SCALE 1/2		SHEET 3.00	

CODE IDENT 26512
LDW270-51302 SHEET 3.00

LDW270 51302 A

LDW270-51302A

A

2/2

DO NOT SCALE DRAWING

DWG SIZE 34 X

PRINTING INTO ONLY

FULL SIZE SHEET AREA (34 X 44)=
1/2 SIZE SHEET AREA (1/4 OF 44)=

PRINT TRIM LINE

LDW270-51304 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
				LFM	LDW270-51300	LEM-1(31)	1	LEM	LDW270-51300	LEM-1(31)	1
PART NO.		GAEC SCH NO.		PART NO. LDW270-51304-3		GAEC SCH NO. 55		PART NO. LDW270-51304-1		GAEC SCH NO. 55	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00	2.00	3.00	1.10						
REV	A	A	A	A						
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED		GRUMMAN REL INFO A	
LAST DASH NO. USED	-3	PRIM NO.	486
			OE(009) MP17

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS9-1100 LINE ITEM 9 DOCUMENTATION TYPE II

DRAWN BY	J. PAVLICA 5/13/66		
LAYOUT BY	—		
CHECKED BY			
GR LEADER			
PROD			
STRESS		PROJ ENGR	
STRUCT	6/3	REL GROUP	6-13-66
RELIABILITY	6/9		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CHECK, RELIEF & EXPLOSIVE VALVE INSTALLATION - DESCENT PROPELLANT PRESSURIZATION SUBSYSTEM

SIZE	CODE IDENT NO.		
B	26512	LDW270-51304	A

SCALE NONE SHEET 1.00 OF 4

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1,1.10,2 & 3	2C 8A					EO A1	ADDED SH 1.10 ; SH 1 OF 4 WAS 1 OF 3 ON-1 REMOVED LSC270-818-4 ADDED LSC270-818-6 LSC270-818-3 ADDED LSC270-818-5	LEM-1(31)	✓	WW	[illegible] 7-25-66		

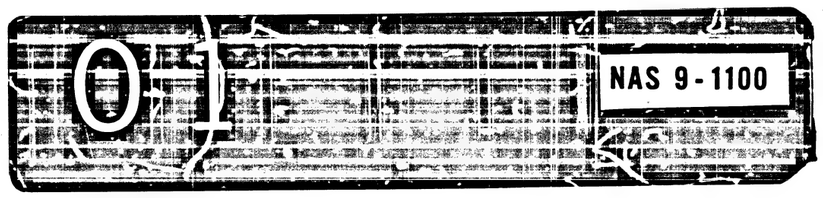
CHG APPROVED	LTR	GROUP LDR	PROP	STRESS	STRUCTURES	RELIABILITY
	A					

ENG 77.16 3-66

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51304	A

SCALE NONE SHEET 1.10



C				3	3		GB511J-3-23	E	BOLT	GRUMMAN STD							
C				2	2		GB511J-3-13	E	BOLT	GRUMMAN STD							
C				2	2		GB511J-3-1	E	BOLT	GRUMMAN STD							
L				1	1		LSC270-819-11	S	EXPLOSIVE VALVE	SEE NOTE 1							
L					1		LSC270-818-6	S	RELIEF VALVE								
L				1			LSC270-818-5	S	RELIEF VALVE								
L					1		LSC270-817-4	S	CHECK VALVE								
L				1			LSC270-817-3	S	CHECK VALVE	SEE NOTE 1							
L							LDW270-513043	E	CHECK, RELIEF & EXPLOSIVE VA. INSTL (OX)								
L							LDW270-513041	E	CHECK, RELIEF & EXPLOSIVE VA INSTL (FUEL)								
////				-3	-1												
CL	QTY PER ASSEMBLY					CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE		

CLEANLINESS PER LSP14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

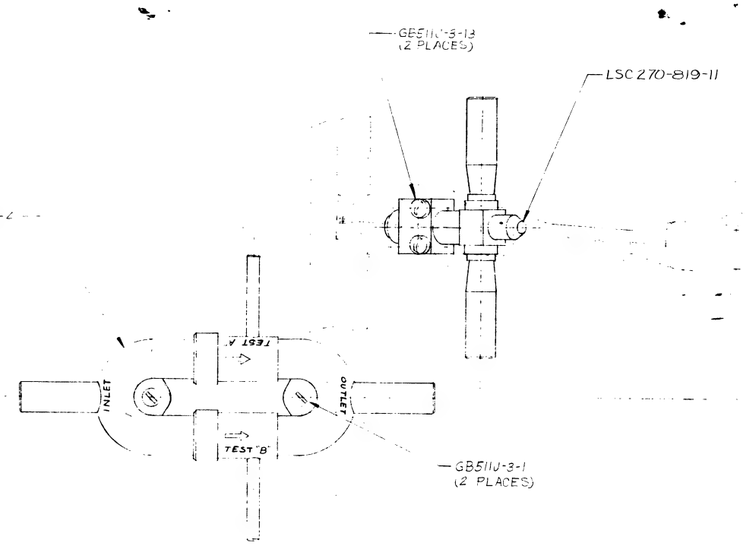
SIZE	CODE IDENT NO.		
B	26512	LDW270-51304	A

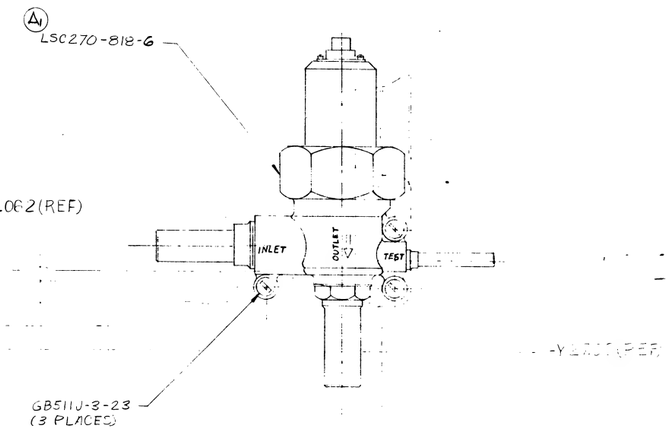
SCALE NONE SHEET 2.00

ENG 77.2 7-65

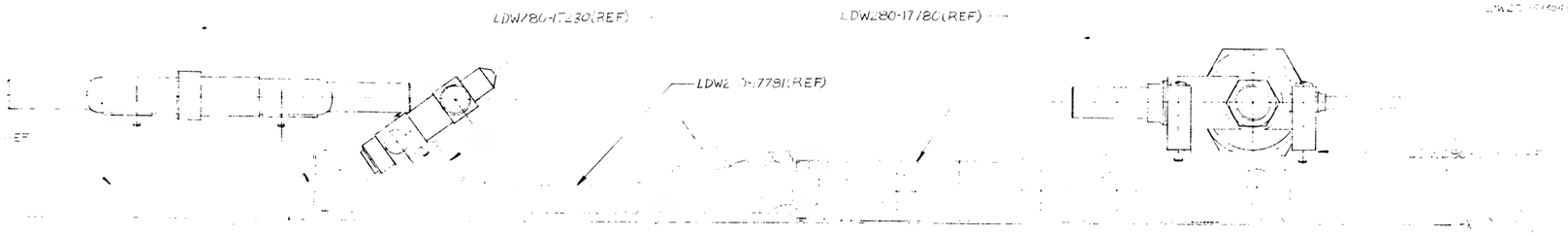
NAS 9-1100

NOTES:
1. COMMERCIAL PART SEE SPECIFICATION CONTROL DRAWING LSC270-8[illegible] BEFORE ORDERING.
2. EXPLOSIVE VALVE INITIATOR PORTS TO REMAIN PLUGGED UNTIL INSTALLATION OF INITIATORS.





LDW270-51304-1 CHECK, RELIEF & EXPLOSIVE VALVE INSTALLATION, FUEL

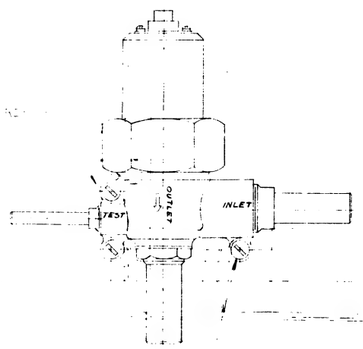


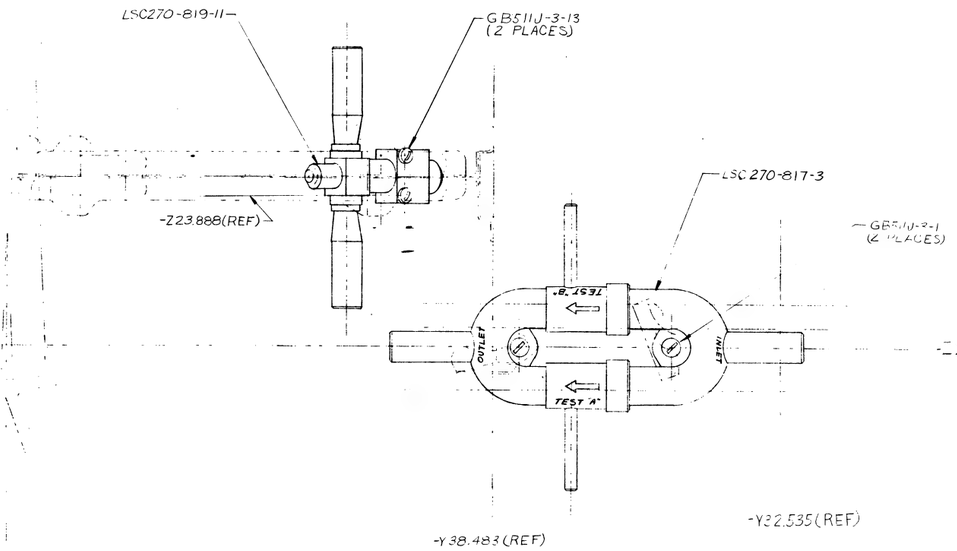
MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.
FILLET AND INSIDE CORNER RADII TOLERANCES .058R TO .062R ± .010; .062R TO .250R ± .015; OVER .250R ± .030
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES.
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
250 FOR ALL DRILLED HOLES
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
SYMBOL DENOTES SURFACE TO BE MACHINED
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
TOLERANCE ON LOFTED DELINEATIONS IS

DWG SIZE 24 X 36
PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X 60) = 15 SQ FT
1/2 SIZE SHEET AREA (1/4 OF FULL) = ≥ 3½ SQ FT
PRINT TRIM LINE

02402
NAS 9-1100

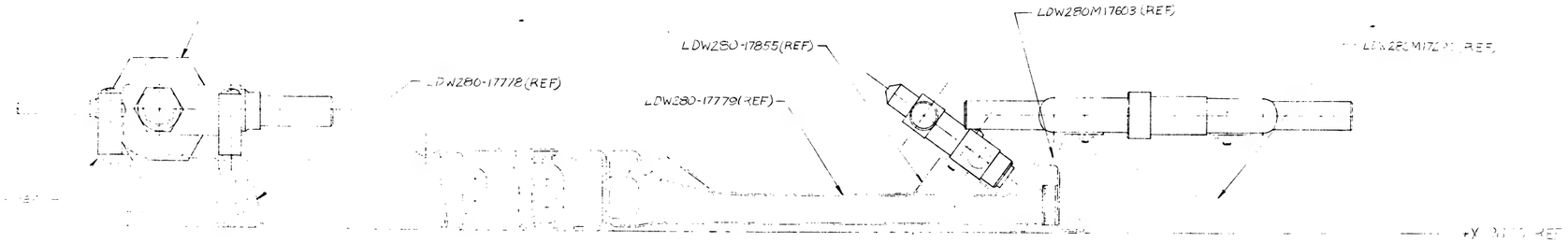
GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LEM	SIZE J	CODE IDENT NO. 26512	LDW270-51304
MODEL OR END ITEM	SCALE		SHEET





-Y48.538(REF)

LDW270-51304-3 CHECK, RELIEF & EXPLOSIVE VALVE INSTALLATION (OX)



01/02

NAS 9-1100

CODE IDENT 26512
LDW270-51304

B

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-51304 | EO NO. B1
CONTROL INFO NO. LM270-936

DELETE NOTE #2.

ADD NOTE *: "LDW270M10039-11 & GS570W-1 SHALL BE INSTALLED IN LSC270-819-11 EXPLOSIVE VALVE INITIATOR PORTS, HAND TIGHT FOR SHIPMENT & STORAGE.

ADD IN FIELD TO LSC270-819-11 (SEE NOTE *).

ADD TO B/M, FOR -1 & -3 INSTL, LDW270M10039-11 (SEE NOTE *) 2 REQD & GS570W-1 (SEE NOTE *) 2 REQD.

* USE NEXT AVAILABLE NOTE NUMBER

DETAIL SPEC REQ		CL II ENGRG CHG	X	CL I ENGRG CHG		LCD1571

5

REASON FOR EO: TO PROVIDE A PERMANENT SHIPPING PLUG FOR EXPLOSIVE VALVES

DESCRIPTION OF EO: ADDED NOTE *, REMOVED NOTE 2 TO B/M ADDED LDW270M10039-11 & GS570W-1 2 REQD FOR -1 & -3

GAEC EO RELEASE: JK 6/12/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LMI (31)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: REWORK ✓ | SCRAP

APPROVED BY: RB | DATE: 6/12/67 | 5 | PROP | SUPPORT | RELIAB GROUP | GROUP LEADER | STRESS GROUP | LIAISON ENGRG | PROJ ENGRG

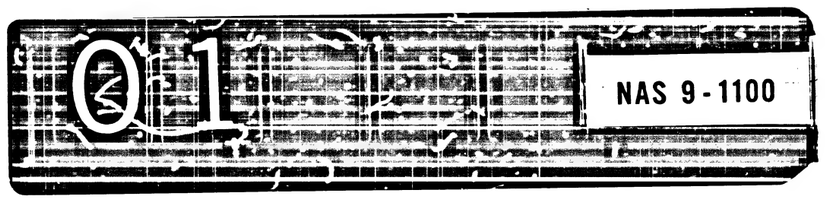
PRIORITY: C

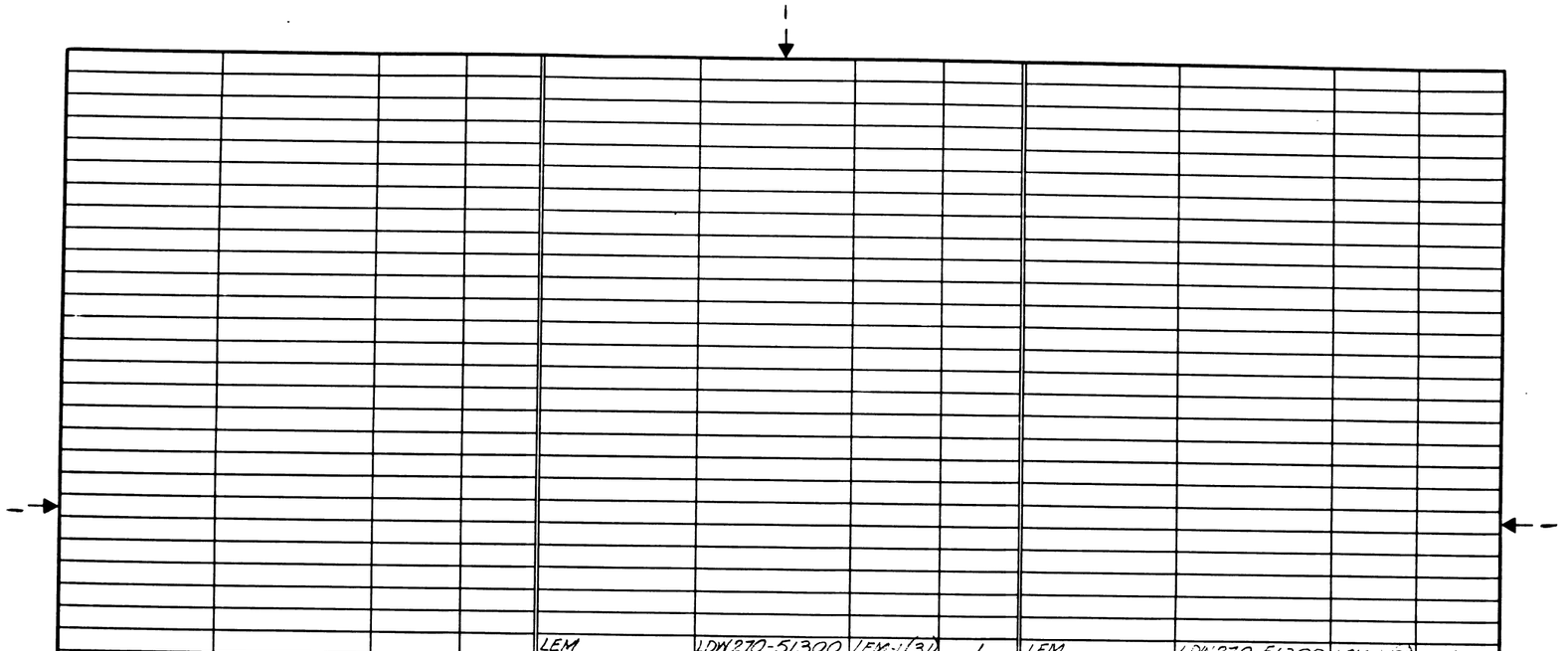
DRAWING TITLE: CHECK, RELIEF & EXPLOSIVE VALVE INSTL DESCENT PROP.-PRESS. SUB-SYSTEM.

DRAWING NO.: LDW270-51304

EO NO.: B1

ISSUED BY A. HENDRICKS X1471 13 JUNE 1967 SECTION PROPULSION GROUP NO. 345 PL 25





MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW270-51300	LEM-1 (31)	1
PART NO. LDW270-51305-3	GAEC SCH NO.		

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW270-51300	LEM-1 (31)	1
PART NO. LDW270-51305-1	GAEC SCH NO. 55		

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00	2.00	3.00							
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED		GRUMMAN REL* INFO			
LAST DASH NO. USED	-3	PRIM NO.	F.S(009)		
		486	MP12		BT: 31

ENG 77.1 9-64

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS — DECIMALS — ANGLES

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9 1100 | LINE ITEM 9 | DOCUMENTATION TYPE II

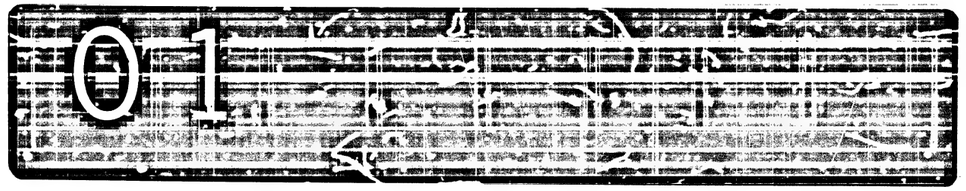
DRAWN BY	P.A. CAPPELLI 5-25-66	RELIABILITY	F Ronga 6/1
LAYOUT BY		WEIGHTS	S. Garcia 6/14/66.
CHECKED BY			
LEADER	J. Pettitt 6/27/66		
PROPULSION	F Ronga 6/24/66		
VDI			
STRESS	6/24/66	PROJ ENGR	Plunkett Stone
STRUCT.	Hildebrand 6/3	RELEASE	Pettitt 6-16-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

DISCONNECT COUPLING INST-
DESCENT STAGE-PROPELLANT
PRESSURIZATION SUB-SYSTEM

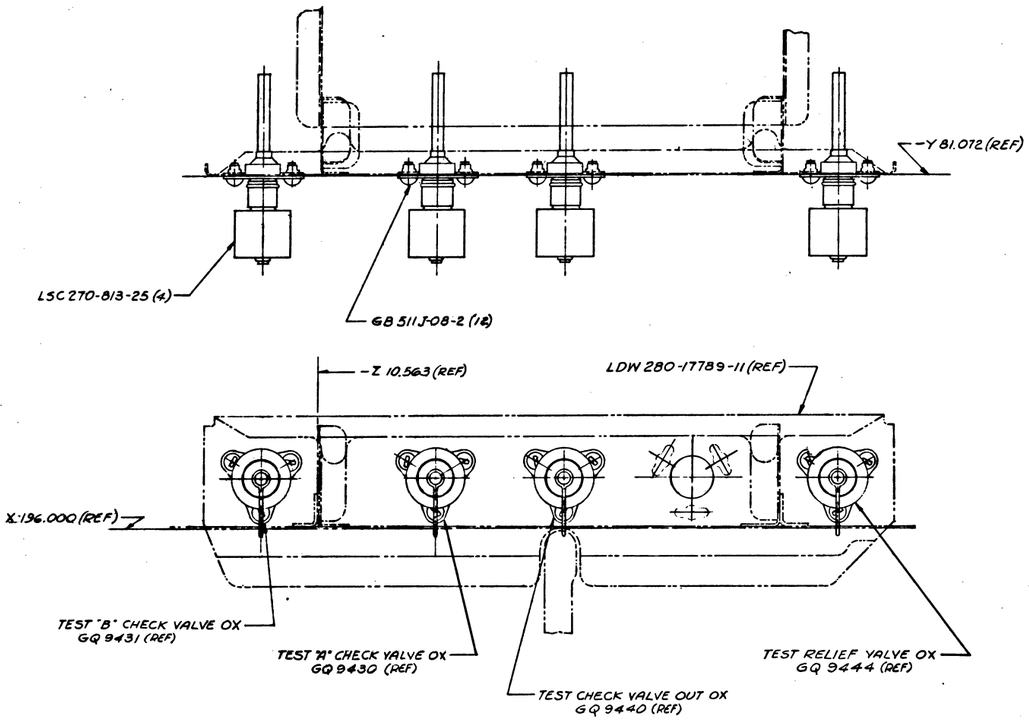
SIZE	CODE IDENT NO.	
B	26512	LDW270-51305

SCALE NONE | SHEET 1.00 OF 3

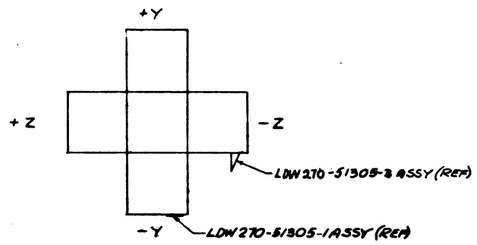


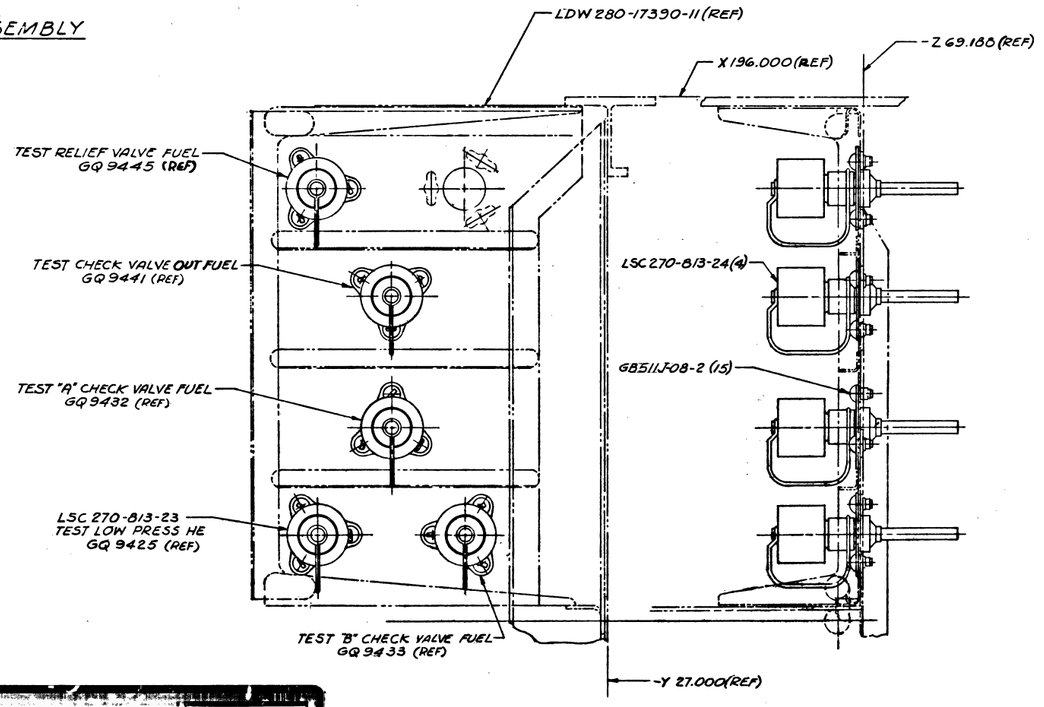
NAS 9-1100

| | | |



LDW 270-51305-1 ASSEMBLY





LDW 270-51305-3 ASSEMBLY

NOTES:-

1. COMMERCIAL PART SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING.

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.

- PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.
- FILLET AND INSIDE CORNER RADII TOLERANCES .018R TO .062R ± .010; .063R TO .250R ± .015; OVER .250R ± .030
- DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 MIN THDS. BEYOND PERMISSIBLE.
- EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
- DO NOT CADMIUM-PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
- MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
- DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
- HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
- ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
- SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10 — 125 √
- FOR ALL DRILLED HOLES — 250 √
- REMOVE ALL BURRS, BREAK ALL EDGES .015-.031
- INSPECTION INFORMATION MINIMUM PLUG ACCESSIBLE AVERAGE EDGE DISTANCE MARGIN 1B
- SYMBOL ⌀ DENOTES SURFACE TO BE MACHINED
- UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
- LENGTHS OF AN, NAS & MS AT ALL RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
- TOLERANCE ON LOFTED DELINEATIONS IS

NAS 9-1100

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L.I., NEW YORK		
LEM	SIZE E	CODE IDENT NO. 26512	LDW 270-51305
MODEL OR END ITEM	SCALE FULL		SHEET 3 OF

THIS IS AN ORIGINAL DWG

LDW270-51305

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65 LIAISON ENGINEERING #5 ENGINEERING ORDER

DWG. NO. LDW270-51305 | EO NO. A1

CONTROL INFO NO. LEM-5-9036

ON-1 & -3 INSTL,

IN B/M & F/O GB511J-08-2 S/B GB511J-08-1.

ADD NOTE *:

SUBSTITUTION OF NAS1132-V-1 SCREWS FOR GB511J-08-1 BOLTS IS PERMISSIBLE.

*- NEXT AVAILABLE NUMBER

5

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG

REASON FOR EO: GB511J-08-1 BOLTS ARE NOT AVAILABLE. GRIP LENGTH TO LONG.

DESCRIPTION OF EO: ON-1 & -3 INSTL, IN B/M & F/O GB511J-08-1 WAS GB511J-08-2. ADDED NOTE *.

GAEC C. EO RELEASE: LE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY			SUPPORT
LEM		LEM-1 (31)		✓		✓		8-30-66			

RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GAEC
9/13	9-12	9-24	8/31/66	9-8	9/9/66

PRIORITY: C

DRAWING TITLE: DISCONNECT COUPLING INSTL. D/S PROPELLANT PRESS. SUBSYSTEM

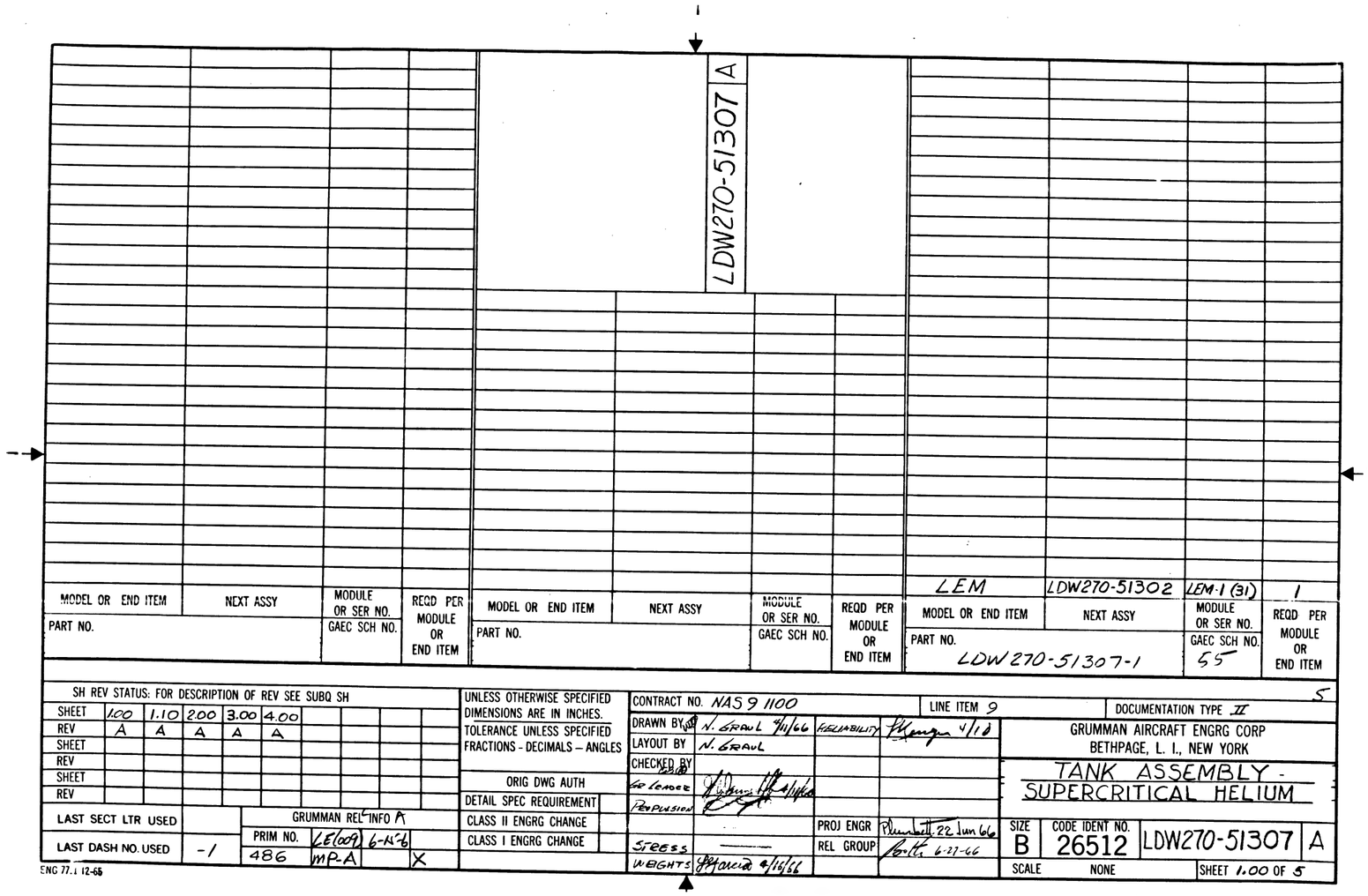
DRAWING NO.: LDW270-51305

EO NO.: A1

ISSUED BY LIAISON - J. McGILL X-6452 SECTION PROPULSION/WALDO GROUP NO. ____ PL 35

01

NAS 9-1100



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LEM	LDW270-51302	LEM-1 (31)	1
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW270-51307-1		GAEC SCH NO. 55	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	100	1.10	2.00	3.00	4.00					
REV	A	A	A	A	A					
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED	
LAST DASH NO. USED	-1

GRUMMAN REL INFO A

PRIM NO.	LE(009)	6-N-6	
486	MP-A		X

ENG 77.1 12-65

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9 1100 | LINE ITEM 9 | DOCUMENTATION TYPE II

DRAWN BY	N. GRAUL 4/11/66	RELIABILITY	4/18
LAYOUT BY	N. GRAUL		
CHECKED BY			
GD LEADER			
PROPULSION			
STRESS		PROJ ENGR	22 Jun 66
WEIGHTS	4/16/66	REL GROUP	6-27-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

TANK ASSEMBLY - SUPERCRITICAL HELIUM

SIZE	CODE IDENT NO.		
B	26512	LDW270-51307	A

SCALE NONE | SHEET 1.00 OF 5

5

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	QUAL APPD
A		1.00							SHEET 1.00 - SHEET 1 OF 5 WAS 1 OF 4 . ADDED SHEET 1.10	LEM-1	NOT	REQD	N. GRAUL 10 JUNE 66		
	1	1.00 2.00 3.00 4.00						Ⓡ	DRAWING REINSTATED PER DCRF 323-917 "A" DATED 8 JUNE 1966. CANCELLATION NOTATION REMOVED FROM ALL SHEETS WHICH WAS CANC PER DCRF 323-917 5/10/66 GS	LEM-1	NOT	REQD			

FOR CONTINUATION OF REVISIONS SEE SHEET _____

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51307	A

SCALE NONE SHEET 1.10

ENG 77.3 5-65

01

NAS 9-1100

L																
C.L.	QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
			LDW270-51307-1	S	TANK ASSY	(MAKE FROM LSC 270-821-53) SEE NOTES 1 THRU 8						

CLEANLINESS LEVEL PER LSP-14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : LPC-19-2 (GRUMMAN) LPC-19-3 (VENDOR)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51307	A

SCALE NONE SHEET 200

ENG 77.2 7-65

01

NAS 9-1100

NOTES:

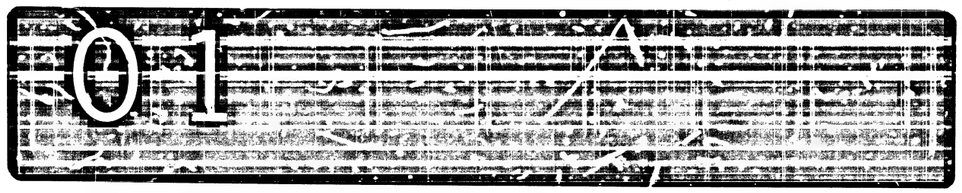
1. LSC270-821-53 PRE-INSTALLATION TESTS SHALL BE IN ACCORDANCE WITH SPECIFICATION LTP279-29
2. AFTER PRE-INSTALLATION TESTS AND JUST PRIOR TO INSTALLATION CUT TUBES OFF ON ELECTRO ETCHED CUTOFF LINE IN ACCORDANCE WITH LSP14-17400A USING AEROQUIP CUT, DEBURRING AND SIZING TOOLS, AEROQUIP AE506 SERIES OR EQUIVALENT.
3. EXTREME CARE MUST BE EXERCISED IN ORDER TO PREVENT DAMAGE TO, OR CONTAMINATION OF THE TANK AND GLASS BEAD PEENED AREA OF THE TUBE STUBS DURING CUTTING, DEBURRING AND SIZING.
4. CLEANLINESS PER LSP14-0011 LEVEL "L" MUST BE MAINTAINED DURING CUTTING, DEBURRING AND SIZING.
5. THE TUBE TO BE CUT SHALL BE UNCAPPED AFTER PURGE PRESSURIZATION AND PRIOR TO CUTTING TO INSURE CLEANLINESS.
6. THE TUBE TO BE CUT SHALL BE POINTED IN A DOWNWARD DIRECTION DURING THE CUTTING, DEBURRING AND SIZING OPERATIONS.
7. DURING THE CUTTING, DEBURRING AND SIZING OPERATIONS TUBING SHALL BE PURGED WITH 10 MICRON ABSOLUTE FILTERED NITROGEN OR HELIUM GAS IN ACCORDANCE WITH THE FOLLOWING TABLE:

TUBE TO BE CUT	APPLICATION POINT	PURGE PRESSURE
TUBE "A"	FILL COUPLING	5.0 ± 1.0 PSIG
TUBE "B"	TUBE "C"	↑
TUBE "C"	TUBE "B"	↓
TUBE "D"	TUBE "E"	
TUBE "E"	TUBE "D"	5.0 ± 1.0 PSIG

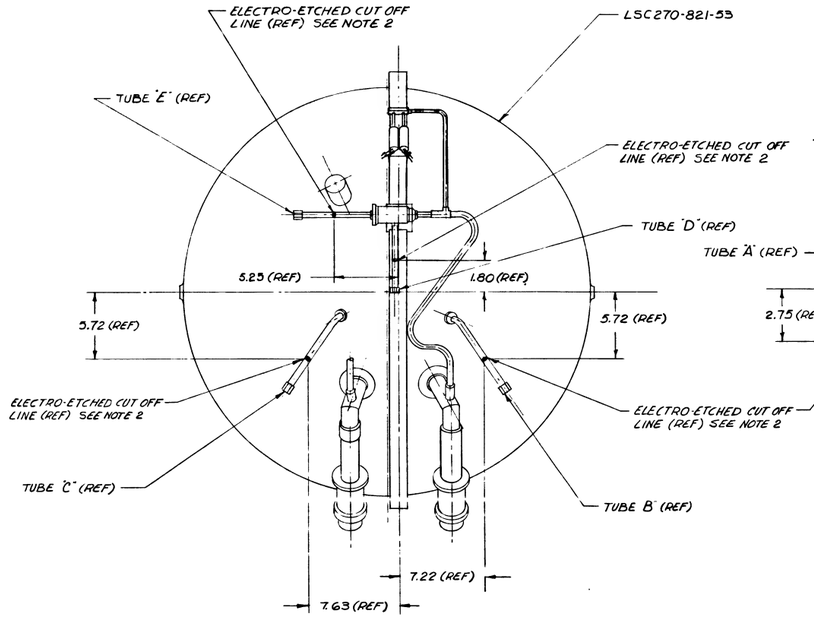
8. AFTER CUTTING OPERATION CAP STUB ENDS PER LSP14-009.

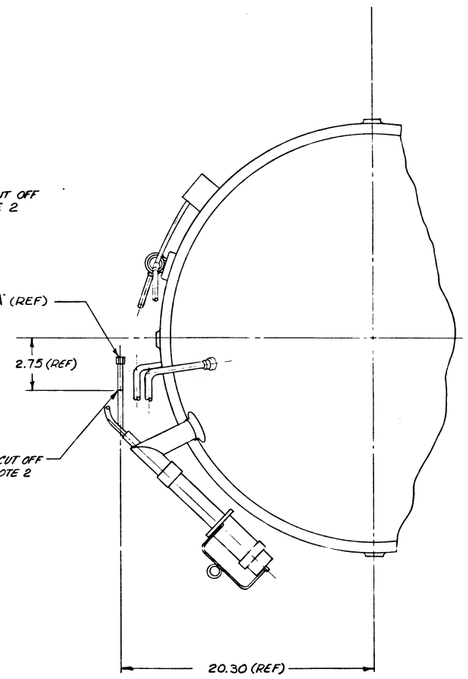
ENG 73.1 6-64

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-51307	A
SCALE NONE		SHEET 3.00	



NAS 9-1100





LDW270-51307-1

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.	
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .020	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ∿ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

LDW270-51307

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LEM MODEL OR END ITEM	SIZE D	CODE IDENT NO. 26512	LDW270-51307	A
	SCALE NONE		SHEET 4.00	

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

LIAISON ENGINEERING #5

ENGINEERING ORDER

DWG NO. LDW270-51307 | EO NO. B1

CONTROL INFO NO. LM-5-9153

REVISE NOTE: 7 TO READ AS FOLLOWS -
DURING THE CUTTING, DEBURRING AND SIZING OPERATIONS TUBING SHALL BE PURGED WITH 10 MICRON ABSOLUTE FILTERED NITROGEN OR HELIUM OR ARGON GAS (WHEN ARGON IS USED THE FILTER ON THE REGULATOR SHOULD BE SUFFICIENT) IN ACCORDANCE WITH THE FOLLOWING TABLE:

5

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG

REASON FOR EO: TO INCLUDE THE USE OF ARGON FOR PURGING.

DESCRIPTION OF EO: IN NOTE: 7 ADDED ARGON GAS.

GAEC EO RELEASE: 16

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-1 (31)	

DRAWING CHANGE REQD: REVISE DWG | RECORD EO

DISPOSITION OF PARTS: REWORK | SCRAP

APPROVED BY: [illegible] | DATE: 10/7/66 | 9-23-66 WTS | SUPPORT | RELIAB GROUP | GROUP LEADER: [illegible] — | STRESS GROUP: — 9276 | LIAISON ENGRG: 9-29 | PROJ ENGRG: 9276 | ~~CONT~~

PRIORITY: C

DRAWING TITLE: TANK ASSEMBLY SUPERCRITICAL HELIUM

DRAWING NO.: LDW270-51307

EO NO.: B1

ISSUED BY LIAISON - J. JARVIS x6452 SECTION PROPULSION GROUP NO. 270 PL 35

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 22.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW270-51307 | EO NO. B2

CONTROL INFO NO. LM270-772

SHEET 1.00 IN M/B FOR -1 ADD

LM LDW270-25302 LTA-5 (15) 1 REQD

5

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG

REASON FOR EO: TO AGREE WITH N/A USAGE

DESCRIPTION OF EO: IN M/B FOR-1 ADDED - LM LDW270-25302 LTA-5 (15) 1 REQD.

GAEC EO RELEASE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA 5 (15)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		✓	

APPROVED BY	06	-	-		-	-	
DATE	10/9/66	-	-	12/14/66	-	-	12-19-66
	6	PROP	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	12-19-66 GOVT

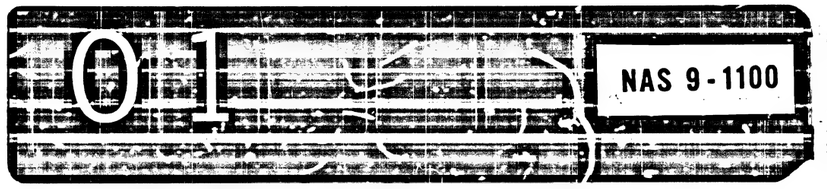
PRIORITY: C

DRAWING TITLE: TANK ASSEMBLY - SUPERCRITICAL HELIUM

DRAWING NO.: LDW270-51307

EO NO.: B2

ISSUED BY N. GRAUL x1471 17 DEC 66 SECTION PROPULSION GROUP NO. 345 PL 35



REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET 1.11

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
RETRACED SHEET 3.00 NO CHG. LAST REV NO CHG ART STERNBERG 11-7-68															
A	1	1.00, 1.10 & 3.00					✓	E.O. A1	IN M/B N/A FOR LM-6(36) THRU LM-15(45) LDW270-54304 WAS LDW270-54300. ADDED SH 1.10	NOT REQD	NOT	REQD	OBERNIER 10-31-68		
	2	1.10 & 3.00					✓	EOA2 LCD1514	IN NOTE 5 STEPS b. & C. NITROGEN WAS FREON, ADDED STEP e, IN NOTE 6, ADDED VAC. REQMT. IN NOTE 7 LSP14-50105 WAS LSP14-0020, PATCH TEST AFTER PIT TEST WAS AFTER DRYING OPERATION	LM2(32) LM6(36) THRU LM15(45)	✓				
	3	1.00 1.10 2.00 3.00				✓		EOA3 LCD 1950	CREATED -3 SUB-ASSY, ADDED -3 TO NOTES 4 & 6, ADDED NOTE NO. 9 REMOVED LM-6(36) THRU LM 15(45) FROM -1	LM-6(36) THRU LM-15(45)	-1				
	4						✓	EOA4	REMOVED NOTE 4 ADDED NOTE NO. 9	LM2(32) LM6(36) THRU LM15(45)	✓				
	5						✓	EOA5	ADDED NOTE NO. 10	LM6(36) THRU LM-15(45)	✓				
	6	3.00, 3.01					✓	EOA6 LCD3381	SHT 3.00 IN FLD FOR -3 SEE NOTE 11, WAS SEE NOTE 9; ADDED NOTE 11, DELETED NOTE 9	LM-8(38) THRU LM-15(45)	NOT	REQD			
	7					✓		EOA7	CANCELED BY EO A8	LM 8(38)					
	8					✓		E.O. A8 LCD3491	CANCELS E.O. A7	LM-8(38)	NOT REQD				

CHG APPROVED

LTR	GROUP LDR	PROP
A		

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51309	A

SCALE NON. SHEET 1.10

ENG 77.16 3-66

NAS 9-1100

CL	QTY PER ASSEMBLY -5	-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
N			1		LDW280-17388-830DSH-4	E	TUBE	SEE DWG						
N			1		LDW280-17388-829DSH-12		TUBE	SEE DWG						
N			1		LDW280-17388-828DSH-10		TUBE	SEE DWG						
N			1		LSC269-240-21		TEE	SEE DWG						
N			1		LSC269-240-12		TEE	SEE DWG						
N			1		LDW270-10030-2		CHECK VALVE	SEE NOTE 13&14						
N			1		LDW270-10030-1		CHECK VALVE	SEE NOTE 13&14						
L		1	1		LDW280-17388-639DSH-4		TUBE	SEE DWG						
L		1	1		LDW280-17388-453DSH-12		TUBE	SEE DWG						
L		1	1		LDW280-17388-165DSH-10		TUBE	SEE DWG						
L		1	1		LSC269-240-21		TEE	SEE NOTE 1						
L		1	1		LSC269-240-12		TEE							
L		1	1		LSC270-817-4		CHECK VALVE							
L		1	1		LSC270-817-3		CHECK VALVE	SEE NOTE 1						
N					LDW270-51309-5	S	QUAD CHECK VALVE	SUB-ASSY				NONE	NONE	
L					LDW270-51309-3		QUAD CHECK VALVE	SUB-ASSY				NONE	NONE	
L					LDW270-51309-1	S	QUAD CHECK VALVE	SUB-ASSY				NONE	NONE	

CLEANLINESS LEVEL PER LSP14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

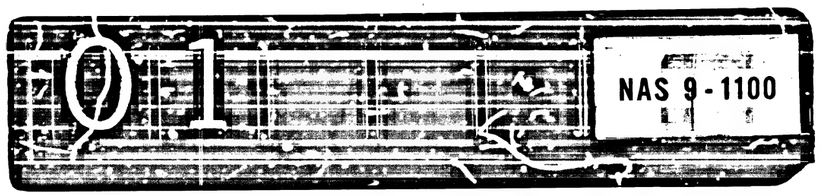
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : LPC19-2 (GRUMMAN) LPC19-3 (VENDOR)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51309	A

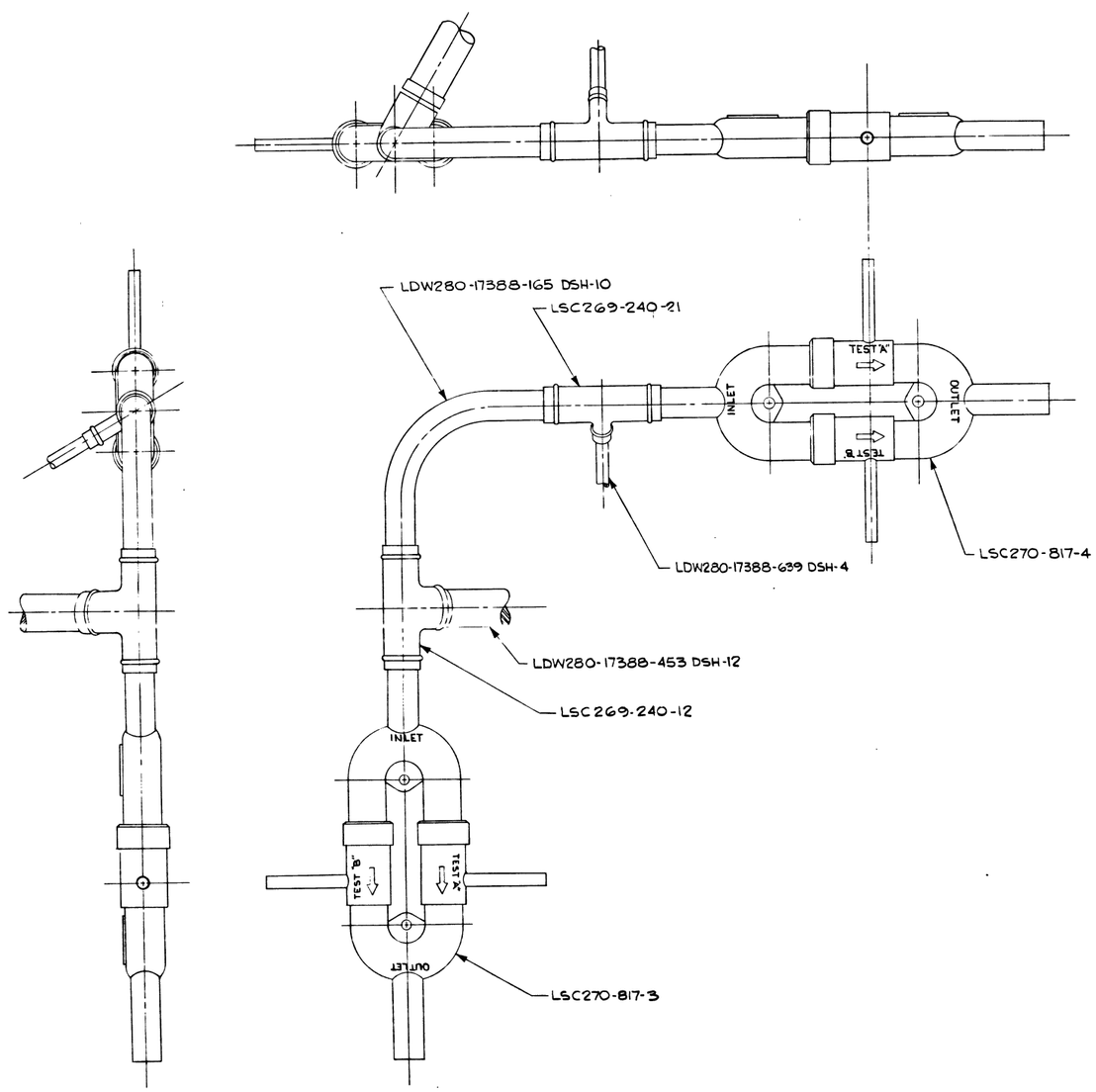
SCALE NONE SHEET 2.00

ENG 77.2 7-65



FOR NOTES SEE SHEET 3.01, 3.02 & 3.03

SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130	
AND ALL OTHER MARKINGS IN REGION MARKED PART NUMBER USE BOTH SIDES IF NECESSARY	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
INSTALL RIVETS IN ACCORDANCE WITH	



LDW270-51309-1 QUAD CHECK VALVE SUB-ASSEMBLY

(A3) LDW270-51309-3 QUAD CHECK VALVE SUB-ASSEMBLY (SAME AS -1 EXCEPT AS NOTED, SEE NOTE " 11) (A6)

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714			
SIZE E	CODE IDENT NO. 26512	LDW270-51309	A
SCALE FULL		SHEET 3.00	

THIS DWG SUPERSEDES LDW270-51309 REV NC. 15-3-67

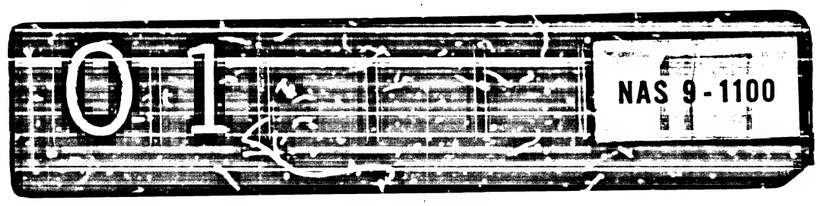
LDW270-51309 A

NOTES:

1. COMMERCIAL PART SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING
2. INDUCTION BRAZING OF FITTINGS SHALL BE IN ACCORDANCE WITH LSP-14-6303
3. TUBE STUBS SHALL BE CAPPED PER LSP-14-009 FOR SHIPMENT & STORAGE
4. ~~THE FOLLOWING PROCEDURE SHALL BE USED WHEN BRAZING LDW270-51309 -1 & -3 SUB ASSEM.~~
   - ~~a. ALIGN PART ON BRAZING FIXTUR~~
   - ~~b. APPLY 10-15 PSIG ARGON AT TEST "A" TEST "B" AND OUTLET OF LSC270-817 -3 & -4 CHECK VALVE~~
   - ~~c. BRAZE JOINT OF LSC269-240-12 ON LDW280-17388-453DSH-12 AND -165 DSH-10 ARGON PURGE FROM LDW280-17388-453 DSH-12 OUT THROUGH LDW280-17388-639 DSH-4~~
   - ~~d. BRAZE JOINT OF LSC 269-240-21 ON LDW280-17388-639 DSH-4 AND LDW280-17388-165 DSH-10 ARGON PURGE FROM LDW 280-17388-639 DSH-4 OUT THROUGH LDW 280-17388-453 DSH-12~~
   - ~~e. RELIEVE PRESSURE FROM TEST "A" ON LSC270-817-3 BRAZE JOINT OF LSC269-240-12 ON LSC 270-817-3 ARGON PURGE FROM LDW 280-17388-453DSH-12 & -639DSH-4 OUT THROUGH TEST "A" RE-APPLY 10-15 PSIG ARGON TO TEST "A"~~
   - ~~f. RELIEVE PRESSURE FROM TEST "A" ON LSC270-817-4 BRAZE JOINT OF LSC 269-240-21 ON LSC270-817-4 ARGON PURGE FROM LDW280-17388-453 DSH-12 & -639 DSH -4 OUT THROUGH TEST "A" RE-APPLY 10-15 PSIG ARGON TO TEST "A"~~
   - ~~g. UPON COMPLETION OF SUCCESSFUL BRAZES RELIEVE ARGON PRESSURE FROM OUTLET TEST "A" & TEST "B"~~
5. LDW-270-51309-1 & 5 SUB-ASSEMBLY SHALL BE FLUSHED WITH FREON TF AT 10-20 PSIG 2-5 GPM FOR 2-5 MIN.
   - a. APPLY FREON AT LDW-280-17388-453DSH-12 & -639 DSH -4 FOR-1 & -3 & LDW280-17388-829DSH-12 & LDW280-17388 DSH-4.
   - b. NITROGEN PRESSURE 20-25 PSIG TEST "B" & OUTLET OF LSC270-817-3&-4 FOR -1 & -3 AND LDW270-17388-10030 -1 & -2 FOR -5 AND FLOW AS ABOVE
   - c. NITROGEN PRESSURE 20-25 PSIG TEST "A" & OUTLET OF LSC 270-817-3 & -4 FOR -1 & -3 & LDW 270-10030-1 & -2 FOR -5 AND FLOW AS ABOVE.
   - d. CAP TEST "A" & TEST "B" OF LSC270-817 -3 & -4 FOR -1 & -3 AN LDW 27-10030 -1 & -2 FOR -5 AND FLOW AS ABOVE
   - e. AFTER FLUSHING INSPECT SUB ASSY PER LSP-14-19401 VERIFY LEVEL "L" FOR -1 & -3 & LEVEL "N" FOR -5 OF LSP 14-0011 HAS BEEN OBTAINED.
6. AFTER COMPLETION OF FREON FLUSH SUBJECT ALL STUBS OF LDW270-51309-1&5 ASSY TO 2-5 PSI A VAC FOR 2 MINUTES. PURGE LDW270-51309-1, -3 & -5 SUB ASSY WITH HEATED GN_2 140°F MAX FOR 10-15 MIN.
7. AFTER COMPLETION OF LTP270-309 PIT TEST PATCH TEST "A" TEST "B" & OUTLET OF LSC270-817-3 & -4 FOR -1 & -3 AND LDW270-10030-1&-2 FOR -5 PER LSP 14-50105.
8. UPON CONFORMANCE TO LEVEL "L" FOR -1 & -3 "N" FOR -5 OF LSP14-0011 THE CHECK VALVE SUB-ASSEMBLY SHALL BE PIT TESTED PER LTP 270-309 PRE-INSTALLATION TEST PIAN QUAD CHECK VALVE SUB-ASSEMBLY.
9. THE FOLLOWING PROCEDURE SHALL BE USED WHEN BRAZING THE -1 & -3 QUAD CHECK VALVE SUB-ASSEMBLY
   - a. ALIGN PARTS ON BRAZING FIXTURE
   - b. CAP TEST "A" TEST "B" AND OUTLET OF LSC270-817 -3 & -4
   - c. INITIATE ARGON PURGE FROM LDW280-17388-453DSH-12 AND OUT LDW280-17388-639 DSH-4 BRAZE JOINT OF LSC269-240-12 ON LDW280-17388-453 DSH-12 & LDW280-17388-165 DSH-10 AND BRAZE JOINT OF LSC269-240-21 ON LDW280-17388-165 DSH-10
   - d. REMOVE CAP ON LSC270-817-4 TEST "A" & CAP LDW280-17388-639 DSH4 BRAZE LSC269-240-21 ON LSC270-817-4
   - e. REMOVE CAP ON LSC270-817-3 TEST "A" CAP LSC270-817-4 TEST "A" BRAZE LSC269-240-12 ON LSC270-817-3
   - f. REMOVE CAP ON LDW280-17388-639DSH-4, CAP TEST "A" ON LSC270-817-3. BRAZE LSC269-240-21 ON LDW280-17388 - 639 DSH-4
10. LSC269-234-15 MAY BE USED AS AN ALTERNATE FOR LSC269-240-12

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-51309	A
SCALE		SHEET 3.01	

ENG 72.1 6-64



NOTES: (CONTINUED)

11. THE FOLLOWING PROCEDURE SHALL BE USED TO VIBRATE - FLUSH THE -3 QUAD CHECK VALVE SUB-ASSY:
    a. CAP LDW280-17388-639DSH -4 LINE
    b. APPLY FREON TF (PCA GRADE) TO LDW280-17388-453DSH-12 LINE AND FLOW AT 20-25 PSIG, 2-5 GPM.
    c. FLOW OUT THROUGH TEST "A" TEST "B" AND OUTLET OF LSC 270-817-3 & -4 REGULATE FLOW SUCH THAT 60 - 80% IS FROM OUTLETS & REMAINDER FROM TEST PORTS
    d. WHILE UNDERGOING FLUSH OPERATION, VIBRATE THE SUB-ASSY AT
        1.) FREQUENCY - 60 CPS ± 15%
        2.) LEVEL -2$_g$ ± 20%
        3.) TIME 5-10 MIN.
    e. UPON COMPLETION OF VIBRATION TERMINATE FREON FLUSH AND PATCH TEST PER LSP 14-19401 VERIFY THAT LEVEL "N" OF LSP 14-0011 HAS BEEN OBTAINED

~~12. PRIOR TO INSTALLATION, TUBE SHALL UNDERGO THE VIBRATE FLUSH PROCEDURE SPECIFIED BELOW~~
~~a. APPLY FREON TF (PCA GRADE) CONFORMING TO REQUIREMENTS OF LSP 14-0020 TO TUBE END AND FLOW AT 20-50 PSI 2-5 GPM.~~
~~b. WHILE UNDERGOING FREON FLOW, VIBRATE THE TUBE AT THE FLOWING LEVEL:~~
~~FREQUENCY 60 CPS ± 15%~~
~~G LEVEL g_g ± 20%~~
~~TIME 5 MIN. MINIMUM~~
~~c. CONTINUE THE ABOVE PROCEDURE UNTIL LEVEL "N" OF LSP 14-0011 IS OBTAINED. PATCH TEST VERIFICATION SHALL BE PER LSP 14-19401~~
~~d. THE VIBRATION SHALL BE PREFORMED WITH TUBING GROUNDED TO ELIMINATE ELECTROSTATIC EFFECTS.~~

13. THE FOLLOWING PROCEDURE SHALL BE USED WHEN BRAZING LDW 270-51309-5 VALVE SUB-ASSY
    a. ALIGN PARTS ON BRAZING FIXTURE
    b. CAP TEST "A" & TEST "B" AND OUTLET OF LDW 270-10030 -1 & -2
    c. INITIATE ARGON PURGE FROM LDW 280-17388-829 DSH + 12 AND OUT OF LDW 280-17388-830 DSH-4, BRAZE JOINT OF LSC269-240-12- ON LOW 280-17388-829 DSH-12 & LDW280-17388-828 DSH -10 AND BRAZE JOINT OF LSC269-240-21- ON LDW 280-17388-826 DSH-10.
    d. REMOVE CAP ON LDW 270-10030-1 TEST "A" & CAP LDW 280-17388-830 DSH-4 BRAZE LSC269-240-21 ON LDW 270-10030-2
    e. REMOVE CAP ON LDW 270-10030-1 TEST "A", & CAP LDW 270-10030-2 TEST "A". BRAZE LSC 269-240-12 ON LDW 270-10030-1
    f. REMOVE CAP ON LDW 280-17388-830DSH-4, CAP TEST "A" ON LDW270-10030-1, BRAZE LSC 269-240-21- ON LDW 280-17388-830 DSH-4.

14. THE FOLLOWING PROCEDURE SHALL BE USED TO VIBRATE-FLUSH THE -5 QUAD CHECK VALVE SUB-ASSY:
    a. CAP LDW280-17388-830DSH-4LINE
    b. APPLY FREON TF (PCA GRADE) TO LDW280-117388-829 DSH-12 LINE AND FLOW AT 20-25 PSIG, 2-5 GPM.
    c. FLOW OUT THROUGH TEST "A" TEST "B" AND OUTLET OF LDW270-10030-2. REGULATE FLOW SUCH THAT 60-80% IS FROM OUTLETS AND REMAINDER FROM TEST PORTS.

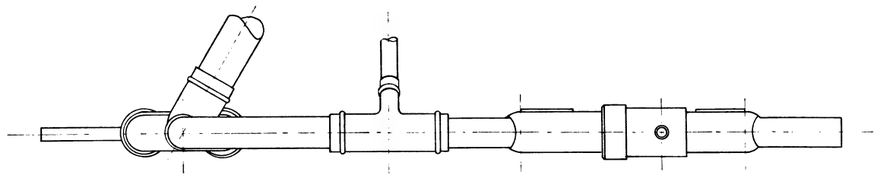
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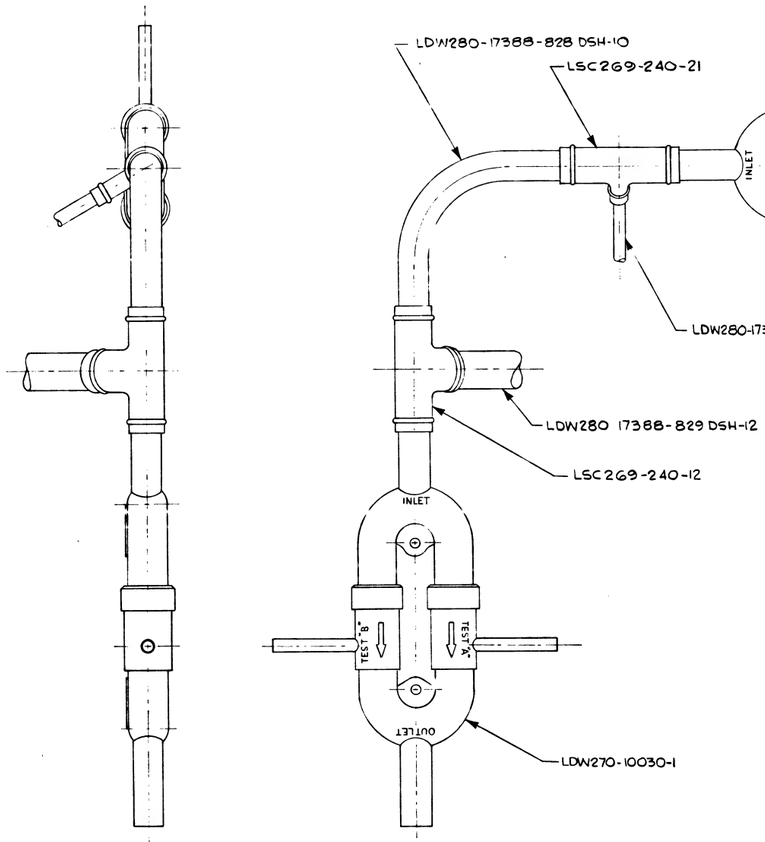
GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-51309	A
SCALE		SHEET 3.02	

ENG 73.1 6-64

QUALITY
NAS 9-1100

SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.
MARK PART NUMBER IN ACCORDANCE WITH MIL STD 130.
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
INSTALL RIVETS IN ACCORDANCE WITH





(A5) LDW270-51309-5 QUAD CHECK VALVE SUB-ASSEMBLY

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714			
SIZE E	CODE IDENT NO. 26512	LDW270-51309	A
SCALE FULL		SHEET 4 OF 30	

LDW270-51309A

LDW270-51309 B

LM	LDW270-54304	LM-14(44) THRU	1	LM	LDW270-51304	LM-8(38)	1								
				LM	LDW270-54304	LM-7(37)	1								
LM	LDW270-54304	LM-2(32)	1	LM	LDW270-54304	LM-6(36)	1	LM	LDW270-52300	LM-2(32)	1				
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO. GAEC SCH NO.	REQD PER MODULE OR END ITEM				
PART NO. LDW270-51309-5				PART NO. LDW270-51309-3				PART NO. LDW270-51309-1		55					

WORK PACKAGE FUNCTION 110 5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	1.10	1.11	2.00	3.00	4.00			
REV	B	A	B	A	A	A			
SHEET	301	3.02	303						
REV	A	A	B						
SHEET									
REV									

LAST SECT LTR USED		GRUMMAN REL INFO B	
LAST DASH NO. USED	-5	PRIM NO.	VK(209)
		484	ME 18 5/16/67

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES
— — —

ORIG DWG AUTH			
DETAIL SPEC REQUIREMENT			
CLASS II ENGRG CHANGE	✓		
CLASS I ENGRG CHANGE			
LCD 1514			

CONTRACT NO. NAS 9-1100 LINE ITEM 9 DOCUMENTATION TYPE II

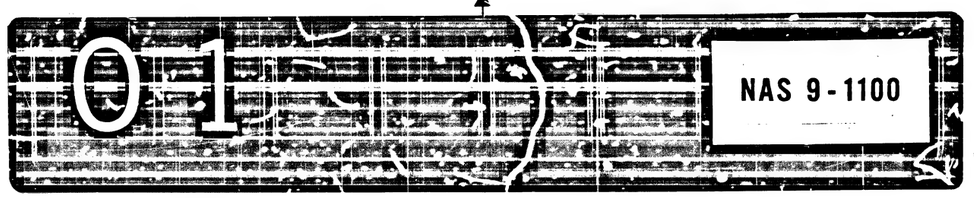
DRAWN BY	J. PAVLICA 5/16/67		
LAYOUT BY	—		
CHECKED BY			
GR LDR	J. Pavlica 5/23/67		
PROP	M Dawson 5/31/67	PROJ ENGR	J.A. McClenaghan 5/19/67
		REL GROUP	Approved 5/24/67

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

QUAD CHECK VALVE SUB-ASSY
DESCENT PROPELLANT
PRESSURIZATION SUB-SYSTEM

SIZE	CODE IDENT NO.		
B	26512	LDW270-51309	B
SCALE NONE		SHEET 1.00 OF 9	

ENG 77.1 12-65



REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	APPD
A	9	2.00 3.01 3.02 3.03 4.00 1.11				✓		LCD 3491- ECP H089	REMOVED -3 ASSY. ADDED SH 1.11, 3.01, 3.02, 3.03 & 4.00. CREATED -5 SUB-ASSY. ADDED -5 SUB-ASSY REQUIREMENTS TO NOTES 5, a, b, c, d, e, 6, 7 & 8. ADDED NOTES 13 & 14 FOR -5 SUB-ASSY.	LM-8 THRU LM-15		-3	A. STERNBERG 11-7-68		
	10	3.03 3.01				✓		LCD 1950 (1)	REF E.O. A3 NOTE 15 WAS NOTE 9 W. Murphy 11-13-68 NCG	LM-6 THRU LM-15	-1				
B	1	1.00				✓		LEO 270-78 LCD 3491 ECP H089	ADDED LM-8 EFF. TO LDW270-51309-3 N/A LDW270-51304.	LM-8	✓				
	2	1.00				✓		LEO 270-79 LCD 3491 ECP H089	LDW270-51309-5 EFFECTIVITY WAS LM-8 THRU LM-15 S/B LM-9(39) THRU LM-15(45)	LM-8		✓			
	3	1.00						LEO 270-80 LCD 3587	FOR -5 REMOVED LM-15 EFFECTIVITY	LM-15		✓			
	4	3.03					✓	LEO 270-84	ADDED NOTE #16	LM-5 THRU LM-14	NOT	REQ'D	H. STEVES 3-11-69		
	5					✓		E.O. B5 LCD 3491A ECP H089	CANCELED BY E.O. B7	LM-6 THRU LM-8	NOT	REQ'D			
	6	3.03				✓		E.O. B6 LCD 3491 ECP H089	ADDED NOTE #17	NOT REQ'D	NOT	REQ'D			
	7					✓		E.O. B7 LCD 3491 ECP H089 (R)	CANCELED E.O B5.	LM-6 THRU LM-8	NOT	REQ'D N.D.	E.C.G		

CHG APPROVED

LTR	GROUP LDR	PROP	PROJ.
A	[illegible] 11/12/68	R. B. [illegible] 11/13/68	
B			

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51309	B

SCALE NONE SHEET 1.11 (3)

ENG 77.16 3-66

01

NAS 9-1100

NOTES: (CONTINUED)

14. THE FOLLOWING PROCEDURE SHALL BE USED TO VIBRATE-FLUSH THE -5 QUAD CHECK VALVE SUB-ASSY: (CONTINUED)

    d. WHILE UNDERGOING FLUSH OPERATION, VIBRATE THE SUB-ASSY AT :
        1. FREQUENCY - 60 CPS ± 15%
        2. LEVEL 2g ± 20%
        3. TIME -5-10 MIN.

    e. UPON COMPLETION OF VIBRATION TERMINATE FREON FLUSH AND PATCH TEST PER LSP 14-19401. VERIFY THAT LEVEL "N" OF LSP 14-0011 HAS BEEN OBTAINED.

15. VIBRATE & FLUSH REQUIREMENTS (-3 ONLY)

    a. APPLY FREON TF (PCA) AT 20-25 PSIG TO OUTLET PORT & TEST PORTS "A" & "B" OF LSC 270-817-3 & -4 CHECK VALVES

    b. FILL INLET TUBE LDW 280-17388-453DSH-12 & TEST TUBE LDW 280-17388-639DSH-4 WITH FREON TF(PCA). TUBES TO BE SEALED WITH VINYL TAPE NO. 401. TAPE NOT TO BE APPLIED TO TUBE SURFACE.

    c. VIBRATE SUB-ASSY LDW270-51309-3 AT:
        (1) FREQUENCY 60 cps ± 15%
        (2) LEVEL ±2g ± 20%
        (3) TIME 5-10 MIN. (OR AS NECESSARY TO SATISFY LEVEL "L" OF LSP 14-0011).

    d. UPON COMPLETION OF VIBRATION, DRAIN TUBES LDW280-17388-453 DSH-12 & LDW 280-17388-639DSH-4 PRIOR TO RELIEVING PRESSURE ON OUTLET & TEST PORTS "A" & "B" OF LSC 270-817-3 & -4 CHECK VALVES. PATCH TEST FOR LEVEL "L" OF LSP 14-0011.

    e. FLUSH SUB-ASSY LDW 270-51309-3 WITH FREON TF(PCA GRADE) AT 10-20 PSIG, 2-5 GPM, 2-5 MIN. APPLY FREON AT LDW 280-17388-453DSH-12 & -639 DSH-4 THROUGHOUT THE FOLLOWING STEPS.

    (1) APPLY FREON TF(PCA) BACK PRESSURE AT 20-25 PSIG TO TEST "B" & OUTLET OF LSC 270-817-3 & -4 CHECK VALVES. FLOW AS ABOVE. PATCH TEST TO VERIFY THAT LEVEL "L" OF LSP 14-0011 HAS BEEN OBTAINED.

    (2) APPLY FREON TF(PCA) BACK PRESSURE AT 20-25 PSIG TO TEST"A" & OUTLET OF LSC 270-817-3 & -4CHECK VALVES. FLOW AS ABOVE. PATCH TEST TO VERIFY THAT LEVEL "L" OF LSP 14-0011 HAS BEEN OBTAINED.

    (3) CAP TEST "A" & TEST "B" OF LSC 270-817-3 & -4 CHECK VALVES. FLOW AS ABOVE. PATCH TEST TO VERIFY THAT LEVEL "L" OF LSP 14-0011 HAS BEEN OBTAINED.

16. CLAMPING OF TUBES TO BE IN ACCORDANCE WITH LEI 280-019 REV "B" (FOR -3 & -5).

17. THE LDW 270-51309-5 QUAD CHECK VALVE SUB-ASSEMBLY SHALL BE USED FOR ALL FUTURE REPLACEMENTS AND SPARES FOR -1 & -3 ON LM-2(32), LM-6(36) THRU LM -8 (38).

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-51309	B
SCALE		SHEET 303	(3)

ENG 73.1 6-64

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG NO. LDW270-51309 | EO NO. C1

CONTROL INFO NO. LM-2-5539

REVISE TO READ:

NOTE 6: AFTER COMPLETION OF FREON FLUSH, SUBJECT ALL STUBS OF LDW270-51309-1 ASSEMBLY TO 2-5 PSIA VAC. FOR 2 MINUTES. PURGE LDW270-51309-1 & -3 WITH HEATED GN_2 140°F MAX FOR 10-15 MIN. AFTER COMPLETION OF FREON SUBJECT ALL PORTS OF LDW 270-51309-5 TO 25-30 MM HG. ABSOLUTE PRESSURE FOR ONE (1) HOUR MINIMUM.

DETAIL SPEC REQ | CL II ENGRG CHG: ✓ | CL I ENGRG CHG

REASON FOR EO: IMPROVED DRYING METHOD

DESCRIPTION OF EO: REVISED NOTE 6 REPLACED HEATED NITROGEN DRY WITH VACUUM DRY.

(2)

GAEC EO RELEASE: KB 7-23-64

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM10-(40) THRU LM15-(45)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: REWORK ✓ | SCRAP

APPROVED BY / DATE: 7/14/64

SUPPORT | RELIAB. GROUP

GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ. ENGRG
KB 7/30/64	K.C. 7/29/64	7/29/64	7/30/64

PRIORITY: C

DRAWING TITLE: QUADCHECK VALVE SUB-ASSY ~ DESCENT PROP. PRESSURIZATION SUB-SYSTEM

DRAWING NO.: LDW270-51309

EO NO.: C1

ISSUED BY: S. Henrich X3604

SECTION: LM PROPULSION GROUP NO. 270 PL 25

0 1

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG NO LDW270-51309 | EO NO C2

CONTROL INFO NO. LM-2-5548

THIS EO REVISES EO C1 EFF:

(S/B) LM10-(40) THRU LM14-(44)

(WAS) LM10-(40) THRU LM15-(45)

DETAIL SPEC REQ | CL II ENGRG CHG | V | CL I ENGRG CHG |

REASON FOR EO: (REF EO B3) INCORRECT EFF. CALLED OUT

DESCRIPTION OF EO: REMOVED LM-15 EFFECTIVITY FROM EO C1

(2)

GAEC EO RELEASE: R V R 7-30-69

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY / DATE		SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	EO NO.
		LM10-(40) THRU LM14-(44)		✓		✓		7/24/69				RGB 7/24/69	KC 7/23/69	Drain 7/24/69	RGB 7/24/69	C2

PRIORITY: C

DRAWING TITLE: QUADCK VALVE SUB-ASSY DESCENT PROP. PRESSURIZATION SUB SYS

DRAWING NO.: LDW270-51309

ISSUED BY LIAISON S. Henrich X3604 SECTION LM PROPULSION GROUP NO. 270 PL 25

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LDW270-51009 | EO NO. C3

CONTROL INFO NO. LM-2-5570

THIS EO REVISES EO C1

REF. NOTE 6:

AFTER COMPLETION OF FREON... FOR 10-15 MIN. AFTER COMPLETION OF FREON SUBJECT... TO 25-30 INCHES HG... FOR 1 HR. MIN.

(WHS) AFTER COMPLETION OF FREON SUBJECT... TO 25-30 MM HG... FOR 1 HR. MIN.

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG
		✓

REASON FOR EO: INCORRECT CALLOUT ON EO C1

DESCRIPTION OF EO: THIS EO REVISES EO C1: IN NOTE 6; 25-30 MM HG..., S/B ...25-30 INCHES HG...

GAEC EO RELEASE: (2) CWD 8/14/69

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM10-(40)	
		THRU	
		LM15-(45)	

DRAWING CHANGE REQD: REVISE DWG ✓; RECORD EO

DISPOSITION OF PARTS: REWORK ✓; SCRAP

PRIORITY: C

DRAWING TITLE: QUAD. CHECK VALVE SUB-ASSY DES. PROP. PRESSURIZATION SUB-SYS.

DRAWING NO.: LDW270-51309

EO NO.: C3

APPROVED BY	DATE	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
RD	8/11/69			8/14/69	8/11/69	8/14/69	8/14/69

ISSUED BY LIAISON S. Henrich X3604

SECTION LM PROPULSION GROUP NO. 270 PL 25

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING COP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW270-51309 | EO NO. C4

CONTROL INFO NO. LM-2-5577

THIS EO REVISES EO C_3

REF NOTE 6:

AFTER COMPLETION OF FREON.... FOR 10-15 MIN.
AFTER COMPLETION OF FREON SUBJECT....
TO 30-0 M.A HG.... ABSOLUTE PRESSURE FOR HOUR MINIMUM.

WAS AFTER COMPLETION OF FREON SUBJECT.....
TO 25-30 INCHES HG.... ABSOLUTE PRESSURE
FOR ONE (1) HOUR. MINIMUM.

DETAIL SPEC REQ | | CL II ENGRG CHG | ✓ | CL I ENGRG CHG | |

REASON FOR EO: INCORRECT CALLOUT ON EO C_3

DESCRIPTION OF EO: THIS EO REVISES EO C_3 AS NOTED ABOVE
REVISED NOTE 6.

GAEC EO RELEASE: VK

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	DATE	RELIAB GROUP	SUPPORT	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
LM		LM-10 (40) THRU		✓		✓		R.B.th	1/21/64			3/24/69	8/13/69	8-19-69	8/22/69	8/27/69
		LM-15 (45)						P.R.R	8-18-69			K.C	Duane	R.B.th	Both	8/27/69

PRIORITY: C

DRAWING TITLE: QUADCHECK VALVE SUB-ASSY - DESCENT PROP. PRESSURIZATION SUB-SYSTEM

DRAWING NO.: LDW270-51309

EO NO.: C4

ISSUED BY LIAISON S.GRECO K3604 SECTION LM PROPULSION GROUP NO. 270 PL 25

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

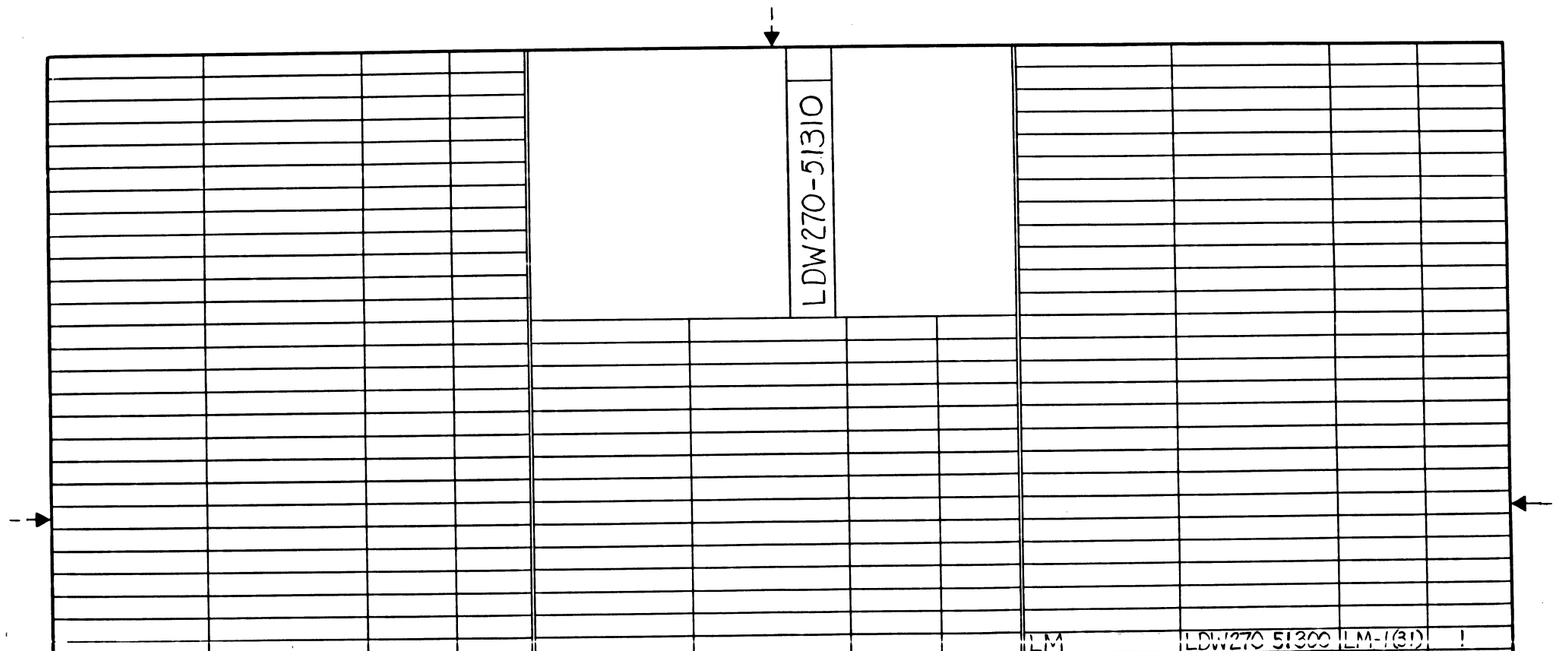
ENGINEERING ORDER

DWG. NO. LDW270-51309		EO NO. C5
CONTROL INFO NO. LM-2-5582		

THIS EO REVISES EO C3 & C4 EFF

LM-10 (40) THRU LM-14 (44) WAS
LM-10 (40) THRU LM-15 (45)

| DETAIL SPLC REQ | | CL II ENGRG CHG | | CL I ENGRG CHG | ✓ | | |



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LM	LDW270 51300	LM-1(31)	1
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW270-51310-1		GAEC SCH NO.	

WORK PACKAGE NO. 110 — 5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH								
SHEET	1.00		2.00	2.01		3.00		4.00
REV								
SHEET								
REV								
SHEET								
REV								

LAST SECT LTR USED	C	GRUMMAN REL INFO	
LAST DASH NO. USED	-11	PRIM NO.	JK(coy)
		486	mP.14 -3/17/7

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 NONE ± 1/2°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS 9-1100 — LINE ITEM — DOCUMENTATION TYPE II

DRAWN BY	A. HENDRICKS 3-13-67	RELIABILITY	
LAYOUT BY			
CHECKED BY	N. Grau L 3-13-67		
GR LEADER	[illegible] 3/13/67		
PROP	[illegible] 3/13/67		
VDI		PROJ ENGR	[illegible]
STRESS		REL GROUP	[illegible]
WEIGHTS			

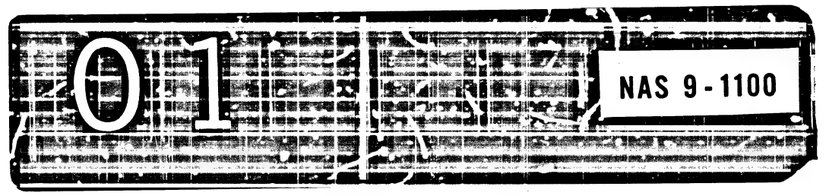
GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

MODULE ASSEMBLY
DESCENT PROPELLANT
PRESSURIZATION SUBSYSTEM

SIZE	CODE IDENT NO.	
B	26512	LDW270-51310

SCALE NONE — SHEET 1.00 OF 5

ENG 77.1 12-65



C.L.	QTY PER ASSEMBLY	PART NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
L	1	LSC270-827-1	S		REDUCING VALVE	SEE NOTE 1						
L	1	LSC270-814-3	S		FILTER							
L	1	LSC270-713-10-1	S		SOL. LATCH VALVE							
L	1	LSC270-713-9-1	S		SOL. LATCH VALVE							
L	2	LSC269-258-7	E		TEE							
L	1	LSC269-222-8	E		TEE							
L	3	LSC269-218-8	E		UNION	SEE NOTE 1						
L	1	LDW280-23681-3	E		PLATE ASSEMBLY	SEE DWG						
L	1	LDW280-17388-622 DSH-8			TUBE							
L	1	LDW280-17388-246 DSH-6			TUBE							
L	1	LDW280-17388-245 DSH-8			TUBE							
L	2	LDW280-17388-171V-2	E		TUBE ASSEMBLY	SEE DWG						
L	1	LDW270-51310-11	S		NAME PLATE	(MAKE FROM	GN11AT-4)					
L		LDW270-51310-1	S		MODULE ASSEMBLY							

CLEANLINESS PER LSP14.0011

SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH LPC 19-2 (GRUMMAN) LPC 19-3 (VENDOR)

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW270-51310

SCALE NONE SHEET 2.00

ENG 77.2 5-64

NAS 9-1100

C.L	QTY PER ASSEMBLY	PART NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
	-1											
N	2	510790-203	E		TRANSDUCER	G.F.E.						
C	2	MS28778-2			PACKING	STD PART						
C	9	MS21043-3			NUT							
C	8	MS21043-06			NUT							
C	4	AN960C10L			WASHER							
C	1	AN960D3			WASHER							
C	2	AN815-2C			UNION							
C	2	AN735D31			CLAMP	STD PART						
C	1	GC12H-16			CLAMP	GRUMMAN STD.						
C	4	GC12H-8			CLAMP							
C	3	GB511J-3-4			BOLT							
C	6	GB511J-3-3			BOLT							
C	1	GB511J-08-3			BOLT							
C	8	GB511J-06-16			BOLT							
			E			GRUMMAN STD						

CLEANLINESS PER LSP 14-0011

SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH LPC 19-2 (GRUMMAN) LPC 19-3 (VENDOR)

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW270-51310

SCALE NONE SHEET 2.01

ENG 77.2 5-64

2.01 NAS 9-1100

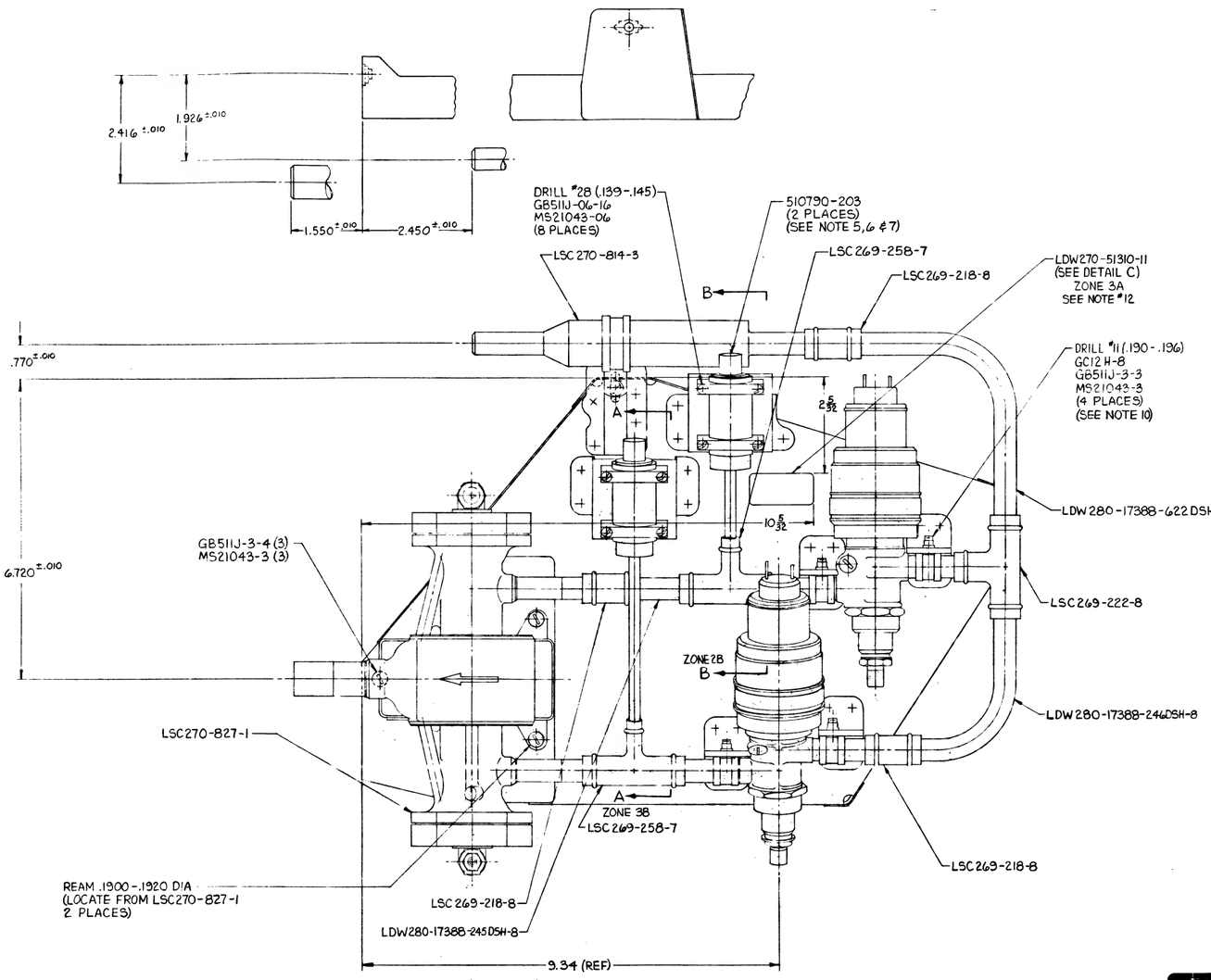
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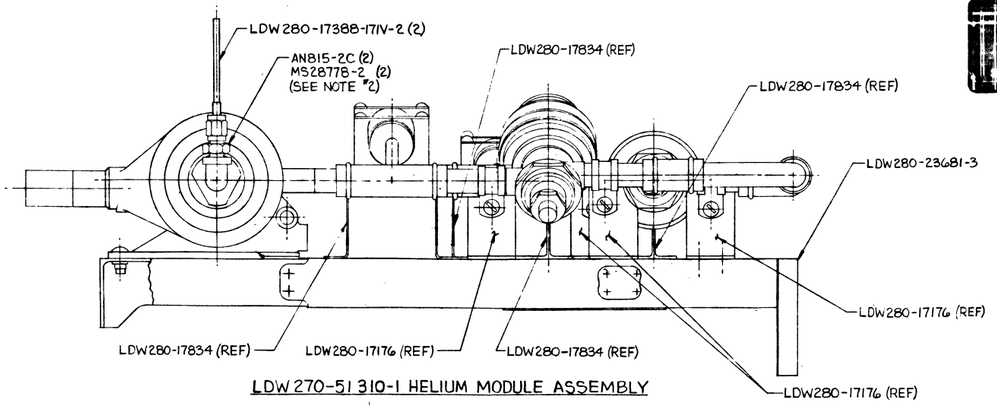
1. COMMERCIAL PART SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING.
2. TORQUE MECHANICAL FITTING 50-60 INCH-LBS.
3. INDUCTION BRAZING OF FITTINGS SHALL BE IN ACCORDANCE WITH SPEC LSP-14-6303.
4. LDW270-51310-1 MODULE ASSEMBLY SHALL BE TESTED IN ACCORDANCE WITH LPT 270-310. PRE-INSTALLATION TEST PLAN FOR MODULE ASSEMBLY-DESCENT HELIUM PROPELLANT PRESSURIZATION SUBSYSTEM.
5. 510790-203 TRANSDUCER SHALL BE PREPARED IN ACCORDANCE WITH SPEC LSP-14-17450 PRIOR TO BRAZING INTO SYSTEM.
6. ELECTRICALLY BOND 510790-203 TRANSDUCER IN ACCORDANCE WITH LSP 390-001.
7. FOR ELECTRICAL INTERFACE REFER TO INTERFACE CONTROL DOCUMENT LID 360-20001. FOR MECHANICAL INTERFACE REFER TO LID 360-20210 (FOR ENGR REF ONLY).
8. TUBE STUBS SHALL BE CAPPED PER LSP-14-009 FOR SHIPMENT AND STORAGE. REMOVE CAPS PRIOR TO BRAZING INTO SYSTEM.
9. INSTALL AN960C10L WASHER ON BOTH SIDES OF TEE BRACKET BETWEEN BRACKET AND AN735D31 CLAMP.
10. PERMISSIBLE TO SHIM WITH AN960C10 OR AN960C10L AS REQUIRED.
11. STENCIL, RUBBER STAMP OR SILK SCREEN $\frac{1}{16}$ HIGH LETTERS AND NUMERALS PER LSP-14-001 AND LSP-14-002.
12. APPLY NAME PLATES IN ACCORDANCE WITH GRUMMAN SPEC LSP-14-22602 AND CURE AS SPECIFIED OR AT AMBIENT TEMPERATURE FOR 14 DAYS. THE USE OF ALTERNATE ADHESIVES IS PERMISSIBLE PROVIDING THEY CONFORM TO THE APPLICABLE REQUIREMENTS OF GRUMMAN SPEC LSP-14-002.

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-51310	
SCALE NONE		SHEET 3.00	

ENG 72.1 6-64

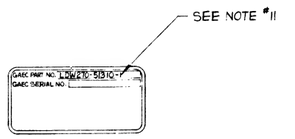
NAS 9-1100



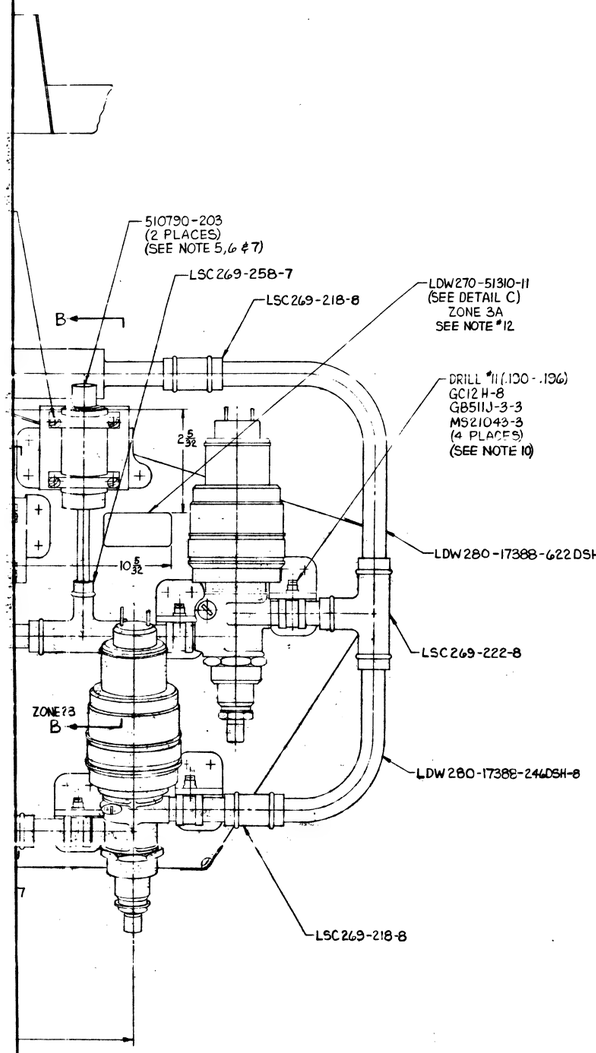


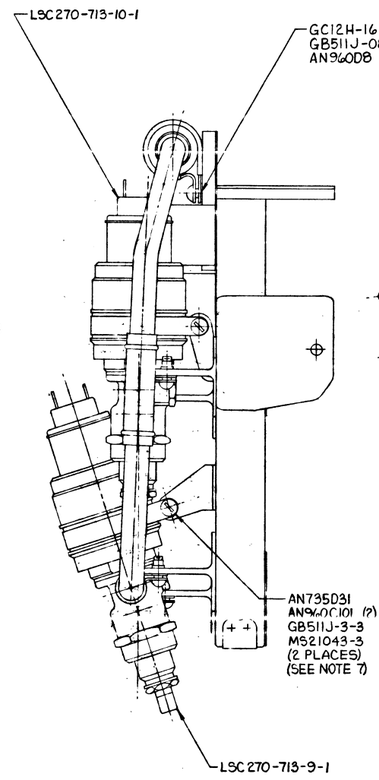
LDW 270-51 310-1 HELIUM MODULE ASSEMBLY

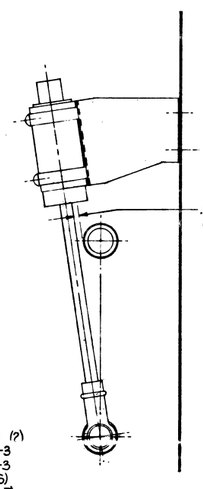
01/02 NAS 9-1100



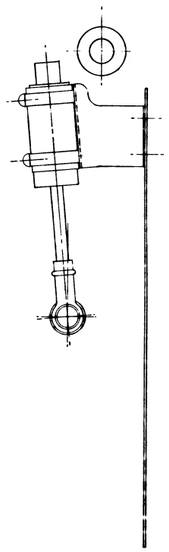
DETAIL C
ZONE 4C
SCALE 2/1



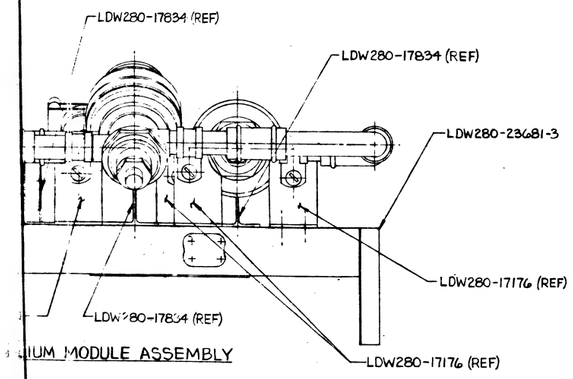




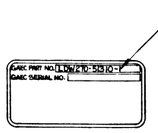
SECTION A-A
ZONE 5B



SECTION B-B
ZONE 5B



IUM MODULE ASSEMBLY



DETAIL C
ZONE 4C
SCALE 2/1

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY.	
FILLET AND INSIDE CORNER RADII TOLERANCES .018R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
250 FOR ALL DRILLED HOLES	✓
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	✓
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ⌐ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, MAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	✓
TOLERANCE ON LOFTED DELINEATIONS IS	

DWG SIZE 34 X 44

PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X 48)=17.98 SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL)=4.49 SQ. FT.

PRINT TRIM LINE

D LDW270-51310
C
B LDW270-51310
A LDW270-51310

02102 NAS 9-1100

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L.I., NEW YORK		
LM MODEL OR END ITEM	SIZE J	CODE IDENT NO. 26512	LDW270-51310
	SCALE FULL		SHEET 4.00

LDW270-51310

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO LDW270-51310 | EO NO. A1
CONTROL INFO NO. LM270-847

SH 4: ON -1 INSTL, TO LDW270-51310-11, AT DETAIL C, ZONE 2A
ADD, "SEE NOTE #*".

SH 3: ADD NOTE #*, "EPON #919 PER LSP-14-14102 & LSM-14-4103, BRUSH
THIN COAT OVER NAMEPLATE, CURE 72 HOURS AT
ROOM TEMPERATURE".

* USE NEXT AVAILABLE NOTE NUMBER.

DETAIL SPEC REQ		CL II ENGRG CHG	X	CL I ENGRG CHG		LCD-1032

REASON FOR EO: TO PROVIDE PROTECTIVE COATING FOR NAMEPLATE

DESCRIPTION OF EO: ADDED GENERAL NOTE & FIELD REFERENCE

GAEC EO RELEASE: JK 4/3/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM1(31)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO | DISPOSITION OF PARTS: -1 REWORK | SCRAP

APPROVED BY / DATE: PROP 4/3/67 | SUPPORT | RELIAB GROUP | GROUP LEADER 4/28/67 | STRESS GROUP | LIAISON ENGRG | PROJ ENGRG 3/29/67 4/28/67

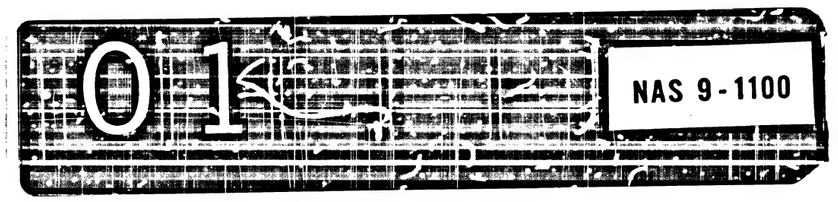
PRIORITY: C

DRAWING TITLE: MODULE ASSEMBLY-DESCENT PROP. PRESSURIZATION SUB-SYSTEM.

DRAWING NO.: LDW270-51310

EO NO.: A1

ISSUED BY A.HENDRICKS X1471 27 MAR 1967 SECTION PROPULSION GROUP NO. 345 PL 25



B

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LDW270-51310 | EO NO. A2
CONTROL INFO NO. LM270-860

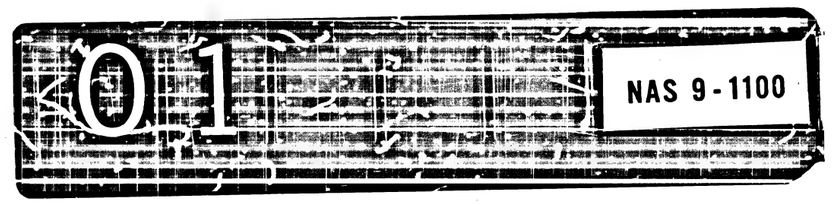
DESCRIPTION OF E.O.

SH4: ON -1 INSTL, IN F/D, AT ZONE 4C, TUBE CALL OUT
LDW280-17388-636 DSH-8 WAS
LDW280-17388-622 DSH-8.

SH 2.00: IN B/M FOR -1 INSTL, LDW280-17388-636DSH-8
WAS LDW-17388-622DSH-8.

DETAIL SPEC REQ		CL II ENGRG CHG	X	CL I ENGRG CHG	LCD # 19-1032											5
REASON FOR EO: TO AGREE WITH CHANGE OF DETAIL PARTS					DESCRIPTION OF EO: NOTED											GAEC EO RELEASE: JK 4/6/67
MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY / DATE		PROP	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
LM		LM1 (31)		✓		-1		1					3/1/67			4/5/67	4/5/67
				PRIORITY: C	DRAWING TITLE: MODULE ASSEMBLY-DESCENT PROP. PRESSURIZATION SUB-SYSTEM								DRAWING NO.: LDW270-51310				EO NO.: A2

ISSUED BY A. HENDRICKS X1471 30 MAR 1967 SECTION PROPULSION GROUP NO. 345 PL 25



ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LDW270-51310 | EO NO. A3
CONTROL INFO NO. LM-5-15123

IN B/M
LDW 270-51310-11 I & T "S" S/B "E".

RELEASED BY LIAISON

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓			5
REASON FOR EO: TRACEABILITY NOT REQ'D.				DESCRIPTION OF EO: IN B/M I&T "E" WAS "S" FOR. LDW270-51310-11.				GAEC EO RELEASE: 31

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY				GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
LM		LM-1 (31)						DATE			SUPPORT	RELIAB GROUP	5/16/67	5/16/67	5/18/67	5-18-67	6/5/67

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	MODULE ASSY. D/S-PROP. PRESS. SUB. SYS.	LDW270-51310	A3

ISSUED BY LIAISON J. JARVIS SECTION PROPULSION GROUP NO. 270 PL 25

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENG 32.1 REV 3-65
ENGINEERING ORDER

DWG NO. LDW270-51310 | EO NO. A4
CONTROL INFO NO. LM270-920

1. DELETE NOTE #2 & REFERENCES IN FIELD

   IN FIELD & B/M REMOVE CALL OUT FOR AN815-2C (2) & MS28778-2 (2).

2. IN B/M ONLY, I & T COLUMN; FOR -1 ASSY, LDW270-51310-11 "E" WAS "S".

DETAIL SPEC REQ		CL II ENGRG CHG	X	CL I ENGRG CHG		LCD-1032	5

REASON FOR EO: 1. TO REMOVE TORQUE REQUIREMENTS FOR ~~3~~ TUBE FITTING. 2. SERIALIZATION OF NAMEPLATE NOT REQUIRED

DESCRIPTION OF EO: 1. DELETED NOTE 2 & FIELD REFERENCE, REMOVED AN 815-2C & MS28778-2. 2. REMOVED SERIALIZATION OF LDW270-51310-11. E WAS S

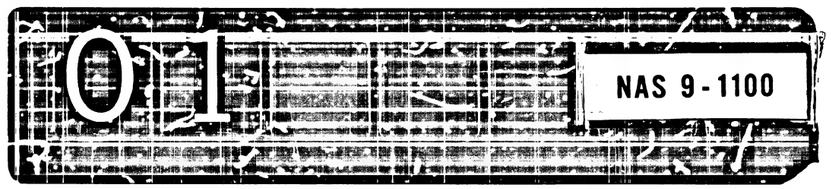
(R) GAEC EO RELEASE: 5/12/67

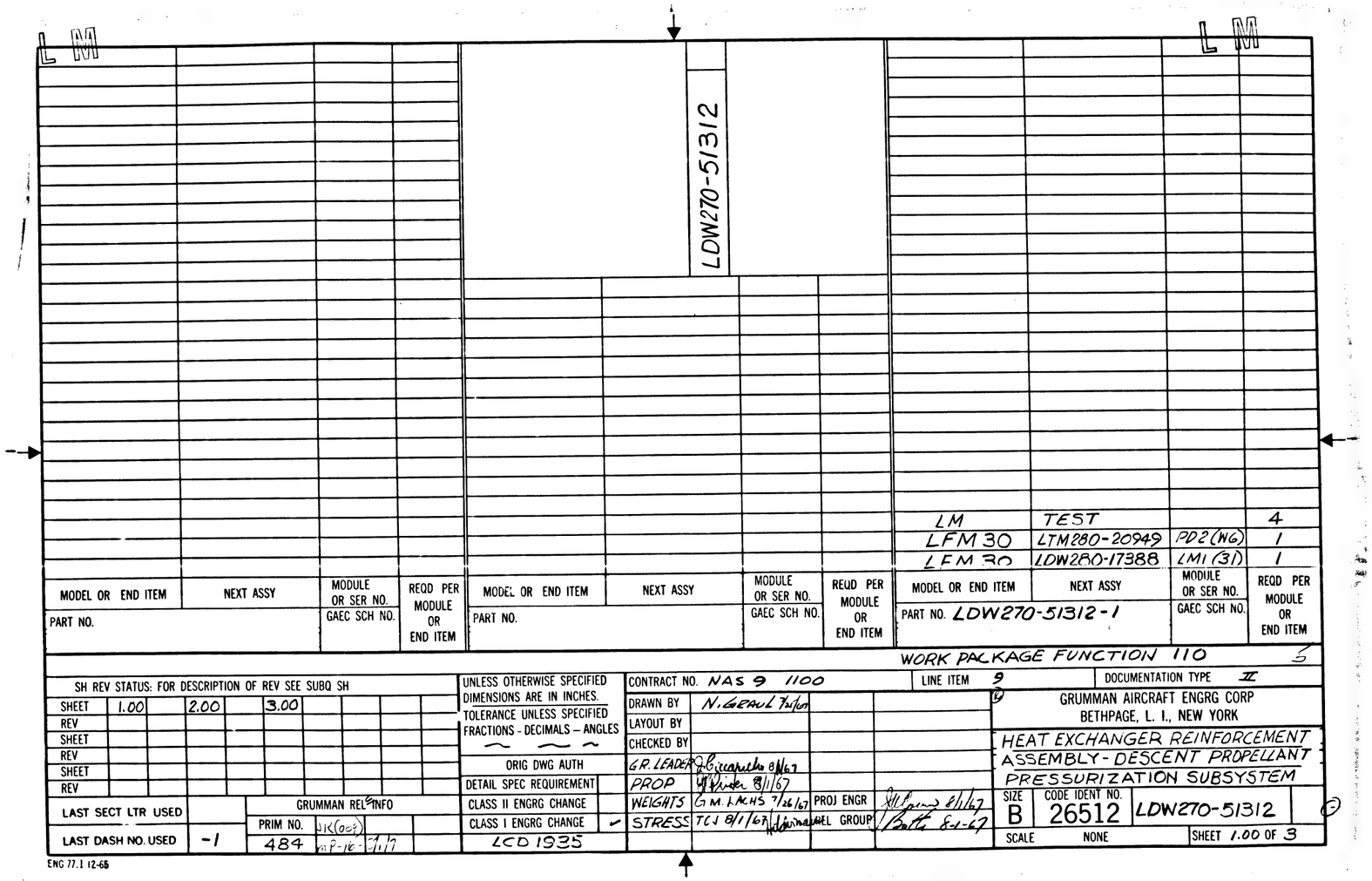
MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO	EFFECTIVITY: SUB CONTR UNIT NO
LM		LM1(31)	

PLAN NO CHANGE REQD	DISPOSITION OF PARTS			APPROVED BY								
REVISE DWG	RECORD EO	REWORK	SCRAP	DATE	5/14/67	PROP	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
✓		-1		1					5/14/67		5/15/67	5/16/67

PRIORITY: C | PLANNING TITLE: MODULE ASSEMBLY-DESCENT PROP. PRESSURIZATION SUB-SYSTEM | DRAWING NO: LDW270-51310 | EO NO. 14

ISSUED BY A. HENDRICKS X1471 12 MAY 1967 SECTION PROPULSION GROUP NO. 345 PL 25





MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	TEST		4
LFM 30	LTM280-20949	PD2(WG)	1
LFM 30	LDW280-17388	LMI(31)	1
PART NO. LDW270-51312-1		GAEC SCH NO.	

WORK PACKAGE FUNCTION 110 5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00		2.00		3.00					
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED	
LAST DASH NO. USED	-1

GRUMMAN REL INFO
PRIM NO. DIK(005) 484 MP-16-7.1.17

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	✓
LCD 1935	

CONTRACT NO. NAS 9 1100 LINE ITEM 9 DOCUMENTATION TYPE II

DRAWN BY	N. GEAUL 7/26/67		
LAYOUT BY			
CHECKED BY			
G.P. LEADER	J. Ciccarello 8/1/67		
PROP	[illegible] 8/1/67		
WEIGHTS	G.M. LACHS 7/26/67	PROJ ENGR	[illegible] 8/1/67
STRESS	TCJ 8/1/67	REL GROUP	[illegible] 8-1-67

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

HEAT EXCHANGER REINFORCEMENT ASSEMBLY - DESCENT PROPELLANT PRESURIZATION SUBSYSTEM

SIZE	CODE IDENT NO.	
B	26512	LDW270-51312

SCALE NONE SHEET 1.00 OF 3

ENG 77.1 12-65

01 NAS 9-1100

						✓				SHIM-LAMINATED	AL. ALY	MIL-S-22499 COMP I (5052) CL 7	5052H39	.252x10x10				
						4		MS21043-3	E	NUT	STD PART							
						3		NAS1307-35	E	BOLT	↕							
						4		NAS679C7	E	NUT	STD PART							
						✓		GT835B-8N	E	TEFLON TAPE	GRUMMAN STD							
						4		GB511J-3-3	E	BOLT	GRUMMAN STD							
L						1		LSC270-820-11	S	HEAT EXCHANGER	SEE NOTE 3							
						2		LDW270M10054-11	E	FITTING	SEE DWG.							
						2		LDW270M10053-11	↕	TRUSS	↕							
						4		LDW270M10052-11		SPACER								
						1		LDW270M10056-1		BEAM ASSY								
						1		LDW270M10051-11	↓	BEAM	↓							
						1		LDW270M10050-11	E	PLATE	SEE DWG							
L								LDW270-51312-1	S	HEAT X REINF ASSY								
////// C.L.						-1		CODE IDENT		PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
						QTY PER ASSEMBLY													

CLEANLINESS LEVEL PER LSP-14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

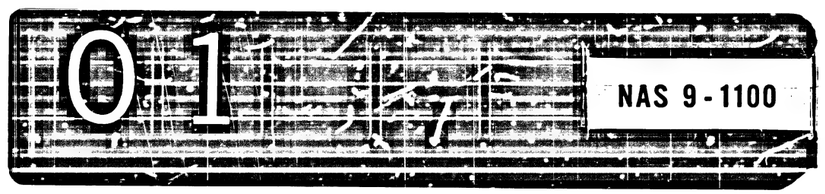
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : LPC-19-2 (VENDOR) LPC19-3 (GRUMMAN)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

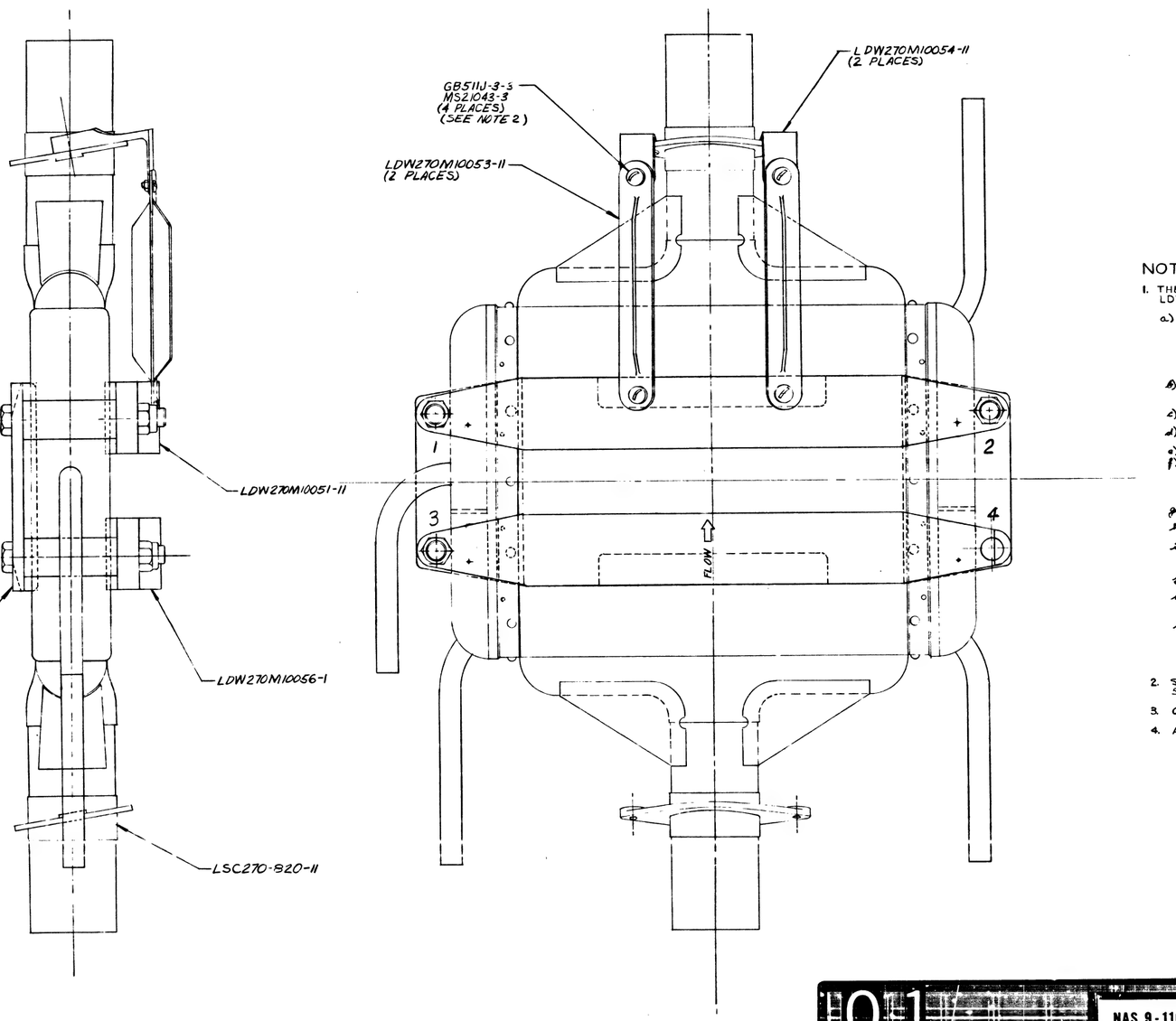
SIZE	CODE IDENT NO.	
B	26512	LDW270-51312

SCALE NONE SHEET 2.00

ENG 77.2 7-65



SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
M.S.M. PART NUMBER IN ACCORDANCE WITH MIL-STD-130.	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ⊏⊐ USE BOTH SIDES IF NECESSARY	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
INSTALL RIVETS IN ACCORDANCE WITH	

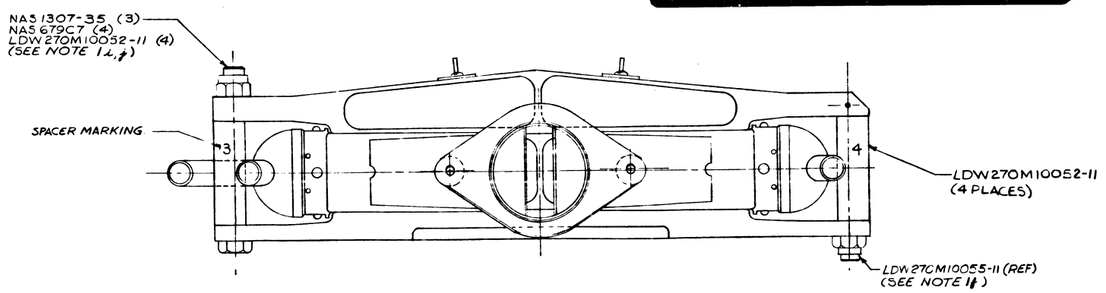


NOTES:

1. THE FOLLOWING PROCEDURE SHALL BE USED TO FABRICATE THE LDW270-51312-1 ASSEMBLY:
   a) APPLY TEFLON TAPE *GT835B-8N TO FACE (SURFACE TO CONTACT HEAT EXCHANGER) OF LDW270M10050-11 PLATE, LDW270M10051-11 BEAM & LDW270M10056-1 BEAM ASSY & CHAMFERED EDGE OF LDW270M10056-1. CHECK HEAT EXCHANGER FOR FLATNESS, SHOULD ROCKING OF BEAMS OR PLATE BE EVIDENT OR GAPS PRESENT APPLY ADDITIONAL TEFLON TAPE TO BEAMS OR PLATE AS REQUIRED.
   b) ASSEMBLE LDW270M10054-11 FITTING (2) & LDW270M10053-11 TRUSS (2) TO LDW270M10051-11 BEAM WITH GB51IJ-3-3 BOLT & MS21043-3 NUT HAND TIGHT.
   c) REMOVE GB51IJ-3-3 BOLTS (2) & MS21043-3 NUTS (2) FROM UPPER MOUNTING FLANGE OF HEAT EXCHANGER (REF. IN 2A DWG. 51608)
   d) INSTALL SUBASSEMBLY (REF. b) USING GB51IN-3-9 BOLT (2) & MS21043-3 (2) HAND TIGHT.
   e) PLACE LDW270M10050-11 PLATE IN BACK OF HEAT EXCHANGER.
   f) ROTATE LDW270M10050-11 PLATE COUNTERCLOCKWISE INSTL LDW270M10056-1 BEAM ASSY - STUD INTO #4 HOLE OF LDW270M10050-11 PLATE & INSTL AN315-7R NUT. INSTALL NAS1307-35 BOLT THRU #3 HOLE IN LDW270M10050-11 PLATE AND LDW270M10056-1 BEAM ASSY INSTALL AN315-7R NUT.
   g) INSTALL NAS1307-35 BOLT THRU #1 & #2 HOLE OF LDW270M10050-11 PLATE & LDW270M10051-11 BEAM INSTALL AN315-7R NUT.
   h) ALIGN ASSEMBLY ON HEAT EXCHANGE AND BRING UP BOLTS HAND TIGHT.
   i) MEASURE GAP BETWEEN LDW270M10050-11 PLATE, LDW270M10051-11 BEAM & LDW270M10056-1 BEAM ASSY TABULATING DIMENSIONS OF POSITIONS #1, 2, 3, 4 AS SHOWN ON LDW270M10050-11 PLATE (TOL ±.005)
   j) TRIM LDW270M10052-11 SPACERS TO DIMENSIONS TABULATED IN STEP (i). MARK CORRESPONDING POSITION ON SPACER.
   k) INSTALL LDW270M10052-11 SPACER AT CORRESPONDING ASSY POINTS. APPLY TEFLON TAPE *GT835B-8N TO SPACER TO TAKE UP GAP. SPACER TO HEAT EXCHG.
   l) REPLACE AN315-7R NUTS NOW WITH NAS679C7 NUTS HAND TIGHT.
   m) TORQUE NAS679C7 NUTS - POSITION 1-2-3-4 IN PROGRESSIVE STEPS TO SEAT LDW270M10050-11 PLATE, LDW270M10051-11 BEAM & LDW270M10056-1 BEAM ASSY ON LDW270M10052-11 SPACERS (NO PRESSURE SHOULD BE APPLIED TO HEAT EXCHANGER) THE MAX. TORQUE TO BE APPLIED IS 130 IN. LBS. (RANGE OF 16-130 IN. LBS. - DUE TO ITEM TO ITEM VARIATION OF THE NAS679C7 NUT).
2. SHIM AS REQUIRED - .06 MAX - USING ALUMINUM ALLOY LAMINATED SHIM 5052 H39 MIL-S-22499 COMP I (5052) CLASS 1 TYPE I
3. COMMERCIAL PART SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING
4. ALL PARTS TO BE TETHERED DURING ASSEMBLY.

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NAS 9-1100



LDW270-51312-1 HEAT EXCHANGER REINFORCEMENT ASSY

GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714			
SIZE E	CODE IDENT NO. 26512	LDW270-51312	
SCALE FULL		SHEET 3	

DWG 73.4 REV 5-67

LDW270-51312

ENG 32.1 10-63

LFM

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-51312 | EO NO. A1
CONTROL INFO NO. LM270-1012

SHEET 2 of 3

IN B/M, F/D & NOTES 1f & g:

REMOVE - NAS1307-35 BOLT
ADD - NAS1307-46 BOLT

REVISE NOTES 1i & j TO READ.

i) MEASURE TO .001 ACCURACY GAP BETWEEN LDW270M10050-11 PLATE, LDW270M10051-11 BEAM & LDW270M10056-1 BEAM ASSY TABULATING DIMENSIONS OF POSITIONS #1-2-3-4 AS SHOWN ON LDW270M10050-11 PLATE

j) TRIM LDW270M10052-11 SPACERS TO DIMENSIONS ±.001 TABULATED IN STEP(i) MARK CORRESPONDING POSITION ON SPACER.

(WAS)

i) MEASURE GAP BETWEEN LDW270M10050-11 PLATE, LDW270M10051-11 BEAM & LDW270M10056-1 BEAM ASSY TABULATING DIMENSIONS OF POSITIONS #1-2-3-4 AS SHOWN ON LDW270M10050-11 PLATE (TOL. ±.005)

j) TRIM LDW270M10052-11 SPACERS TO DIMENSIONS TABULATED IN STEP(i) MARK CORRESPONDING POSITION ON SPACER.

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCD 1935 LFM 30

5

GAEC EO RELEASE: C — JK 8/7/67

REASON FOR EO: GRIP LENGTH OF NAS1307-35 BOLT - SHORT WILL NOT ACCOMODATE INSTL.

DESCRIPTION OF EO: ON-1 IN B/M, F/D & NOTES 1f & g - NAS1307-46 BOLT WAS NAS1307-35 - REVISED NOTES 1-i & j.

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO. EI	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 30	LM-1 (31)	
LM		PD-2 (W6)	
LM		TEST	

DRAWING CHANGE REQD: ✓ REVISE DWG | RECORD EO
DISPOSITION OF PARTS: ✓ REWORK | SCRAP
PRIORITY: C
DRAWING TITLE: HEAT EXCHANGE REINFORCEMENT ASSY-DESCENT PROP PRESS. SUBSYS.
DRAWING NO.: LDW270-51312
EO NO.: A1

APPROVED BY				–		TCS	RLT for MGR Prod Resp	JWL	Scott
DATE				–	8/4/67	8/11/67	8/14	8/14	8/7/67
				RELIAB. GROUP	GROUP LEADER	STRESS GROUP	TRANSITION ENGRG	PROJ ENGRG	QUALITY

ISSUED BY N. GRAUL x1471 8-4-67

GROUP PROPULSION PLT 25 DEPT 270

01 NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER *

DWG NO LDW 270-51312 | EO NO A2
CONTROL INFO NO. LM-5-15944

ON -1

IN M/B
ADD LM-2(32) & LM-3(33)
N/A LDW 280-17388
QTY 1/MODULE

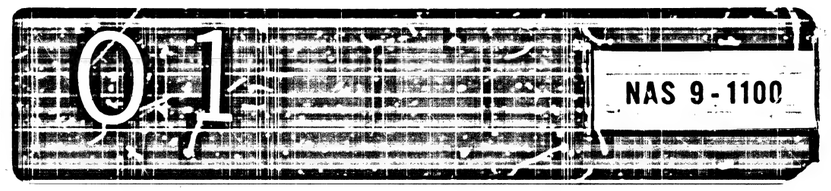
RELEASED BY LIAISON

DETAIL SPEC REQ		CL II ENGRG CHG	✓	CL I ENGRG CHG		LCD 1935	5
REASON FOR EO: NEW HEAT EXCHANGER NOT AVAILABLE				-1 DESCRIPTION OF EO: IN M/B ADDED LM-2(32) & LM-3(33) N/A LDW			GAEC W EO RELEASE: 0 ✓

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY: DATE		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ. ENGRG	
LM		LM-2(32)	LM-3(33)	✓		✓		8/10/67				9/19/67	9/10/67	9/19/67	9/19/67	9/19/67

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	HEAT EXCH. REINFORCEMENT ASSY DESC PROP PRES. SUBSYSTEM	LDW 270-51312	A2

ISSUED BY LIAISON A. VENTO X-86757 SECTION PROP. SYS. GROUP NO. 270 PL 25



GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26517
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG. NO. LDW270-51312 | EO NO. A3
CONTROL INFO NO. LM-5-15961

THIS IS A REVISION OF EO A2

ON -1 (REF)

IN M/B
ADD LM-2 (32) & LM-3 (33)
N/A LDW280-17388
QTY 1/MODULE

S/B

IN M/B
ADD LM-2 (32), N/A LDW280-17388, QTY 1/MODULE
LM-3 (33), N/A LDW280-16050, QTY 1/MOD
LM-4 (34), N/A LDW280-16050, QTY 1/MOD
REVISE LM TEST (4) REQD/MOD S/B (2) REQD/MOD

RELEASED BY LIAISON

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCO 1535

REASON FOR EO: NEW HEAT EXCHANGER NOT AVAILABLE
INCORRECT N/A CALLOUTS & ADDED ADDITIONAL REQUIREMENTS

DESCRIPTION OF EO (REF EO A2): LM-3 N/A LDW280-16050 WAS LDW280-17388, ADDED LM4 N/A LDW280-16050 QTY 1/MODULE, LM TEST QTY REQD/MOD (2) WAS (4)

GAEC EO RELEASE: JK

MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-2 (32)	TEST (10)
		LM-3 (33)	
		LM-4 (34)	

EFFECTIVITY

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY: DATE	SUPPORT	RELIAB. GROUP
		✓		8-11-67		

PRIORITY: C

DRAWING TITLE: HEAT EXCHANGE REINFORCEMENT ASSY D/S PROP PRES. SUB SYSTEM

DRAWING NO.: LDW270-51312

EO NO.: A3

	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
	DSB 8/8/67	DV 8/11/67	DV 8/11/67	Cam 8/11/67

ISSUED BY LIAISON D. YALENZA/GR X 86755 SECTION PROP S/SYS GROUP NO. 270 PL 25

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-51312 | EO NO. A4
CONTROL INFO NO. LM 270 - 1026

SHEET 1.00
IN MODEL BLOCK: FOR-1 REMOVE LM-1 REQMTS.

ADD: LDW270-51312-3 N/A LFM 30 LDW280-17388 LM-1(31) IRQ'D
N/A LM TEST 1 REQD

SHEET 2.00
IN B/M ADD: -3 HEAT X REINF. ASSY - SAME AS -1 EXCEPT LDW270M 10057-11 PLATE REPLACES LDW270M10050-11 PLATE, LDW270M10056-3 BEAM ASSY REPLACES LDW270M10056-1 BEAM ASSY.

SHEET 3.00
IN F/D ADD LDW270-51312-3 HEAT EXCHANGER REINFORCEMENT ASSY
TO CALLOUT LDW270M10050-11 ADD (FOR-1)
ADD CALLOUT LDW270M10057-11 (FOR-3)

IN NOTES: REVISE NOTES AS FOLLOWS:

-3 MAY BE REWORKED FROM -1

1. "... LDW270-51312-1 OR-3 ASSEMBLY."
   a) "APPLY 2 LAYERS OF TEFLON TAPE "GT 835B-8N TO FACE & EDGES..."
   "... OF LDW270M10050-11 PLATE OR LDW270M10057-11 PLATE..."
   e) "... LDW270M10050-11 PLATE OR LDW270M10057-11 PLATE..."
   f) "... LDW270M10050-11 PLATE OR LDW270M10057-11 PLATE..." (3 PLACES)
   g) "... LDW270M10050-11 PLATE OR LDW270M10057-11 PLATE..."
   h) "... LDW270M10050-11 PLATE OR LDW270M10057-11 PLATE..."
   i) "... LDW270M10050-11 PLATE OR LDW270M10057-11 PLATE..."

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ | LEC 1935 LFM 30

REASON FOR EO: REVISED ASSY TO ADD NEW BACK PLATE

DESCRIPTION OF EO: REMOVED -1 & ADDED -3 FOR LM-1
ADDED TEST EFF FOR -3 & REVISED NOTES

GAEC EO RELEASE: JK 8/16/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP	APPROVED BY	DATE					TRJ	ALT FOR MOD	E.J. Barth
														8/16/67	8/16/67	8-16-67
LM	LFM 30	LM1 (31)						PROP	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	ENGRG	PROJ ENGRG		
LM		TEST		PRIORITY C												

DRAWING TITLE: HEAT EXCHANGER REINFORCEMENT ASSY DESCENT PROP PRESS. SUBSYS
DRAWING NO.: LDW270-51312
EO NO.: A4

ISSUED BY N. GRAUL x1471 8-15-67 SECTION PROPULSION GROUP NO. 270 PL 25

01
NAS 9-1100

LDW270-51401 B

LM	LDW280-54001	LM15 (45)	1
		LM14 (44)	
		LM13 (43)	
		LM12 (42)	
		LM11 (41)	
		LM10 (40)	
		LM 9 (39)	
		LM8 (38)	
		LM 7 (37)	
		LM6 (36)	
		LM5 (35)	
	LDW280-54001	LM4 (34)	
	LDW 280-53001	LM3 (33)	
	LDW 280-52001	LM2 (32)	
LM	LDW 280-51001	LM1 (31)	1

PART NO. LDW270-51401-7

LM	LDW280-52001	LM2 (32)	1 OF EA
LM	LDW280-52001	LM1 (31)	1 OF EA

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW270-51401-9 & -11		GAEC SCH NO.	

LM	LDW280-53001	LM3 (33)	1
LM	LDW280-52001	LM2 (32)	1

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW270-51401-13 & -15		GAEC SCH NO.	

LM	LDW280-54001	LM15 (45)	1 OF EA
		LM14 (44)	
		LM13 (43)	
		LM12 (42)	
		LM11 (41)	
		LM10 (40)	
		LM 9 (39)	
		LM8 (38)	
		LM 7 (37)	
LEM	LDW280-54001	LEM-6 (36)	1 OF EA.
	LDW 280-54001	LEM-5 (35)	
	LDW280-54001	LEM-4 (34)	
LEM	LDW280-51001	LEM-1 (31)	1 OF EA.

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW270-51401-1, -3,		GAEC SCH NO. 45	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH				
SHEET	1.00	1.10	2.00	3.00
REV	B	B	B	B
SHEET				
REV				
SHEET				
REV				

LAST SECT LTR USED	F
LAST DASH NO. USED	-15

GRUMMAN REL INFO B
PRIM NO. (JK(GSC)) 10-42
450

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES

ORIG DWG AUTH	GR LDR
DETAIL SPEC REQUIREMENT	PROP
CLASS II ENGRG CHANGE	STRUCT
CLASS I ENGRG CHANGE	VEH. DES

CONTRACT NO. NAS9-1100 | LINE ITEM 9 | DOCUMENTATION TYPE II

DRAWN BY	E. BALSON 5/10/66	WEIGHTS	S. Garcia 6/8/66
LAYOUT BY		RELIABILITY	F. Kruger 6/9
CHECKED BY			
		PROJ ENGR	Plunkett Shaw
	6-8-66	REL GROUP	B.A.F. 6-13-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

DISCONNECT INSTL
ASCENT PROPULSION FEED SYSTEM

SIZE	CODE IDENT NO.		
B	26512	LDW270-51401	B

SCALE NONE | SHEET 1.00 OF 4

3 77.1 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1, 1.10, 2 & 3						E.O. A1	-1, -3, -5, -7, -9 & -11 ADDED WASHER AN960D10L(3) SHEET 1 OF 4 WAS 1 OF 3 ADDED SHEET 1.10.	LEM-1	✓		FYSTER 7-21-66		
	2	1, 1.10						E.O. A2	ADDED VEHICLES LEM-2 THRU LEM-6 & NEXT ASSY'S TO MODEL BLOCK OF A/S DISCONNECT INSTLS. -1, -3, -5, -7, -9 & -11.	LEM-2 THRU -6	NOT	REQD			
B	1	1.00, 1.10 2.00 3.00	7B					E.O B1	IN M/B, B/M & F/D: REMOVED -5 INSTALLATION (FUEL FILL & DRAIN DISCONNECT).	LM-1 (31) THRU LM-6 (36)		-5			
	2	1.00 1.10						E.O. B2	ON -1, -3, -7, -9 & -11 REV. N/A FOR LM-5 & LM-6 WAS LDW280-55001 & LDW280-56001 RESPECTIVELY, ADDED LM-7 THRU LM-15.	LM-5 (35) THRU LM-15 (45)	NOT	REQD			
	3	1.10 3.00	5B				✓	LEO 270-40	IN VIEW B-B FUEL TEST POINT WAS FUEL HIGH POINT BLEED AND FUEL HIGH POINT BLEED WAS FUEL TEST POINT, FOR -1, -3, -5, -7, -9 & -11.	LM-1 (31) THRU LM-15 (45)	✓		A. HENDRICKS 9-6-68		
	4	1.00, 1.10 2.00 3.00					✓	E.O. B4 LCD 1843	DELETED LM-2 (32) & LM-3 (33) FROM -1 & -3 (1 EA REQD/MOD) ADDED -13 & -15 (1 EA REQD/MOD) EFF LM-2 (32) & LM-3 (33), N/A LM-2 LDW280-52001 N/A LM-3 LDW280-53001.	LM-2 (32) LM-3 (33)		-1 & -3	H.D.		
	5	1.00 1.10				✓		E.O. B5 LCD 1426 CCA580	IN MODEL BLOCK FOR -9 & -11 REMOVED LM-3 N/A LDW280-53001 & LM-4 THRU LM-15 N/A LDW280-54001.	LM-3 (33) THRU LM-15 (45)		-9 & -11			
	6	1.10 3.00		(A)		✓			REF LEO 270-40 (B3) IN DESCRIPTION OF LEO FOR -1, -3, -5, -7-9 & -11 SHOULD BE FOR -1 ONLY	LM-1 (31) THRU LM-15 (45)	✓		9-6-68		

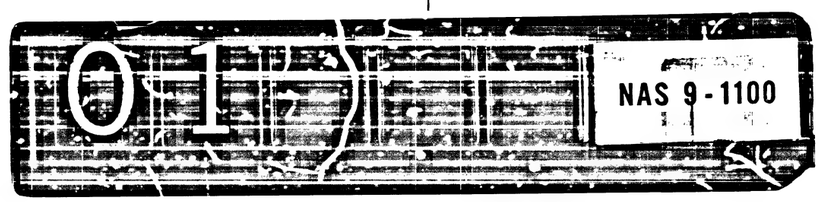
CHG APPROVED	LTR	GROUP LDR	PROP.	STRUCTURES	VEH. DES. INT.	WEIGHTS	RELIABILITY
	B						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51401	B

SCALE NONE SHEET 1.10

ENG 77.16 3-66



	3	3	3	69	3	6		AN960D10L	E	WASHER	STD PART							
	3	3	3	69	3	6		MS21043-3	E	NUT	STD PART							
			3					NAS1133V-3	E	SCREW	STD PART							
	3	3		69	3	6		NAS1133V-2	E	SCREW	STD PART							
L		1		2	1			LSC270-813-27	S	COUPLING ASSY	SEE NOTE 1							
L	1			3		2		LSC 270-813-26	↓	↓	↓							
J			1					LSC270-702-1	↓	↓	↓							
J								LSC270-701-1	S	COUPLING ASSY	SEE NOTE 1							
								LDW270-51401-15	E	DISCONNECT INSTL								10-A
								-13	↑	↑								5-B
								-11	↓	↓								5-A
								-9										7-A
A								-7										8-A
↕																		7-B
↕								-3										10-A
A								LDW270-51401-1	E	DISCONNECT INSTL								5-B
C.L.	-11	-9	-7	-15-13	-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE	
	QTY PER ASSEMBLY																	

CL-CLEANLINESS LEVEL PER LSP14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

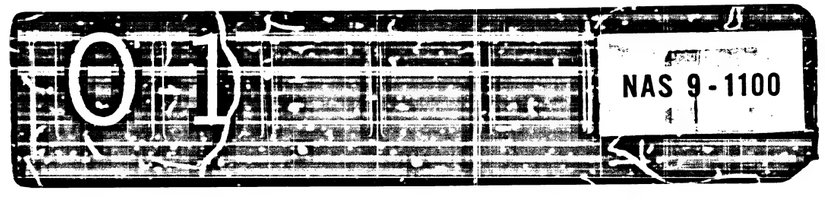
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

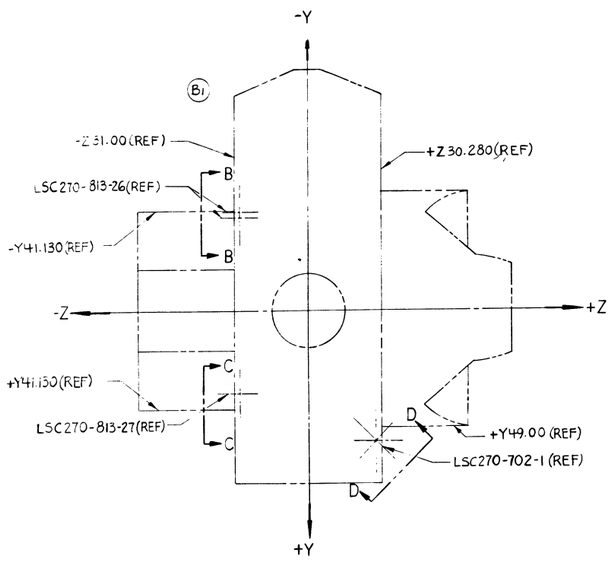
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51401	B

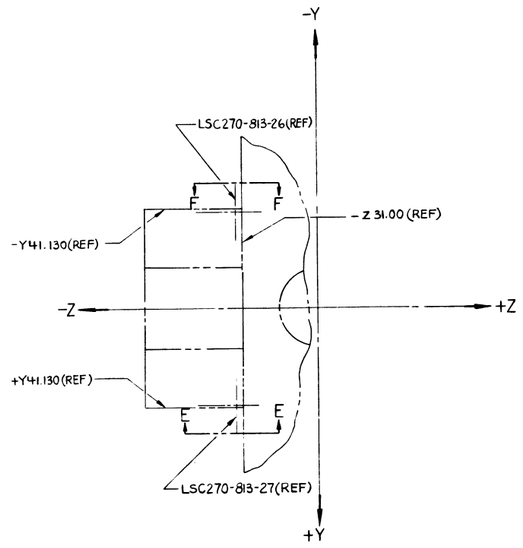
SCALE NONE SHEET 2.00

ENG 77.2 7-65

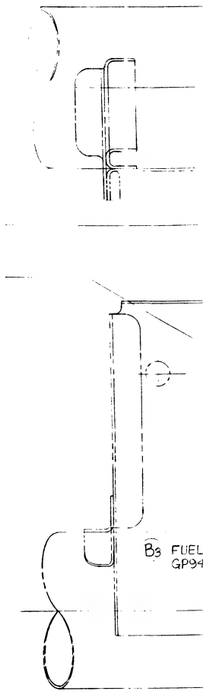


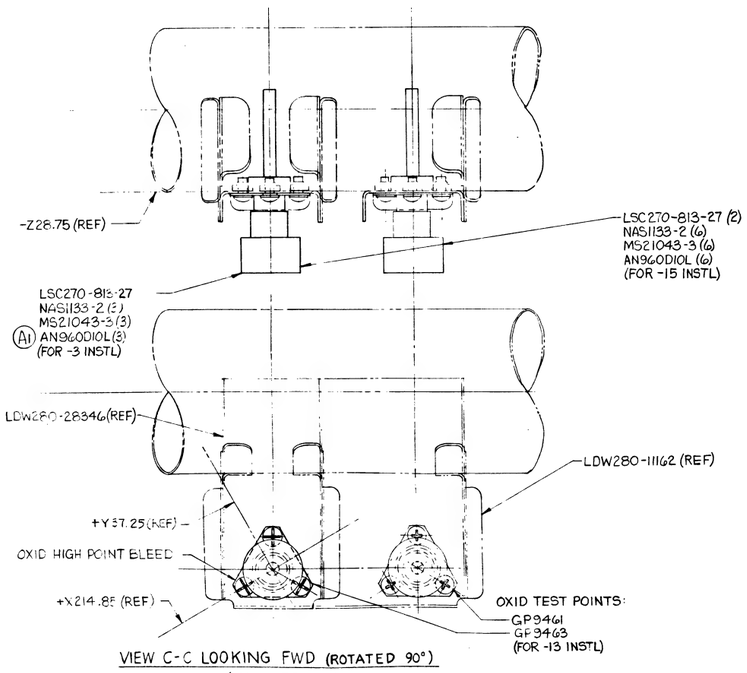


VIEW LOOKING DOWN AT X 225.0
($\frac{1}{20}$ SCALE)
FOR ENGINEERING REFERENCE

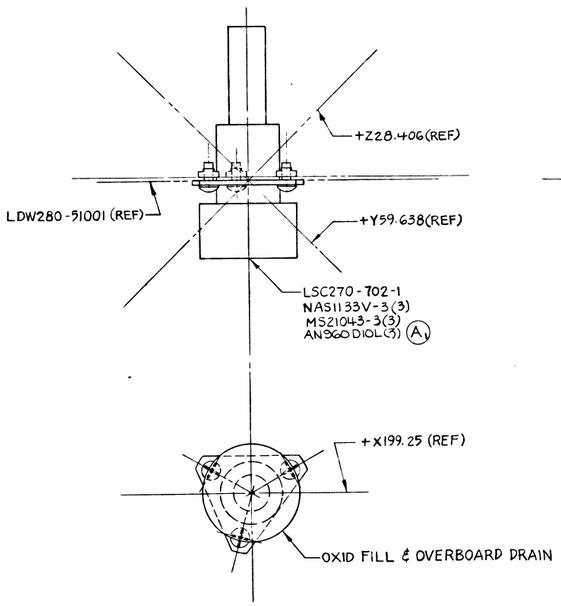


VIEW LOOKING DOWN AT X 316.50
($\frac{1}{20}$ SCALE)
FOR ENGINEERING REFERENCE

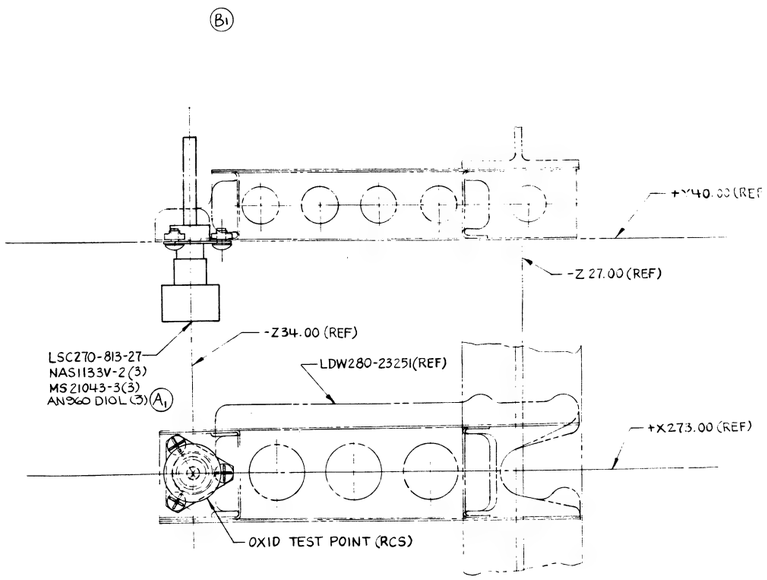




VIEW C-C LOOKING FWD (ROTATED 90°)
(FULL SCALE)
(ZONE 10-C SHEET NO. 3.00)
LDW270-51401-3 INSTL
LDW270-51401-15 INSTL (B4)
(-15 INSTL SAME AS -3 INSTL EXCEPT AS NOTED)



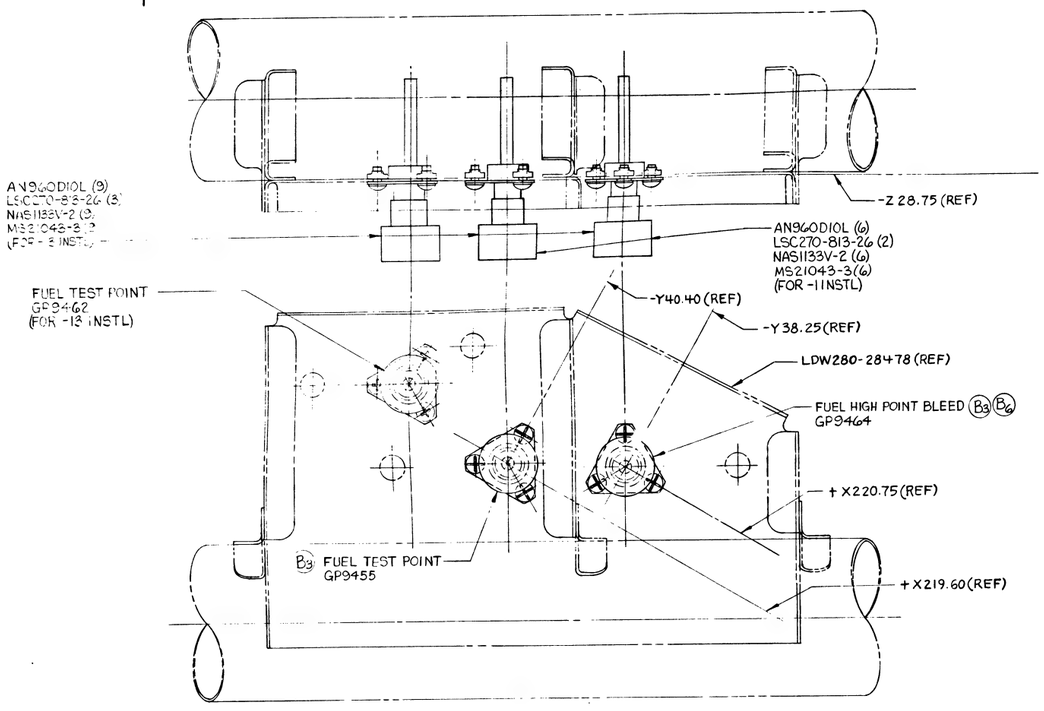
VIEW D-D LOOKING INBOARD (ROTATED 45°)
(FULL SCALE)
(ZONE 10-C SHEET NO. 3.00)
LDW270-51401-7 INSTL



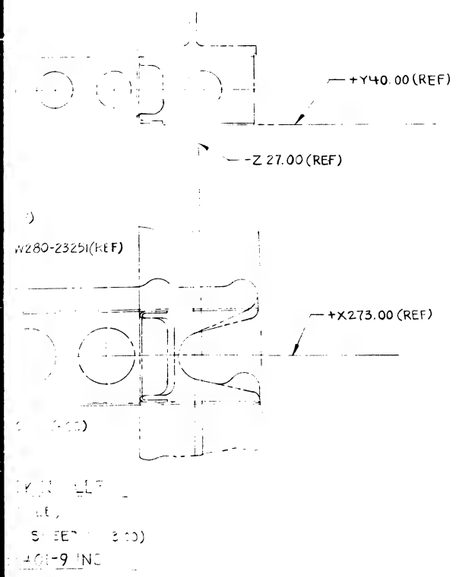
VIEW E-E LOOKING LEFT
(FULL SCALE)
(ZONE 9-C SHEET NO. 3.00)
LDW270-51401-9 INSTL

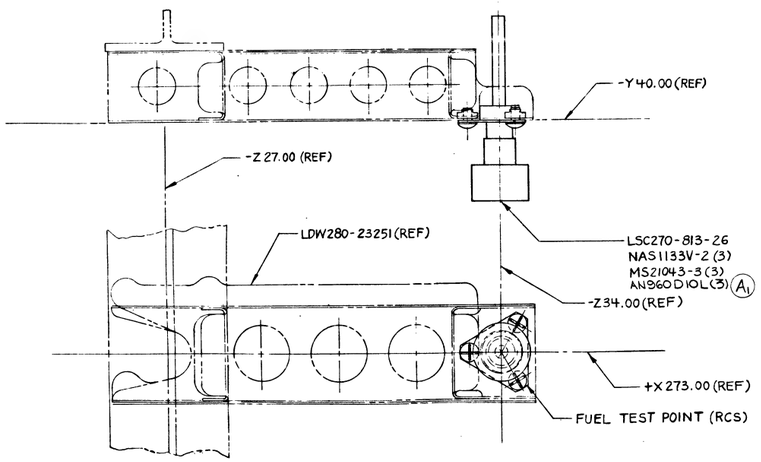
F01703 NAS 9-1100

CODE IDENT 26512
LDW270-51401 SHT 3.00



VIEW B-B LOOKING FWD (ROTATED 90°)
(FULL SCALE)
(ZONE 10-C SHEET NO. 3.00)
LDW270-51401-1 INSTL.
LDW270-51401-13 INSTL B4
(-13 INSTL SAME AS -1 INSTL EXCEPT AS NOTED)



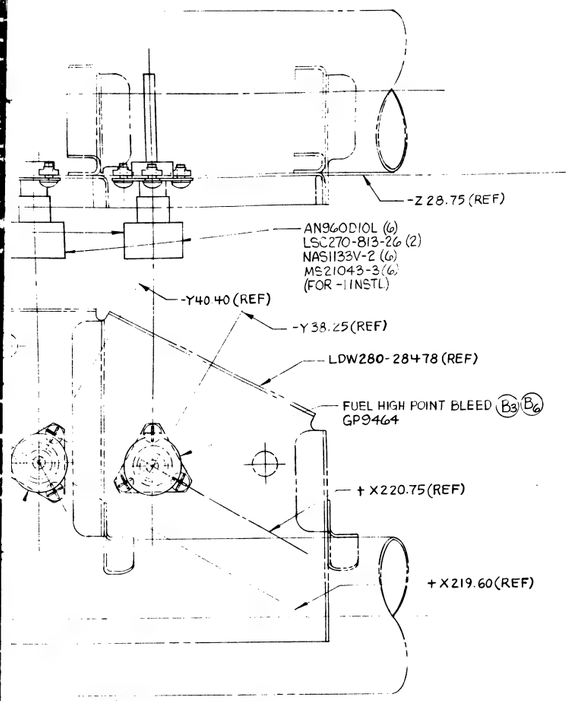


VIEW F-F LOOKING RIGHT (ROTATED 180°)
(FULL SCALE)
(ZONE 9-C SHEET NO. 3.00)
LDW270-51401-11 INSTL

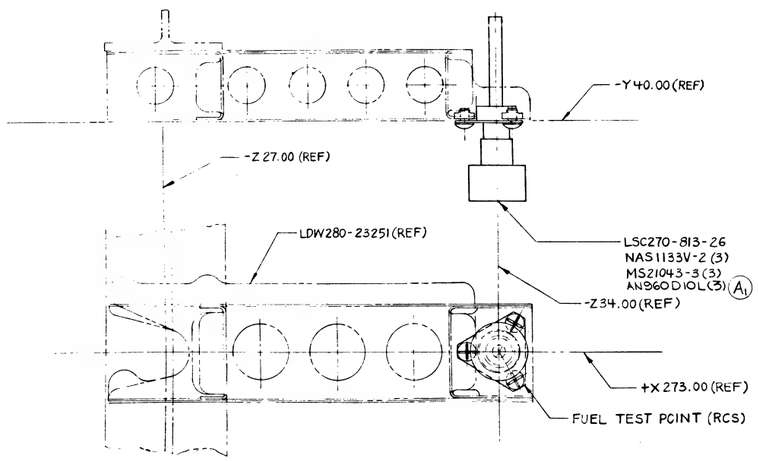
NOTES
1. COMMERCIAL PART. SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING.

02403 NAS 9-1100

CODE IDENT 20982
LDW270-51401 SHT 3 OF 3



CKING FWD (ROTATED 90°)
ULL SCALE)
10-C SHEET NO. 3.00)
70-51401-1 INSTL
70-51401-13 INSTL (B4)
STL SAME AS -11NSTL EXCEPT AS NOTED)



VIEW F-F LOOKING RIGHT (ROTATED 180°)
(FULL SCALE)
(ZONE 9-C SHEET NO. 3.00)
LDW270-51401-11 INSTL

NOTES
1. COMMERCIAL PART. SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING.

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.

- PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED — USE BOTH SIDES IF NECESSARY.
- FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010; .063R TO .250R ± .015; OVER .250R ± .030
- DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.
- EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
- DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
- MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
- DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
- HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
- ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
- 125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
- 200 FOR ALL DRILLED HOLES
- REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
- INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
- SYMBOL ✓ DENOTES SURFACE TO BE MACHINED
- UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
- LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
- TOLERANCE ON LOFTED DELINEATIONS IS

DWG SIZE 24 X
PRINTING INFO ONLY
FULL SIZE SHEET AREA (24 X) = SQ FT.
1/2 SIZE SHEET AREA (1/4 OF FULL) = SQ FT.
PRINT TRIM LINE

03/03 NAS 9-1100

LEM	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
	SIZE J	CODE IDENT NO. 26512	LDW270-51401	B
MODEL OR END ITEM	SCALE		SHEET 3.00	

LDW270-5 401B B
LDW270-51401B A

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.2 REV 3-65

DWG. NO. LEO270 | EO NO. 80
CONTROL INFO NO. LM270-1369

REMOVE LM-15(45) EFFECTIVITY FROM THE FOLLOWING DRAWINGS:

DRAWING NO.	*DASH NO	TITLE	CHANGE NO
LDW270P10000	-1	SEE DWG	B4
P10001	-1		C3
M10027	-1		A6
M10039	-11		A7
M10045	-11		A2
M10077	-11-1		A8
-10025	-11		A5
-10030	-1 & -2		A2
-10031	-1, -3 & -5		A3
-23308	-1		B9
-51309	-5		B3
-51401	-1, -3 & -7		C1
-51451	-1, -3, -5, -9, -11 -13 & -19		C1
-51459	-5 & -7		A7
-52302	-1-1		A6
-52306	---1		A6
-52307	-1-1		A4
52309	-1		B5
-53202	-1-2		A4
-53311	-1 & -2		A3
	-		
-54201	-21 & -23		H7
LDW270-54310	-5	SEE DWG	B4

(5)

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	LCO 3587

LCO #1 SAT 1 & 2.

REASON FOR EO: ELIMINATION OF PROPULSION SUB-SYST FROM LM-15 (REF TWX JC32-68-1977 & 2028)

DESCRIPTION OF EO: FOR * REMOVED LM-15 EFFECTIVITY.

GAEC EO RELEASE: JK 12/4/68

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM		LM-15 (45)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓			✓

APPROVED BY / DATE

SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
		12/3/68			12/4/68

PRIORITY: C | DRAWING TITLE: SEE DWG | DRAWING NO.: LEO 270 | EO NO.: 80

ISSUED BY P. CAPPELLI 1471 SECTION PROPULSION GROUP NO. 270 PL 25

NAS 9-1100

GRUMMAN AEROSPACE CORPORATION

CODE IDENT NO. 26512

BMO 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LEO 270 | EO NO. 88

CONTROL INFO NO. LM 270-1409

ON LM-10 (40) THRU LM-14 (44)
FOR THE FOLLOWING DRAWINGS BELOW,
N/A LDW 280-60001 WAS LDW 280-54001

DRAWING NUMBER	DASH NO. *	TITLE	CHANGE NO.
LDW 270-51401	-1, -3, -7	SEE DWG.	C2
LDW 270-28012	-9	SEE DWG.	C6
LDW 270-54200	-1-7	SEE DWG.	B5

DETAIL SPEC REQ | CI "B" ENGRG CHG | CI "T" ENGRG CHG | V1 LCD 3994 PKG 1 (5)

REASON FOR EO: TO ADD NEW N/A DWG NO. REF LCD 3994; ECP 131

DESCRIPTION OF EO: FOR -* N/A LDW 280-60001 WAS LDW 280-54001, EFF. LM10 THRU LM14

(P) GAEC EO RELEASE 12/7/69

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM 10(40) THRU LM 14(44)	

DRAWING CHANGE REQD: ✓ REVISE DWG; RECORD EO

DISPOSITION OF PARTS: NOT REWORK; REQ'D SCRAP

APPROVED BY	PROP.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
	H. Tang			H. Tang			X15
DATE	12-9-69			12-9-69			12/16/69

PRIORITY: C

DRAWING TITLE: SEE DWG.

DRAWING NO.: LEO 270

EO NO. 88

ISSUED BY LAWRENCE N. SULTANA X1471 12-15-69 SECTION PROPULSION GROUP NO. 270 PL 25

01

NAS 9-1100

LDW270-51402 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW280-51950	LEM-1 (31)	1 EA
PART NO. LDW270-51402-1,-3,-5,-7,		GAEC SCH NO. 45	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00	1.10	2.00	3.00						
REV	B	B	B	B						
SHEET										
REV										
SHEET										
REV										

		GRUMMAN REL INFO Ⓐ	
LAST SECT LTR USED	B	PRIM NO.	JK/009
LAST DASH NO. USED	-7	4.2	MP-8B 10/7/7

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
— — —

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100		LINE ITEM 009	DOCUMENTATION TYPE II
DRAWN BY	B. ZANG 18APR66		
LAYOUT BY		V.D.I.	
CHECKED BY			
GR. LDR.			
PROP.			
REL.	4/20	PROJ ENGR	4-22
STRUCT.	4/20	REL GROUP	4.26.66
STRUCT.	HILDERMAN 4/20		

Ⓑ GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

LEVEL DETECTOR INSTL,
PROPULSION FEED SYSTEM
PROPELLANT TANK-ASCENT

SIZE	CODE IDENT NO.		
B	26512	LDW270-51402	B Ⓑ
SCALE NONE		SHEET 1.00 OF 4	

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.1.10 & 2						EO A1	IN B/M CLEANLINESS LEVEL "C" WAS "N" SH 1 OF 4 WAS SH 1 OF 3, ADDED SH 1.1.10	LEM-1	NOT	REQD	M. J. Kubicki 4/6/67	✓	X
	2	1.00, 1.10 2.00, 3.00						EO A2	ADDED -5 & -7 ON INTERIM BASIS, ADDED NOTE 3	LEM-1	NOT	REQD	HERZFELD	✓	X
B	1	1.10 2.00 3.00						EO B1	ON-1 LSC 270-801-13 WAS LSC 270-801-7 ON-3 LSC 270-801-14 WAS LSC 270-801-8	LM-1	✓		J. CHUPAS 10-4-67	✓	X
	2	1.10						EO B2	EO B2 CANCELLED BY EO B3	LM-1	✓			✓	X
	3	1.10						EO B3	CANCELLED EO B2	LM-1	✓			✓	X
	4	1.10, 2.00 3.00				✓		EO B4	DELETED AN960 D10 (8 EACH) FROM -1 & -3	LM-1	✓			✓	X
	5	1.10 2.00				✓		EO B5 LCD 1894	FOR -1 & -3 INSTL'S - REMOVED LSC 270-801-13 & 14, VS2864-3H2(8) - ADDED LDW270M10069-13 & -14, LDW280M16196-11, LDW280M16197-11(8); AN509C8R10(4) ADDED NOTE 4.	LM-1	✓		S.J.	✓	X

CHG APPROVED LTR	GROUP LDR	PROP.	REL.	STRUCT.	STRUCT.	V.D..
A						
B						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51402	B

SCALE NONE SHEET 1.1.0

DNS 77.16 3-68

01

NAS 9-1100

C			AR	AR	AR	AR		MS20995C32	E	LOCKWIRE	STD PART	(SEE NOTE 1)						
C			8	8				AN960D10	E	WASHER	STD PART	"						
C					4	4		AN509C8R10	E	SCREW	STD PART							
			8	8			92215	VS2864-3H2	E	BOLT (VOI-SHAN)		(SEE NOTE 1)						
			1	1	1	1	05939	1159G-1.624	E	SEAL (RACO)								
			1	1			13309	517557-1		CAP (SEE NOTE 3)								
					1	1		LDW280M16196-11	E	RING	SEE DWG							
					8	8		LDW280M16197-11	E	BOLT	SEE DWG							
J					1			LDW270M10069-14	S	DETECTOR-OXIDIZER	SEE DWG							
J						1		LDW270M10069-13	S	DETECTOR-FUEL	SEE DWG							
G								LDW270-51402-7	E	INSTL (SEE NOTE 3)								
G								LDW270-51402-5	E	INSTL (SEE NOTE 3)								
G								LDW270-51402-3	E	LEVEL DETECTOR	INSTL, OXIDIZER							
G								LDW270-51402-1	E	LEVEL DETECTOR	INSTL, FUEL							
C.L.			-7	-5	-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE	

QTY PER ASSEMBLY

CLEANLINESS LEVEL PER LSP 14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

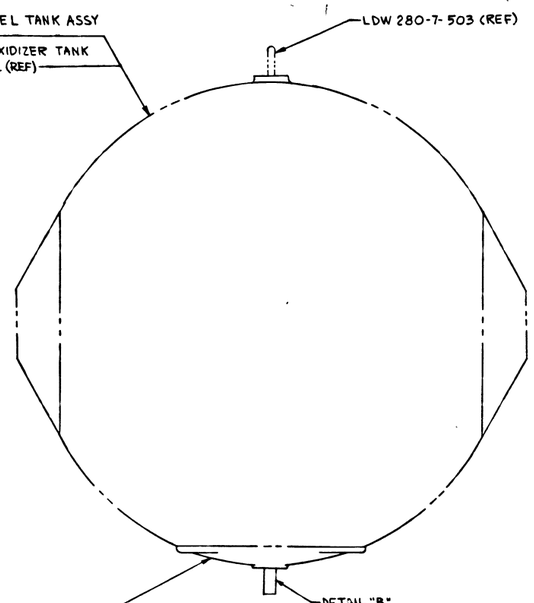
SIZE	CODE IDENT NO.		
B	26512	LDW270-51402	B

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100



NOTES:

1. INSTALL 8 BOLTS FINGER TIGHT THEN TORQUE IN SEQUENCE AS FOLLOWS;
   (a) PHYSICAL LOCATION FOR START OF SEQUENCE (BOLT #1) IS OPTIONAL.
   (b) TORQUE ALL BOLTS PER SEQUENCE TO 10 INCH POUNDS & REPEAT THE SEQUENCE UNTIL BOLTS NO LONGER WILL TURN WHEN 10 INCH LBS. IS APPLIED.
   (c) REPEAT STEP (b) APPLYING 20 INCH POUNDS.
   (d) REPEAT STEP (b) APPLYING 32-35 INCH POUNDS FOR FINAL TORQUE.
2. COMMERCIAL PART SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING.
3. -5 & -7 INSTL ARE INTERIM FOR -1 & -3 INSTL AND WILL BE REPLACED BY -1 & -3 INSTL AFTER COLD FLOW.
4. TORQUE TO HIGH LIMIT TO ASSURE METAL TO METAL CONTACT BETWEEN SENSOR & TANK COVER.

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.

- PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.
- FILLET AND INSIDE CORNER RADII TOLERANCES .010R TO .062R ± .010; .063R TO .250R ± .015; OVER .250R ± .030
- DEFin Groove not APPLI HOLES IS FULL THDS. 2.5 REF THDS. BEYOND PERMISSIBLE.
- EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
- DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
- MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
- DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
- HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
- ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MINM. TO .0005 MAX. PTR. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
- 125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
- 250 FOR ALL DRILLED HOLES
- REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
- INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
- SYMBOL ⌀ DENOTES SURFACE TO BE MACHINED
- UNLESS OTHERWISE SPECIFIED TOLERANCE ON FRACTIONS IS ± 1/64
- LENGTHS OF AN, MS & NS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
- TOLERANCE ON LOFTED DELINEATION IS

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L.I., NEW YORK			
LEM-1 (31)	SIZE D	CODE IDENT NO. 26512	LDW270-51402 B
MODEL OR END ITEM	SCALE 1/5 & 1/8 FULL		SHEET 3 OF 00

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG NO. LDW270-51402 | EO NO. C1
CONTROL INFO NO. LM270-1069

ADD NOTE * (NEXT AVAILABLE NO)

* ON-1 APPLY SEALANT LED520-35 (VISTANEX) AND ON-3 APPLY SEALANT LED520-34 (NITROSO) IN ACCORDANCE WITH LPC 280-46. (LED520 IS AN INTERIM PROCUREMENT DOCUMENT)
IN B/M FOR-1 ADD LED520-35 AS REQUIRED.
FOR-3 ADD LED520-34 AS REQUIRED.

IN F/D ADJACENT TO AN509C8R10(4) (ADD) SEE NOTE *

LFM

LMLK

DETAIL SPEC REQ | CI II ENGRG CHG | CI I ENGRG CHG | ✓ LCD1894

REASON FOR EO: PROVIDE SEALANT & METHOD OF APPLICATION

DESCRIPTION OF EO: ADDED NOTE *. IN B/M FOR-1 ADDED LEL 520-35 & FOR-3 ADDED LED520-34. IN F/D ADDED "SEE NOTE *"

GAEC'S RELEASE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 31	LM-1(31)	

DRAWING CHANGE REQD: ✓ REVISE DWG | RECORD EO
DISPOSITION OF PARTS: ✓ REWORK | SCRAP

APPROVED BY / DATE: FXD 9-4-67 | KP 10/5/67 | — | H Davidson 10/5/67 | — | RP FOR PROJ KSC 10/5/67 | Saw 10/5/67 | Bartl 10 6 67 | MGT. | SUPPORT VEH | RELIAB. GROUP | GROUP LEADER | STRESS GROUP | ENGRG ENGRG | PROJ. ENGRG

PRIORITY: C
DRAWING TITLE: LEVEL DETECTOR INSTL - PROPULSION FEED SYSTEM - PROPELLANT TANK - ASCENT
DRAWING NO.: LDW270-51402
ED NO.: C1

ISSUED BY WM. KUTNER XIGII 10/5/67 SECTION PROPULSION GROUP NO. 345 PL 25

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG. NO. LDW 270-51402 | EO NO. C2
CONTROL INFO NO. LM83-2050

ON -1 AND -3

IN F/D :

AN 509 C8 R 10 (4) S/B MS 51957-41 (4) (REF E.O. B5)

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCD 1894	83

REASON FOR EO: DR S/C # 353, 354
SPECIFY CORRECT SCREWS

DESCRIPTION OF EO:
ON -1 AND -3
CHANGE AN509C8R10 TO MS51957-41

GAEC EO RELEASE: JK 10/1/67

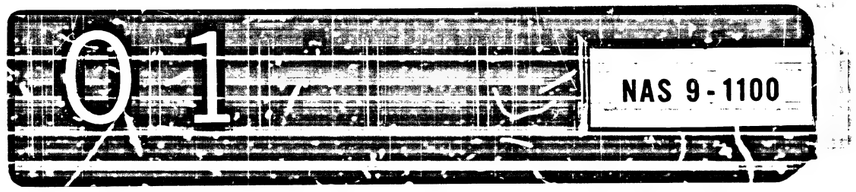
MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM1 (31)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: REWORK ✓ | SCRAP

	APPROVED BY								
		RB	PEK						
DATE	10/2/67	10/9/67	10/13/67		BPA	13 OCT	10/12		
	SYS	SUPPORT	GROUP LEADER	STRESS GROUP		PROJ ENGNG			

PRIORITY: C
DRAWING TITLE: LEVEL DETECTOR INSTL. PROPUL. FEED SYSTEM - PROP. TANK ASCENT
DRAWING NO.: LDW270-51402
EO NO.: C2

ISSUED BY P. KLUG X3906 SECTION PROJ. ENG. KSC GROUP NO. 812 PL 830



REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET 1.11

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1,1.10,2,3						EO-A1	ADDED LEM-2(32) & N/A TO MODEL BLOCK. IN FLD & B/M LSC270-813-31(4) WAS LSC270-813-21(4). IN FLD VIEW G-G REVERSED POSITION OF GQ9476 & GQ9463. SH.1 OF 4 WAS SH.1 OF 3 ADDED SH.1.10.	LEM-1(31) LEM-2(32)	✓		GARY KORDES 9-15-66		
	2	1, 1.10	5B 8B					EO-A2	ADDED LEM-3(33) THRU LEM-6(36) & N/A TO MODEL BLOCK	LEM3(33)THRU LEM6(36)	✓				
	3	1,1.10,2,3	8C 5C					EO-A3	IN B/M, FLD & MOD BLK REMOVED -3 & -9 INSTL & ADDED -15 & -17 INSTL FOR LEM-1 ONLY.	LEM-1(31)	✓				
	4	1.10,2,3	6B 7B 3C					EO-A4	ON-5·7&-11 INSTL, IN B/M & FLD NAS1132V-1 WAS NAS1133V-2 F2	LEM-1 THRU LEM-6	NOT	REQ'D.	BIBILLA 10-5-66		
	5	1.10,2.00 & 3.00	3B					E.O.A5 (1)	ON-13 IN FLD. & B/M REMOVED: MS21043-3 (3) F2	LEM-1 THRU LEM-6	✓		R.WISBET 10-24-66		
B	1	1.00,2.00 3.00	5A 5B					EO B1	DELETED -7 ADDED -19. ADDED EFF -1,-3,5,-9,-11,-13 & -19 TO MODEL BLOCK FOR LM-7 THRU -15. REVISED N/A FOR -1,-3,-5,-9,-11,-13 & -19 LDW280-54508 WAS LDW280-55508 FOR LM-5 & LDW280-56508 FOR LM-6.	LM-1(31) THRU LM-15(45)	✓	-7			
	2	3.00	5A				✓	EO B2	REF EO B1 ON-19 "TEST SHUTOFF VALVE PREVALVE" WAS "TEST FUEL ISOLATION VALVE"	LM-1 THRU LM-15	✓				
	3	1.00,2.00 3.00	5C 7C				✓	EO B3 LCD 727	IN M/B REMOVED LM-2 USAGE FROM -3 & -9 ADDED LM-2 USAGE TO -15 & 17. IN F/D VIEW B-B REMOVED LSC270-802-1(ON-3), ADDED LDW270-51549-5(ON-3), VIEW E-E REMOVED LSC270-803-1(ON-9), ADDED LDW270-51549-7(ON-9)	LM-2(32) THRU LM-15(45)		✓	INGOGLIA 10-6-67		
	4	2.00 3.00	5A 5B					EO B4	DELETE REF EO B1 FOR -19, LSC270-813-3(2) WAS LSC270-813-2(2), NAS1132V-1(6)(2 PLC'S) WAS NAS1137V-1(6)(2 PLC'S)	LM-1 THRU LM-15	✓				
	5	1.00, 2.00,3.00	2C				✓	EO B5 LCD 1843	DELETED LM-2(32) & LM-3(33) FROM -19 (1 EA REQD/MOD) ADDED -21 & 23 (1 EA REQD/MOD) EFF LM-2(32) & LM-3(33) N/A LM-2 LDW280-52508 N/A LM-3 LDW280-53508, ADDED VIEW H-H	LM 2(32) LM 3(33)		-19			

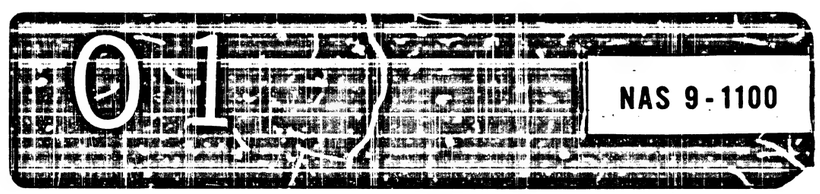
CHG APPROVED	LTR	GROUP LDR	PROP	STRUCTURES	VEH DES INT	WEIGHTS	RELIABILITY
	A						
	B						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51451	B

SCALE NONE SHEET 1.10

ENG 77.16 3-66



-23	-21	-19	-17	-15	-13	-11	-9	-5	-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
CL	QTY PER ASSEMBLY																				
		6	6									NAS1133V-1	E	SCREW							2B
						1						LDW270-51459-7	S	COUPLING ASSY	SEE DWG						6A
			5	5			5		5			MS21043-3	E	NUT	STD PART						6A
			6	3	3		6		3			NAS1133V-3	E	SCREW	STD PART						6A
				3					3	3		NAS1133V-2	E	SCREW	STD PART						5B
	3	9	12			9		12				NAS1132V-1	E	SCREW	STD PART						7B
									1			LDW270-51459-5	S	COUPLING ASSY	SEE DWG						4A
L	1			1		3						LSC270-813-27	S	COUPLING ASSY	SEE NOTE 1						3B
L		1	2		1			2				LSC270-813-26	↑	↑	↓						5B
L			2					2				LSC270-813-31	↑	↑	↓						6A
J						1						LSC270-805-1	↑	↑	↓						7B
J										1		LSC270-804-1	↑	↑	SEE NOTE 1						9A
J				1								LDW270-51459-3	↓	↓	SEE DWG						
J				1								LDW270-51459-1	S	COUPLING ASSY	SEE DWG						
																					2B
												LDW270-51451-23	E	DISCONNECT INSTL							6A
												LDW270-51451-21	E	DISCONNECT INSTL							6A
												LDW270-51451-19	E	DISCONNECT INSTL							6A
												-17	↑	↑							5B
J												-15	↑	↑							7B
↑												-13	↑	↑							4A
												-11	↑	↑							3B
												-9	↑	↑							5B
												-5	↑	↑							6A
												-3	↓	↓							7B
J												LDW270-51451-1	E	DISCONNECT INSTL							9A

CL - CLEANLINESS LEVEL PER LSP14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51451	B

SCALE NONE — SHEET 2.00

ENG 77.2 7-65

Q1

NAS 9-1100

LM	LDW280-60508	LM14(44)	1
		LM13(43)	1
		LM12(42)	1
		LM11(41)	1
LM	LDW280-60508	LM10(40)	1
LM	LDW280-54508	LM 9(39)	1
LM		THRU	1
LM	LDW280-54508	LM-4(34)	1
LM	LDW280-51508	LM-1(31)	1

PART NO. LDW270-51451-19

LM	LDW280-54508	LM-9(39)	1 EA
		LM-8(38)	1 EA
		LM-7(37)	1 EA
LM	LDW280-54508	LM-6(36)	1 EA
LM	LDW280-54508	LM-5(35)	1 EA
LM	LDW280-54508	LM-4(34)	1 EA
LM	LDW280-53508	LM-3(33)	1 EA

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW270-51451-3 & -9		GAEC SCH NO.	

LDW270-51451C

LM	LDW280-53508	LM 3(33)	1 EA
LM	LDW280-52508	LM 2(32)	1 EA

PART NO. LDW270-51451-21 -23

LM	LDW280-52508	LM-2(32)	1 EA
LM	LDW280-51508	LM-1(31)	1 EA

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW270-51451-15 & -17		GAEC SCH NO.	

LM	LDW280 60508	LM14(44)	1 EA
		LM13(43)	
		LM12(42)	
		LM 11(41)	
LM	LDW280-60508	LM10(40)	1 EA

PART Nº: LDW270-51451 -25, -27, -29

LM	LDW280-60508	LM-14(44)	1EA
LM		LM-13(43)	1EA
LM		LM-12(42)	1EA
LM		LM-11(41)	1EA
LM	LDW280 60508	LM-10(40)	1EA
LM	LDW280-54508	LM-9(39)	1EA
LM		LM-8(38)	1EA
LM		LM-7(37)	1EA
LM	LDW280-54508	LM-6(36)	1EA
LM	LDW280-54508	LM-5(35)	1EA
LM	LDW280-54508	LM-4(34)	1EA
LM	LDW280-53508	LM-3(33)	1EA
LM	LDW280-52508	LM-2(32)	1EA
LM	LDW280-51508	LM-1(31)	1EA

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW270-51451-1,-5,		GAEC SCH NO. 55	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	1.10	1.11	2.00	3.00	4.00			
REV	C	B	C	B	C	C			
SHEET	1.01			2.01					
REV	C			C					
SHEET									
REV									

LAST SECT LTR USED	K
LAST DASH NO. USED	-29

GRUMMAN REL INFO C.
PRIM NO. VK(009) EMF
470 ME-14C-2/17/67

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS — ANGLES ~ ~ ~	
ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	✓
CLASS I ENGRG CHANGE	
LCD 1843	

CONTRACT NO. NAS9-1100			LINE ITEM 9	DOCUMENTATION TYPE II
DRAWN BY	E. BALSON 6/16/66	WEIGHTS	L. Garcia 7/1/66	GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE, L. I., NEW YORK
LAYOUT BY	—	RELIABILITY		
CHECKED BY	—			DISCONNECT INST DESCENT PROPULSION FEED SYSTEM
GR LDR				
PROP				
STRUCT		PROJ ENGR		SIZE B · CODE IDENT NO. 26512 · LDW270-51451 C
VEH DES		REL GROUP		SCALE NONE · SHEET 1.00 OF 8

NG 77.1 12-66

01

NAS 9-1100

LDW270-51451 C

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW270-51451-11 & -13		GAEC SCH NO.	
LM	LDW280-54508	LM9(32)	1
		LM8(38)	
		LM7(37)	
		LM6(36)	
		LM5(35)	
	LDW280-54508	LM4(34)	
	LDW280-53508	LM3(33)	
	LDW280-52508	LM2(32)	
LM	LDW280-51508	LM1(31)	1

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET									
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED

GRUMMAN REL INFO

PRIM NO.

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO.

LINE ITEM

DOCUMENTATION TYPE

DRAWN BY

LAYOUT BY

CHECKED BY

PROJ ENGR

REL GROUP

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW270-51451 C

SCALE NONE

SHEET 1.01

ENG 77.1 12-65

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
B	6	2.00, 3.00, 1.11	2C 6B				✓	EO B6 LCD 1843	REFERENCE EO B5 FOR -21 INSTL ADDED NAS1132V-1(3), FOR -23 INSTL ADDED NAS1132V-1(3), ADDED SH 1.11	LM 2(32) LM 3(33)	✓		J. HAGGLUND 1-15-70		
C	1	1.00				✓		EO C1 LCD 3587	FOR -1, -3, -5, -9, -11, -13, -15, & -19 REMOVED	LM 15(45)		-1 -3 -5 -9 -11 -13 -15 -19			
	2	1.00 1.01 2.01 3.00 4.00				✓		LCD 3994 PKG#	ADDED SHTS 1.01, 2.01, 4.00, SHT 1.00 OF B WAS 1.00 OF S ADDED -25, -27, -29 INSTL FOR LM 10(40) THRU LM 14(44) N/A LDW280-60508 QTY 1 EA	LM 10(40) THRU LM 14(44)	NOT	REQ'D	V. PAVLICA 2-16-70	K.A.F. 2/16/70	J. Ford 2/16/70
	3	1.00 1.01							RESTRICTED -3 & -9 INSTL TO LM 3(33) THRU LM 9(33) RESTRICTED -11 & -13 INSTL TO LM 1(31) THRU LM 9(33)			✓			
	4	1.00							FOR -1, -5, -19 LM 10 THRU LM 14 N/A ② LDW280-60508 WAS LDW280-54508 J.F.C. 3 SERIAL NOS. 2-16-70		NOT	REQ'D			

CHG APPROVED	LTR	GROUP LDR	PROP	STRUCTURES	VEH DES INT	WEIGHTS	RELIABILITY
	B						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51451	C ②

SCALE NONE SHEET 1.11

ENG 77.16 3-66

01

NAS 9-1100

					11	2		MS21043-3	E	NUT	GOVT STD							
				3	3	3		NAS1133V3	E	SCREW	IND STD							
					9			NAS1133V2	E	SCREW	IND STD							
L					3			LSC270-813-27	S	DISCONNECT CPLG	SEE NOTE 1							
J				1				LSC270-805-1	S	DISCONNECT CPLG	SEE NOTE 1							
V					1			LDW270-51453-7	S	COUPLING ASSY	SEE DWG							
J						1		LDW270-51453-5	S	COUPLING ASSY	SEE DWG							
J								LDW270-51451-29	E	DISCONNECT INSTL								SHT 2.00
J								LDW270-51451-27	E	DISCONNECT INSTL								SHT 4.00
J								LDW270-51451-25	E	DISCONNECT INSTL								C7
C.L.				-29	-27	-25	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE	
	QTY PER ASSEMBLY																	

C.L. CLEANLINESS LEVEL PER LSP14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

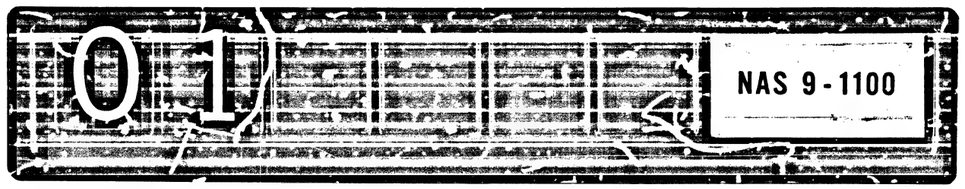
I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : LPC-19-2 (GRUMMAN) LPC-19-3 (VENDOR)

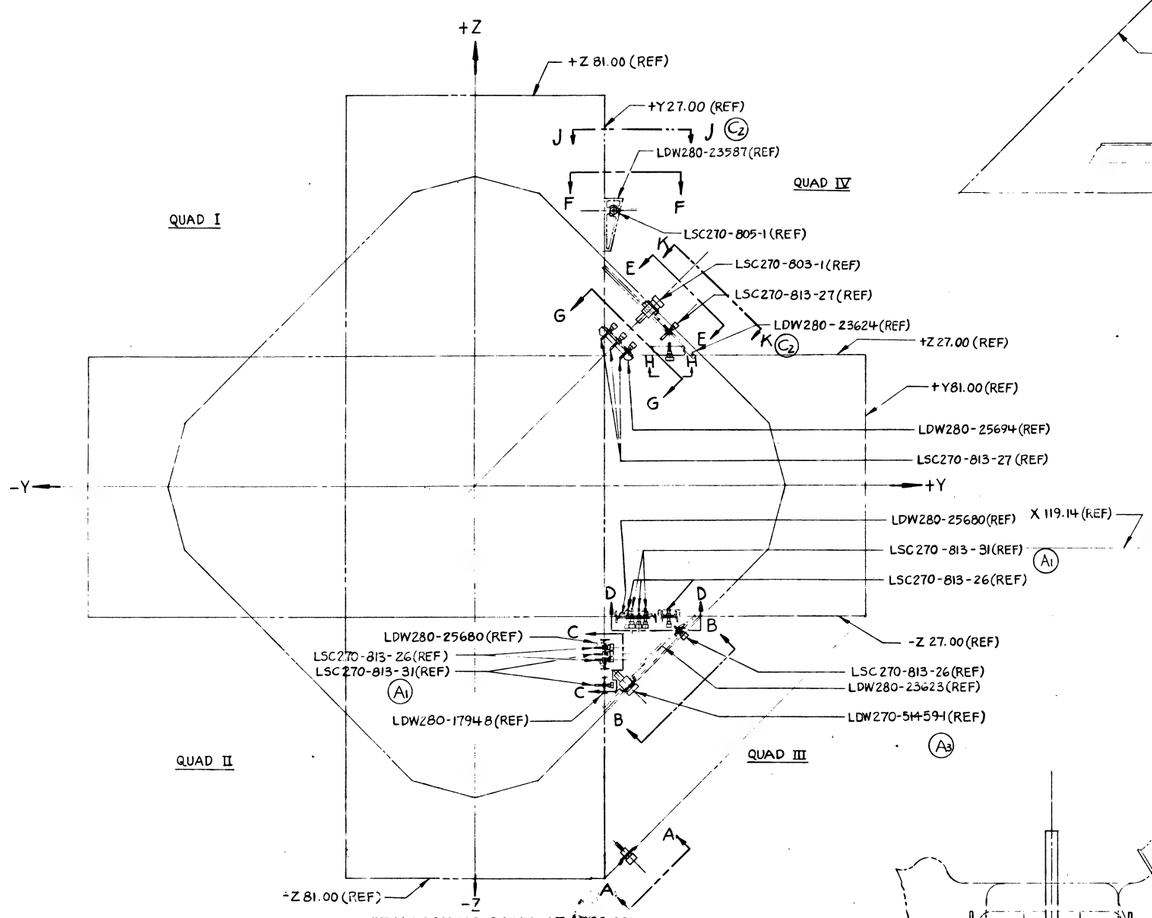
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51451	C

SCALE NONE SHEET 2.01

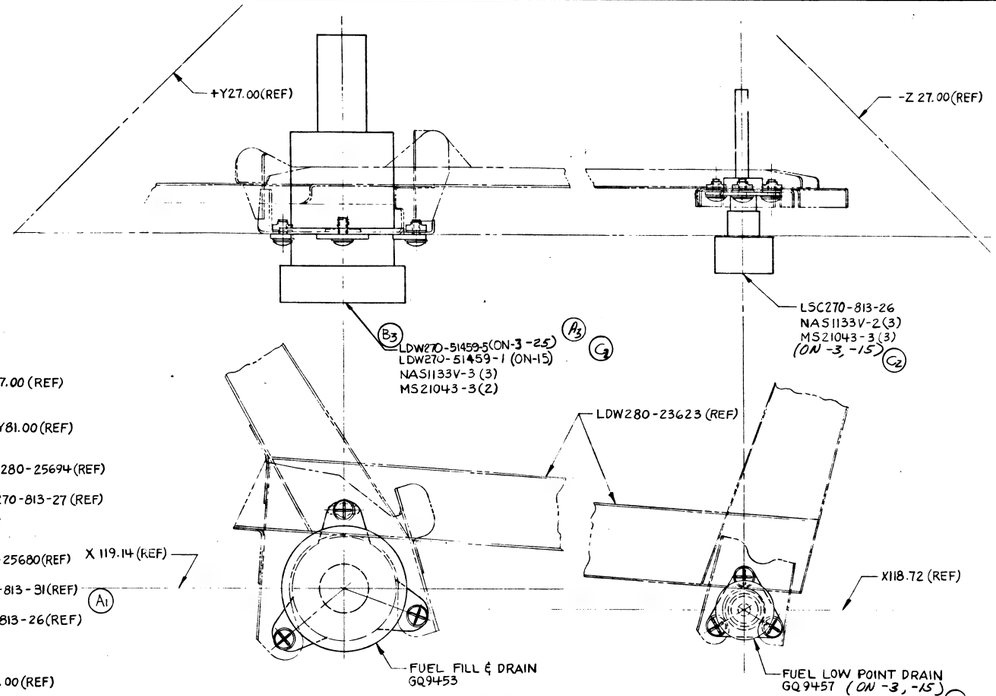
ENG 77.2 7-65





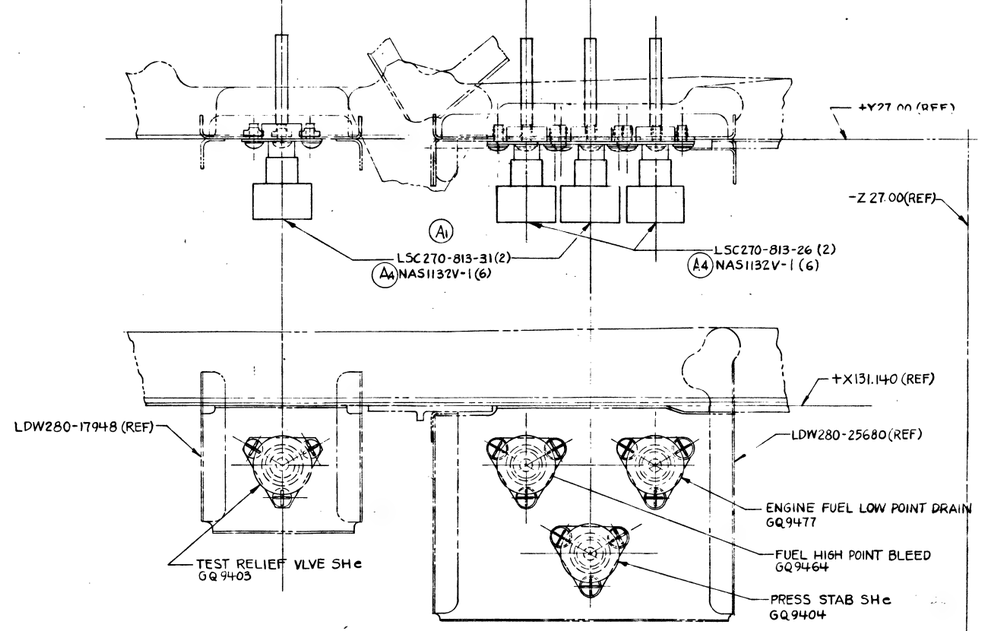
VIEW LOOKING DOWN AT X196.00
1/10 SCALE
FOR ENGINEERING REFERENCE

VIEW A-A LOOKING INBOARD (ROTATED 45°)
(FULL SCALE)
(ZONE 9B SHEET NO. 3)
LDW270-51451-1 INSTL

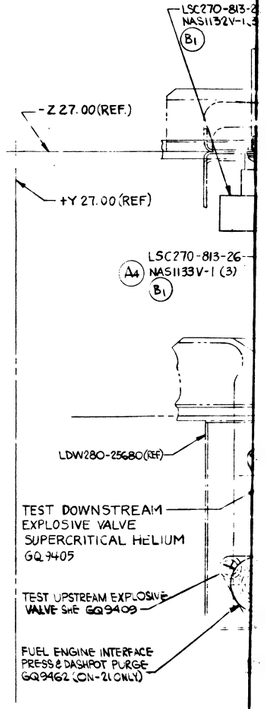


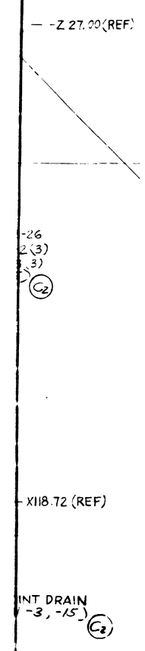
VIEW B-B LOOKING INBOARD (ROTATED 45°)
(FULL SCALE)
(ZONE 9B SHEET NO. 3)
LDW270-51451-3 INSTL.

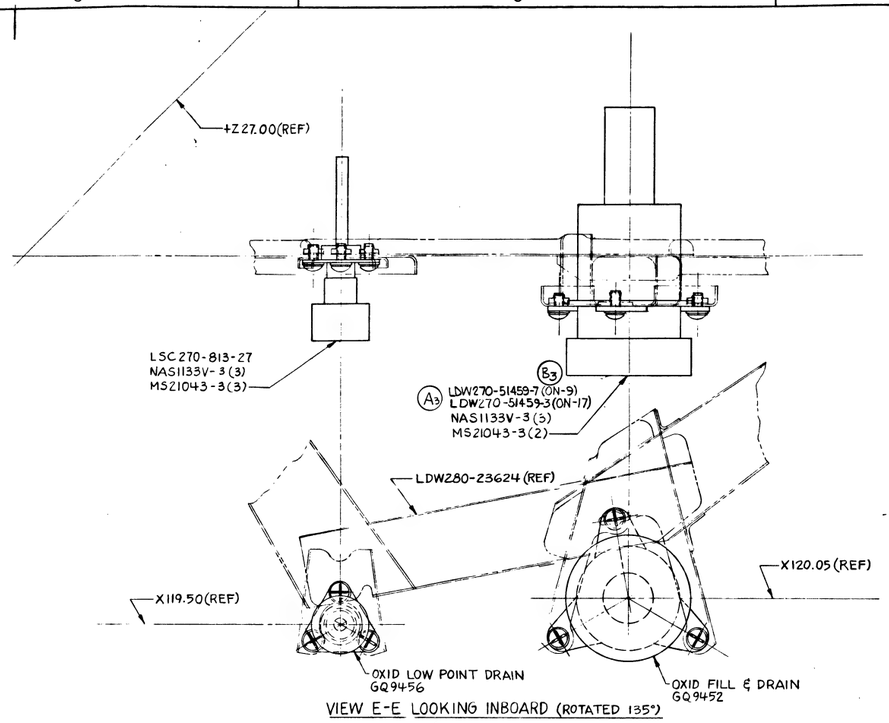
A3 -15 INSTL (IDENTICAL TO -3 EXCEPT AS SHOWN)
C2 -25 INSTL (IDENTICAL TO -3 EXCEPT AS SHOWN)



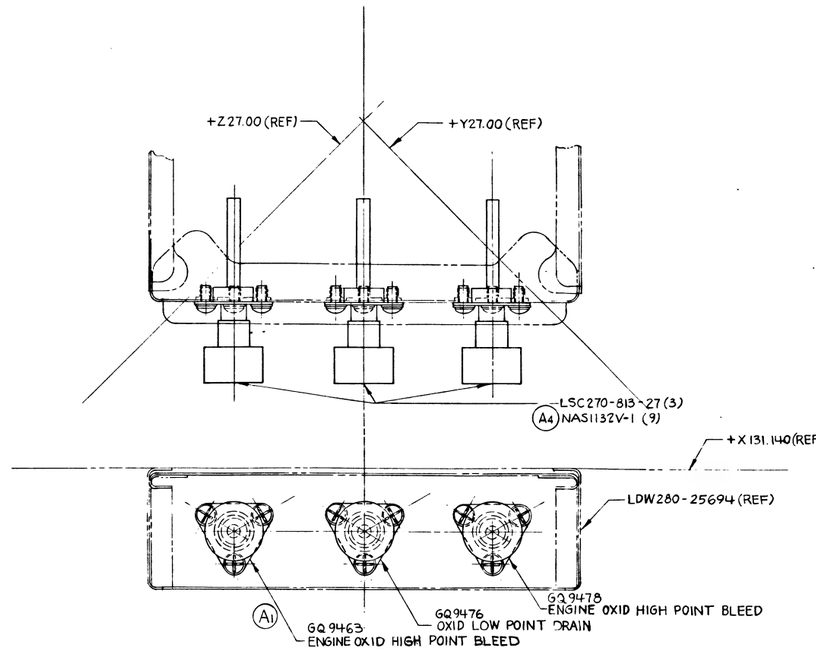
VIEW C-C LOOKING LEFT (ROTATED 90°)
(FULL SCALE)
(ZONE 9B SHEET NO. 3)
LDW270-51451-5 INSTL



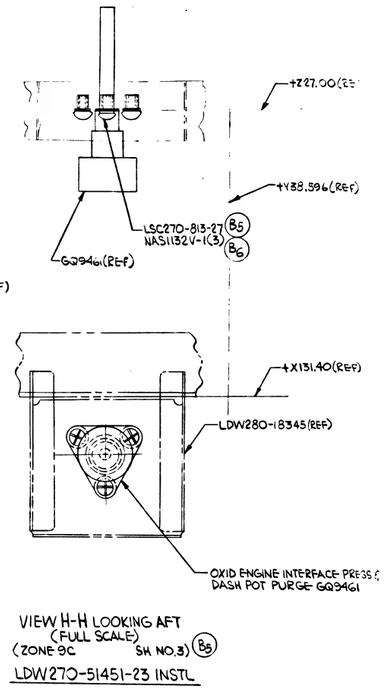




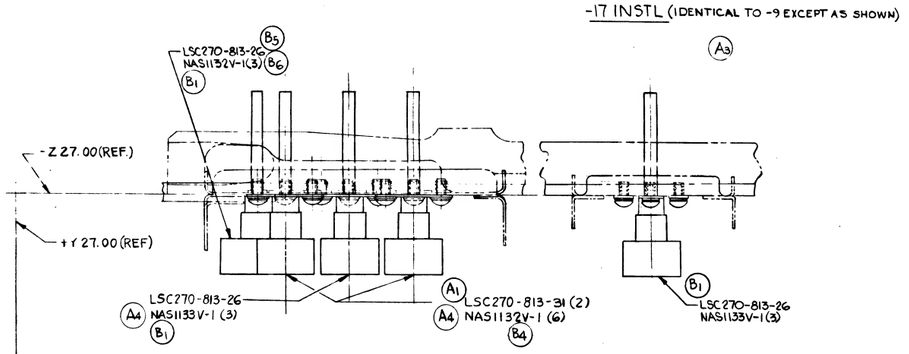
VIEW E-E LOOKING INBOARD (ROTATED 135°)
(FULL SCALE)
(ZONE 9C SHEET NO.3)
LDW270-51451-9 INSTL.
-17 INSTL (IDENTICAL TO -9 EXCEPT AS SHOWN)

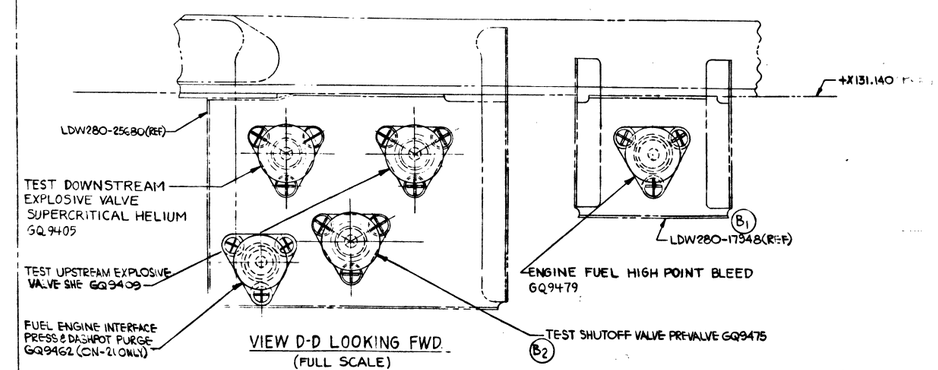


VIEW G-G LOOKING INBOARD (ROTATED 135°)
(FULL SCALE)
(ZONE 9C SHEET NO.3)
LDW270-51451-11 INSTL.

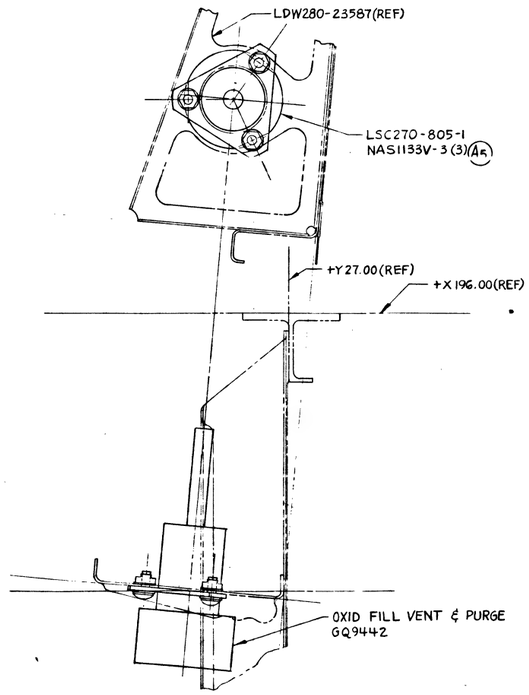


VIEW H-H LOOKING AFT
(FULL SCALE)
(ZONE 9C SH NO.3) B5
LDW270-51451-23 INSTL





VIEW D-D LOOKING FWD
(FULL SCALE)
(ZONE 9B SHEET NO. 3)
LDW270-51451-19 INSTL
B5 -21 INSTL (IDENT TO -19 EXCEPT AS NOTED)



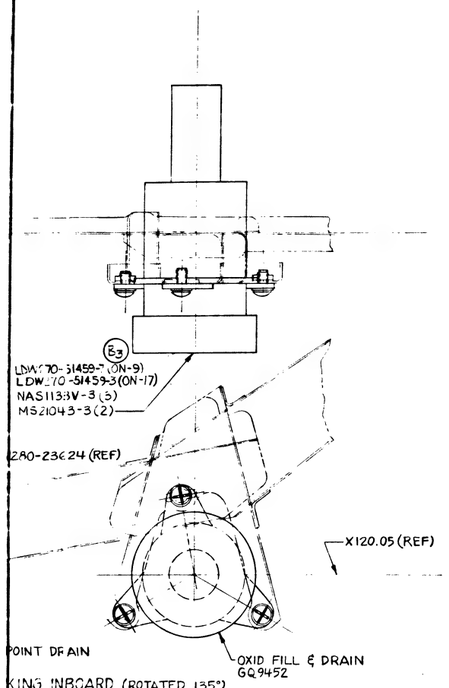
VIEW F-F LOOKING AFT (ROTATED 180°)
(FULL SCALE)
(ZONE 9C SHEET NO.3)
LDW270-51451-13 INSTL.

NOTES:
1. COMMERCIAL PART-SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING.

02703 NAS 9-1100

CODE IDENT 26512
LDW270-51451 SHT 3.00

CODE IDENT 26512
LDW270-51451 SHT 3.00



POINT DRAIN

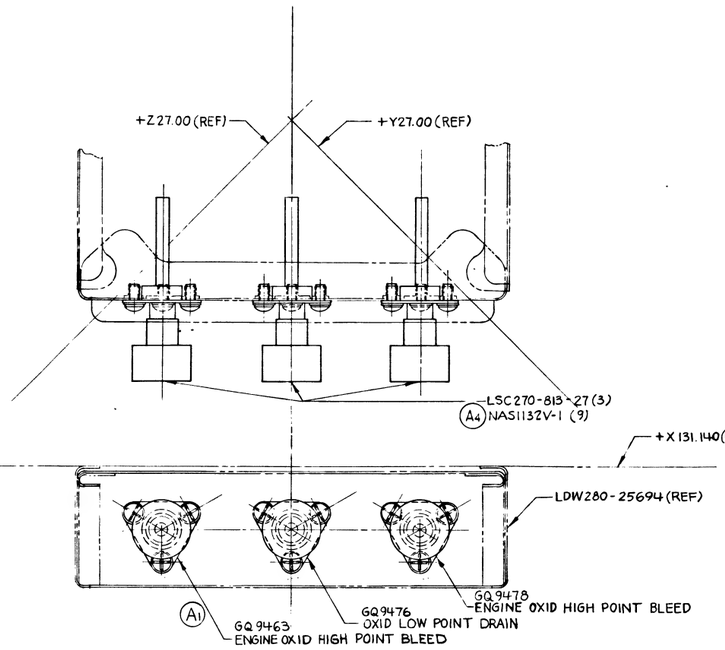
KING INBOARD (ROTATED 135°)

FULL SCALE)

E 9C SHEET NO 3)

0-51451-9 INSTL.

-17 INSTL (IDENTICAL TO -9 EXCEPT AS SHOWN)

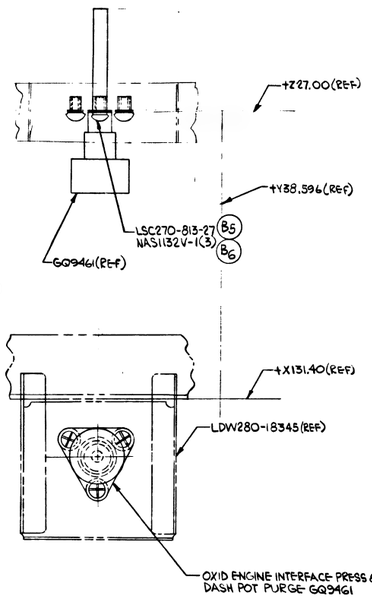


VIEW G-G LOOKING INBOARD (ROTATED 135°)

(FULL SCALE)

(ZONE 9C SHEET NO.3)

LDW270-51451-11 INSTL.

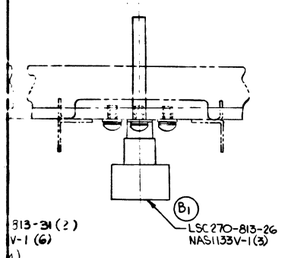


VIEW H-H LOOKING AFT

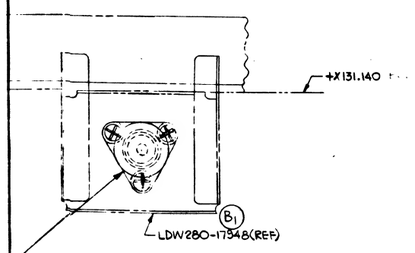
(FULL SCALE)

(ZONE 9C SH NO.3)

LDW270-51451-23 INSTL



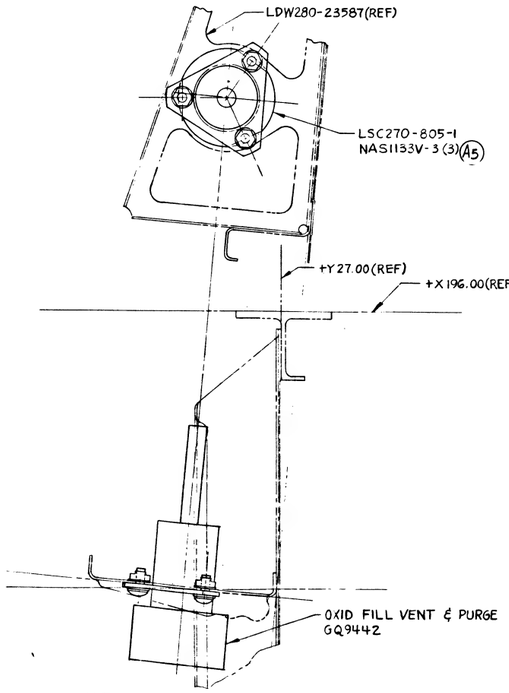
813-31(2)
V-1 (6)



ENGINE FUEL HIGH POINT BLEED
GQ9479

TEST STAND SHUTOFF VALVE PREVALVE GQ9475

HIS EXCEPT AS NOTED)



VIEW F-F LOOKING AFT (ROTATED 180°)

(FULL SCALE)

(ZONE 9C SHEET NO.3)

LDW270-51451-13 INSTL.

NOTES:

1. COMMERCIAL PART-SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING.

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
250 FOR ALL DRILLED HOLES
REMOVE ALL BURRS, BREAK ALL EDGES .015-.031
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
SYMBOL ∱ DENOTES SURFACE TO BE MACHINED
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
TOLERANCE ON LOFTED DELINEATIONS IS

DWG SIZE 34 X 50, FT.
PRINTING INFO ONLY
FULL SIZE SHEET AREA (36 X 50, FT.)
1/2 SIZE SHEET AREA (1/4 OF FULL)
PRINT TRIM LINE

LDW270-51451 C
LDW270-51451 C

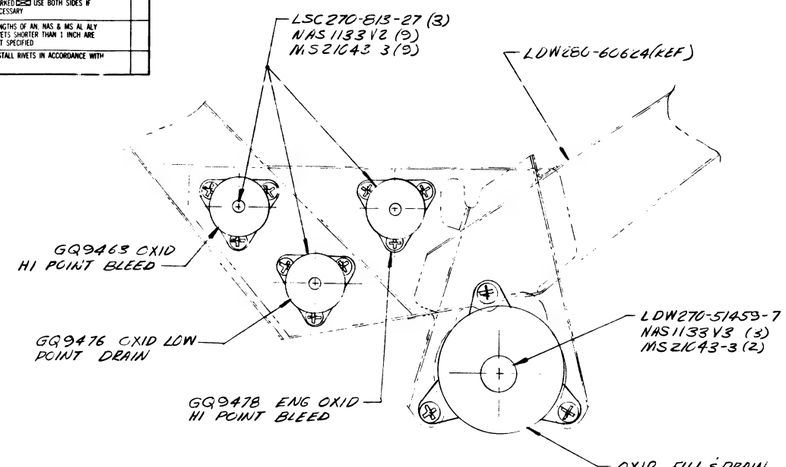
03/03

NAS 9-1100

LM	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
	SIZE J	CODE IDENT NO. 26512	LDW270-51451	C
MODEL OR END ITEM	SCALE		SHEET 3.00	

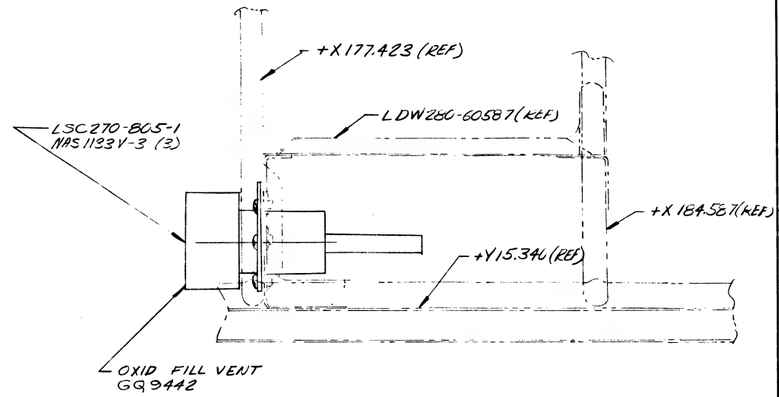
CODE IDENT 26512
LDW270-51451 SHT 3.00

SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.
MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED CRS USE BOTH SIDES IF NECESSARY
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED
INSTALL RIVETS IN ACCORDANCE WITH



VIEW K-K ZONE C9 (SHT 3.00) ROTATED 135°

LDW270-51451-27 INSTL (C2)



VIEW J-J ZONE C9 (SHT 3.00) ROTATED 90°

LDW270-51451-29 INSTL (C2)

GRUMMAN AEROSPACE CORPORATION BETHPAGE, NEW YORK 11714			
SIZE D	CODE IDENT NO. 26512	LDW270-51451	C
SCALE FULL		SHEET 4.00	

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-51451 | EO NO. D1
CONTROL INFO NO. LM-2-6048

ON -25,-27,-29

IN B/M, SHT. 2.01

REMOVE CLEANLINESS LEVEL "J"
IN C.L. COLUMN

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD3994

REASON FOR EO: CLEANLINESS LEVEL VERIFICATION CHECK NOT REQUIRED AFTER INSTL.

DESCRIPTION OF EO: ON -25,-27 & -29 REMOVED CLEANLINESS LEVEL "J"

GAEC EO RELEASE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-10(40)	
		THRU	
LM		LM-14(44)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO | REWORK | SCRAP
DISPOSITION OF PARTS: NOT REQD | 2-24-70 Prod.

	APPROVED BY	DATE		RB	KC	KC	RB
		3/5/70		3/9/70	3/23/70	3/24/70	3/24/70
SUPPORT	RELIAB GROUP			GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG

PRIORITY: C

DRAWING TITLE: DISCONNECT. INSTL DESCENT PROPULSION FEED SYSTEM

DRAWING NO.: LDW270-51451

EO NO.: D1

ISSUED BY LIAISON H. COHAN (X-3604) SECTION PROPULSION GROUP NO. 270 PL 25

0.1

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

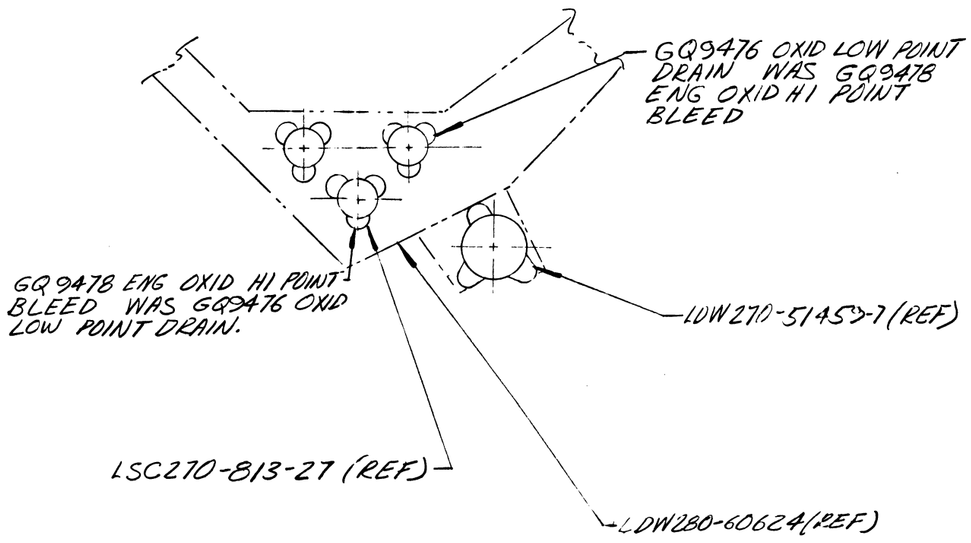
ENG 32.2 REV 3-65

ENGINEERING ORDER

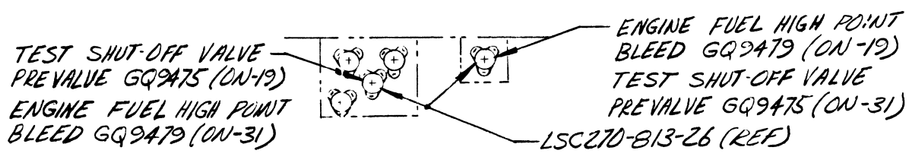
DWG. NO. LDW270-51451 | EO NO. D2

CONTROL INFO NO. LM270-1433

REVISE -27 INSTL AS SHOWN BELOW.
SHT 4.00 ZONE 7C



CREATE -31 INSTL FOR LM10(40) THRU LM14(44)
N/A LDW280-60508 QTY 1
SAME AS -19 EXCEPT AS SHOWN BELOW



VIEW D-D (SHT 3.00 ZONE 6A)

DELETE LM10(40) THRU LM14(44) EFFECTIVITY FROM -19

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓ LCD3994 PKG 3

REASON FOR EO: FACILITATE ENGINE COMPARTMENT LINE ROUTING.

DESCRIPTION OF EO: ADDED -31 FOR LM10(40) THRU LM14(44). DELETED LM10(40) THRU LM14(44) FROM -19. ON -27 GQ9476 WAS GQ9478 & GQ9478 WAS GQ9476.

GAEC USE EO RELEASE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM		LM10(40) THRU LM14(44)	

DRAWING CHANGE REQD: ✓ REVISE DWG; RECORD ED

DISPOSITION OF PARTS: ✓ REWORK; SCRAP

APPROVED BY	DATE	
	3/11/70	PROD
	3-16-70	SUPPORT
	3/11/70	GROUP LEADER
	3/16/70	STRESS GROUP
	3/16/70	LIAISON ENGRG
	3/16/70	PROJ ENGRG

PRIORITY: C

DRAWING TITLE: DISCONNECT, INSTL - DESCENT PROPULSION FEED SYSTEM

DRAWING NO.: LDW270-51451

EO NO.: D2

ISSUED BY J. PAVLICA x1472 SECTION LM PROPULSION GROUP NO. 270 PL 39

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENG 32.1 REV 3-65
ENGINEERING ORDER

DWG. NO. LDW270-51451 | EO NO. D3
CONTROL INFO NO. LM 270-1934

DELETE -31 INSTL FOR LM10(40)THRU LM14(44).
ON -19 ADD LM10(40) THRU LM14(44) EFFECTIVITY
QTY 1 N/A LDW280-60508

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG ✓ LCD 5538

REASON FOR EO: ELIMINATE GSE DISCONNECT INTERFERENCE

DESCRIPTION OF EO: DELETED -31 INSTL FOR LM10 THRU LM14, ADDED LM10 THRU LM14 EFF TO -19

GAEC EO RELEASE: R3 5/12/70

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM10(40) THRU LM14(44)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: REWORK ✓ | SCRAP
PRIORITY: C

APPROVED BY	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
DATE 5/11/70	5/11/70			5/12/70

PROP | SUPPORT | RELIAB. GROUP

DRAWING TITLE: DISCONNECT INSTALLATION-DESCENT PROPULSION FEED SYSTEM
DRAWING NO.: LDW270-51451
EO NO.: D3

ISSUED BY 5-12-70 J. PAVLICA x1472
SECTION LM PROPULSION
GROUP NO. 270 PL 25

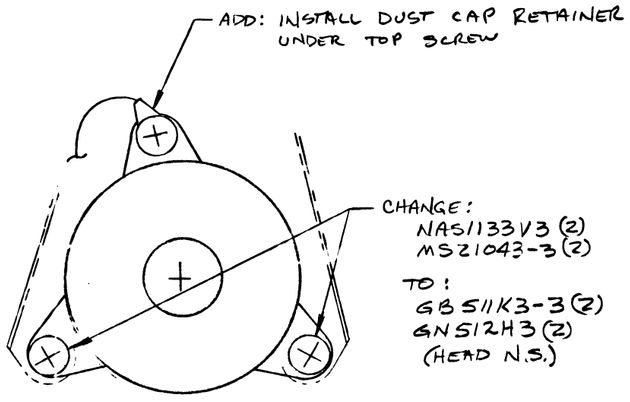
01

NAS 9-1100

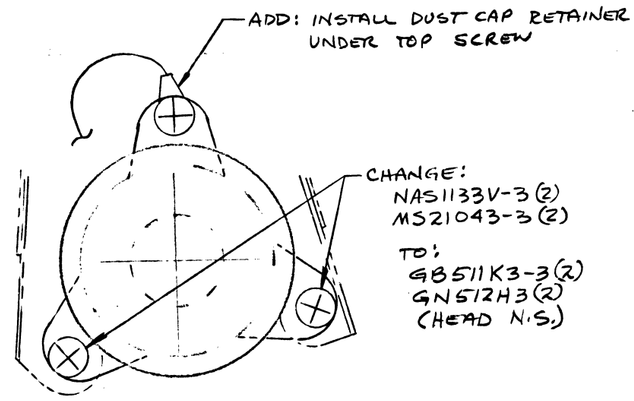
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 22.2 REV 3-65

DWG. NO. LDW270-51451		EO NO. D4
CONTROL INFO NO. LM-5-23374		



VIEW K-K, SHEET 4.00
LDW270-51451-27 INSTL (REF)



VIEW B-B, SHEET 3.00
LDW270-51451-25 INSTL (REF)

DESCRIPTION CONTD: "ADDED: INSTALL DUST CAP RETAINER UNDER TOP SCREW."

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	LCD 3994

REASON FOR EO: INTERFERENCE WITH HEAT SHIELD SUPPORT

DESCRIPTION OF EO: ON -25 & -27 GB511K3-3(2) & GN512H3(2) WAS NAS1133V-3(2) & MS21043-3(2) (CONTD. ABOVE)

GAEC EO RELEASE: JEB

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-10(40) THRU LM-13(43)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: REWORK ✓ | SCRAP

PRIORITY: C

DRAWING TITLE: DISCONNECT INST DESC. PROP. FEED SYSTEM

DRAWING NO.: LDW270-51451

EO NO.: D4

APPROVED BY						
				KC	CH	RB
DATE	9/4/70			9/1/70	9-26-70	10/1/70
		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ. ENGRG

ISSUED BY LM/SP4 E.V. BERGEMAN X-86755 SECTION LM PROPULSION GROUP NO. 270 PL 39

NAS 9-1100

GRUMMAN AEROSPACE CORPORATION

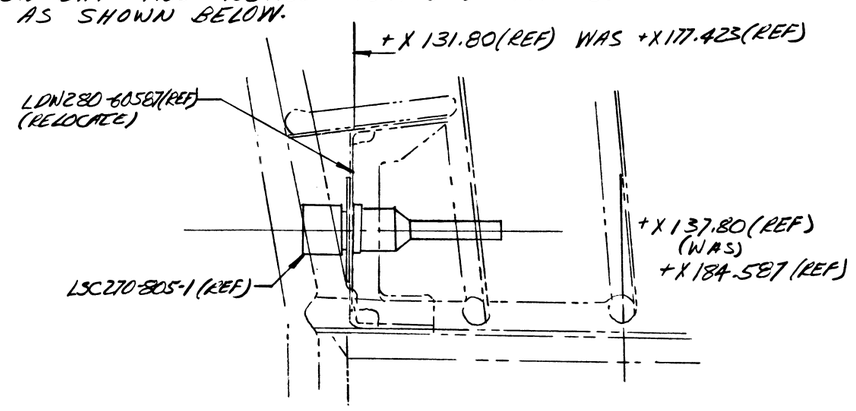
CODE IDENT NO. 26512

ENG 22.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW270-51451		EO NO. D5
CONTROL INFO NO. LM270-1452		

ON SHT 4.00 REVISE VIEW J-J FOR -29
AS SHOWN BELOW.



DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓ LCD 5651 PKG 1

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
PROVIDE ADEQUATE CLEARANCE	REVISED REFEFERENCE COORDINATES TO REFLECT DISCONNECT RE LOCATION +X 131.80 WAS +X 177.423	4-8

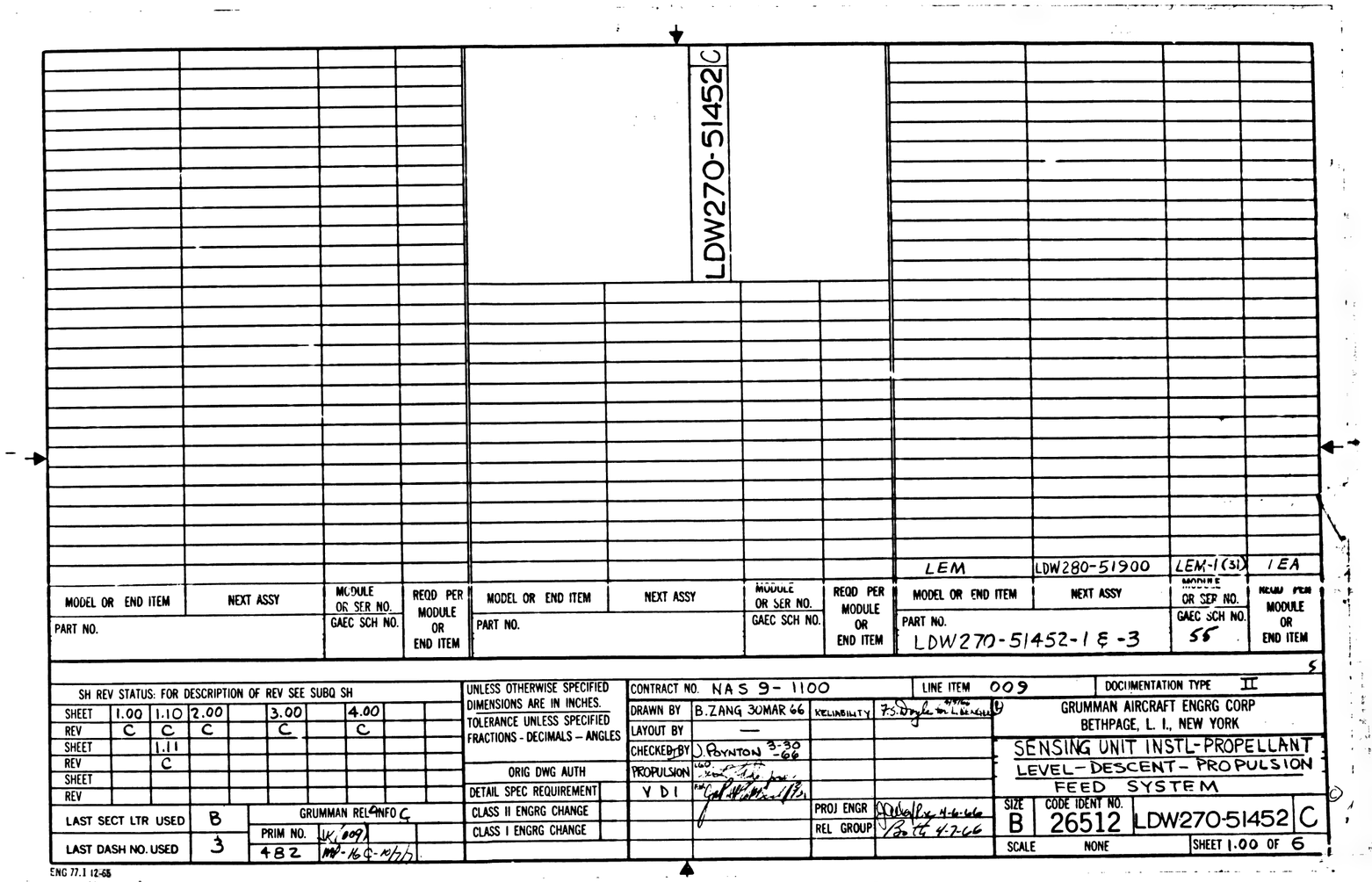
MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP	APPROVED BY	DATE	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
LM		LM10(90) THRU LM13(43)		✓		✓		PROP	11/14/70			12/2/70			12/2/70

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	DISCONNECT INSTL-DESCENT PROPULSION FEED SYSTEM	LDW270-51451	D5

ISSUED BY J. PAVLICA X1926 SECTION LM PROPULSION GROUP NO. 270 PL 25

01

NAS 9-1100



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LEM	LDW280-51900	LEM-1 (3)	1 EA
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW270-51452-1 & -3		GAEC SCH NO. 55	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00	1.10	2.00		3.00		4.00			
REV	C	C	C		C		C			
SHEET		1.11								
REV		C								
SHEET										
REV										

LAST SECT LTR USED	B	GRUMMAN REL INFO C	
LAST DASH NO. USED	3	PRIM NO. UK 009	
		482 MM-16 C-11/66	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS – ANGLES

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100 | LINE ITEM 009 | DOCUMENTATION TYPE II

DRAWN BY	B. ZANG 30MAR 66	RELIABILITY	F.S. Doyle 4/7/66
LAYOUT BY	—		
CHECKED BY	J. POYNTON 3-30-66		
PROPULSION	[illegible]		
V D I	[illegible]	PROJ ENGR	[illegible] 4-6-66
		REL GROUP	[illegible] 4-7-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SENSING UNIT INSTL-PROPELLANT LEVEL-DESCENT-PROPULSION FEED SYSTEM

SIZE	CODE IDENT NO.	
B	26512	LDW270-51452 C

SCALE NONE | SHEET 1.00 OF 6

ENG 77.1 12-65

01A
NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET 1.11

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1, 1.10, 2						EO A1	SH 1 OF 5 WAS SH 1 OF 4. ADDED SH 1.10. IN B/M FOR -1, -3, REVISED QUANTITIES FOR NAS1271H4, AN960C416L (16 EA) WAS (8 EA) (R)	NOT REQD	✓		C.P. CASTISE 10-6-67		
B	1	1, 1.10, 2. & 4.						EOB1	ON-1, LSC270-00009-16 (1) REQ'D WAS (2) ADD LSC270-00009-34 (1).	LM-1	✓		C. D'AVELLA 10-6-67		
	2	1.10, 2. & 4.					✓	EOB2	REF. EO B1 ~ ON-1 IN FLD & B/M LSC270-00009-16-1 (2) REQD. WAS LSC270-00009-16 (1) REQD., AND -34 (1) REQD. ON-3 LSC270-00009-15-1 (2) REQD. WAS LSC 270-00009-15 (2) REQD. GW10K-416C WAS AN960-C416L						
	3	1.10 & 3.					✓	EOB3 LCD 1068	REVISE NOTE "1.						
	4	1.10 & 3.					✓	LEO270-39	REVISE NOTE "1.						
	5	1.10 & 3.					✓	EOB5 LCD1894	REVISE NOTE "1						
	6	1.10 & 3.				✓		EOB6 LCD1894	REVISE NOTE "1						
	7	1.10, 2., 3. & 4.				✓		EOB7 LCD1894	ON-1 & 3 ~ ADDED LDW280M15563-11 (2 EA) & NAS1271H12 (16EA) ~ REMOVED NAS1271H4 (16EA). REVISE NOTE "1. ADDED NOTE "6						
	8	1.10 & 3.						EOB8 LCD1894	DELETED ".001 PERMISSIBLE GAP IN THE UNBOLTED CONDITION" FROM NOTE "6						
	9	1.10, 2. & 4.					✓	EOB9 LCD1894	ON-1, LSC270-00009-36 (2) REQD (WAS) LSC 270-00009-16-1 (2) REQD. ON-3, LSC270-00009-35 (2) REQD. (WAS) LSC 270-00009-15-1 (2) REQD.			✓			
	10	1.10 2, 3 & 4.					✓	EOB10-LCD1894	GS13AK-147-XXX (WAS) GS13AJ-147. ADDED NOTE "4		✓				
C	1	1.10, 2., 3. & 4.				✓		EOC. LCD1894	IN FLD & B/M LDW270M10071-13 (WAS) LSC 270-00009-35, LDW270 M10071-14 (WAS) LSC 270-00009-36, GB511AJ-4H12 (WAS) NAS1271H4 FOR -1-1 & -3-1 ADDED LDW280M15563-11 (PREV. INC. ON EOB7), GS13AK-147 (PREV. INC. ON EOB10) ADDED NOTES "4 & "5 (NOTE "4 PREV. INC. ON EOB10). ADDED AN515C8R4 (8 EA) TO -1-1 & -3-1.		✓				

CHG APPROVED	LTR	GROUP LJR	VEH DES INT	PROPULSION	RELIABILITY
	A				
	B				
	C				

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51452	C

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	CHGL APPD
C	2	1.11 & 3.					✓		ON SH. 3. - REF E.O. B3, LEO 270-39, E.O. 5, 6, & 7. REMOVED NOTE "1 AND ADDED NOTE "7. ADDED SH. 1.11	LM-1	✓		C. DAVELLA 10-6-67		
	3	1.11 & 3.				✓			REF E.O. B7 - INFLD E.O. - IN NOTE "6 "_____ BEFORE MATCHING ___" (WAS) "HAND MATCH___" AND "FACE WITH___" (WAS) "SIDE WITH___".						
	4	1.11				✓			REF E.O. C1 - IN FLD & DESCRIPTION BOX OF E.O. "FOR-1-1 ___" S/B "FOR-1___" AND "FOR-3-1___" S/B "FOR-3___".						
								(2)	ADDED MS 51957-41 (4) (WAS) AN515C8R4 (4)						

CHG APPROVED	LTR	GROUP LDR	VEH DES INT	PROPULSION	RELIABILITY
	C				

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51452	C

SCALE NONE SHEET 1.11

GNG 77.16 3-65

OFFICIAL USE ONLY
NAS 9-1100

QTY PER ASSEMBLY			CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
-3	-1												
AR	AR			MS20995C32		SAFETY WIRE	STD PART						
16	16			GB511AJ-4H12		BOLT	GRUMMAN STD						
16	16			GW10K-416C		WASHER	GRUMMAN STD						
8	8			MS51957-41		BOLT	STD PART						
2	2			GS13AK-147-XXX		SEAL SEE NOTE 4	GRUMMAN STD						
2	2			LDW280M15563-11		RING	SEE DWG						
2				LDW270M10071-13	S	SENSING UNIT	(OXIDIZER) (SEE NOTE 3)						
	2			LDW270M10071-14	S	SENSING UNIT	(FUEL) (SEE NOTE 3)						
				LDW270-51452-3	E	SENSING UNIT INSTL (OXIDIZER)							
				LDW270-51452-1	E	SENSING UNIT INSTL (FUEL)							

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
	SAFETY WIRING	MS33540

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51452	C

SCALE NONE SHEET 2.C

©

ENG 77.2 7-66

NAS 9-1100

NOTES:

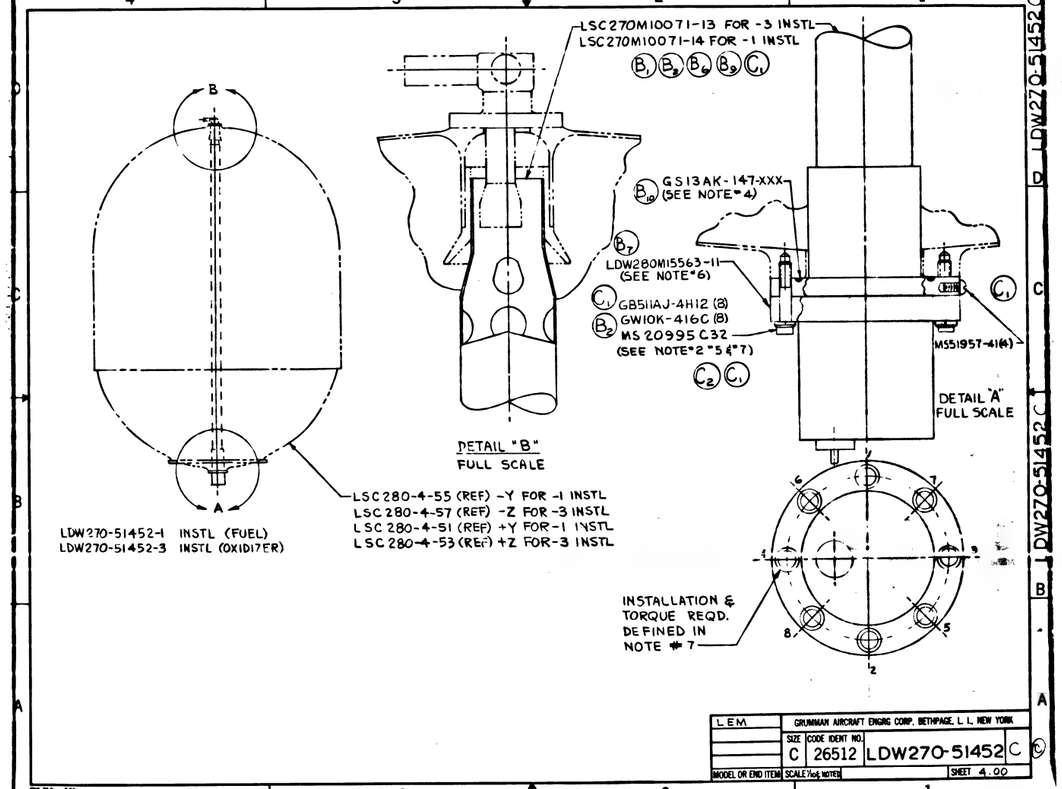
1. INSTALL ALL BOLTS FINGER TIGHT & TORQUE IN SEQUENCE AS FOLLOWS:
   (a) PHYSICAL LOCATION FOR START OF SEQUENCE (BOLT "1") IS OPTIONAL.
   (b) TORQUE ALL BOLTS PER SEQUENCE TO 15 INCH-LBS. & REPEAT THE SEQUENCE UNTIL BOLTS DO NOT TURN WHEN 15 INCH-LBS IS APPLIED.
   (c) REPEAT STEP (b) APPLYING 30 INCH-LBS.
   (d) REPEAT STEP (b) APPLYING 55-60 INCH-LBS. FOR FINAL TORQUE.
2. SAFETY WIRE PER MS33540.
3. COMMERCIAL PART SEE SPECIFICATION CONTOL DWG BEFORE ORDERING.
4. SELECT SECONDARY DASH NUMBER OF SEAL IN ACCORDANCE WITH LPC280-42.
5. TORQUE TO HIGH LIMIT TO ASSURE METAL TO METAL CONTACT BETWEEN SENSOR & TANK COVER.
6. CUT & REMOVE LOCKWIRE FROM FOUR NO. 6 MACHINE SCREWS ON PQGS FLANGE BEFORE MATCHING LDW280M15563-11 TO PQGS FLANGE. FACE WITH BLIND HOLES MATES WITH PQGS FLANGE.
7. INSTALL ALL BOLTS FINGER TIGHT & TORQUE IN SEQUENCE AS FOLLOW:
   (a) PHYSICAL LOCATION FOR START OF SEQUENCE (BOLT) IS OPTIONAL.
   (b) TORQUE ALL BOLTS PER SEQUENCE TO 15 INCH-LBS. & REPEAT THE SEQUENCE UNTIL BOLTS DO NOT TURN WHEN 15 INCH-LBS. IS APPLIED.
   (c) REPEAT STEP (b) APPLYING 30 INCH-LBS.
   (d) REPEAT STEP (b) APPLYING 50 INCH-LBS.
   (e) REPEAT STEP (b) APPLYING 70 INCH-LBS.
   (f) REPEAT STEP (b) APPLYING 90-100 INCH-LBS.
   (g) AFTER INITIAL INSTALLATION THE BOLT PATTERN MUST BE RETORQUED IN THE TIGHTENING DIRECTION AT 72 HR. INTERVALS. REPEAT TWICE, I.E. THE INITIAL INSTL PLUS TWO RETORQUES.

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-51452	C
SCALE NONE		SHEET 3.00	

SNS 751 0-64

01

NAS 9-1100



LDW270-51452C

LEM	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK			
	SIZE	CODE IDENT NO.		
	C	26512	LDW270-51452	C
MODEL OR END ITEM	SCALE 1/64 NONE		SHEET 4 OF 00	

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG NO. LDW270-51452 | EO NO. D1
CONTROL INFO NO. LM270-1070

ADD NOTE * (NEXT AVAILABLE NO)

ON-1 APPLY SEALANT LED520-35(VISTANEX) AND ON-3 APPLY SEALANT LED520-34 (NITROSO) IN ACCORDANCE WITH LPC280-46 (LED520 IS AN INTERIM PROCUREMENT DOCUMENT)
IN B/M FOR-1 ADD LED520-35 AS REQUIRED
FOR-3 ADD LED520-34 AS REQUIRED

IN F/D ADJACENT TO AN515C8R4(4) (ADD) SEE NOTE *

LFM

LMLK

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCD 1094

REASON FOR EO: PROVIDE SEALANT & METHOD OF APPLICATION

DESCRIPTION OF EO: ADDED NOTE *. IN B/M FOR-1 ADDED LED520-35 & FOR-3 ADDED LED520-34. IN F/D ADDED "SEE NOTE *"

GAEC EO RELEASE: 10/6/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 31	LM-1(31)	

DRAWING CHANGE REQD: ✓ REVISE DWG; RECORD EO
DISPOSITION OF PARTS: ✓ REWORK; SCRAP

APPROVED BY	FXD		—					
DATE	10/5/67	10/5/67	—	10/5/67	—	10/6/67	10/6/67	10-6-67
	MFG	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	CONF

PRIORITY: C
DRAWING TITLE: SENSING UNIT INSTL - PROP LEVEL DESCENT - PROP FEED SYSTEM
DRAWING NO.: LDW270-51452
EO NO.: D1

ISSUED BY WM KUTNER X1611 10/5/67 SECTION PROPULSION GROUP NO. 345 PL 25

01

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW 270-51452 | EO NO. D2
CONTROL INFO NO. LM 83-2086

THIS EO SUPERSEDES ALL PREVIOUS NOTICES TO:

REMOVE
NOTE # 1.

ADD NOTE *

*. INSTALL ALL BOLTS FINGER TIGHT & TORQUE IN SEQUENCE AS FOLLOWS:
a. PHYSICAL LOCATION FOR START OF SEQUENCE (BOLT #1) IS OPTIONAL.
b. TORQUE ALL BOLTS PER SEQUENCE TO 15 INCH LBS. & REPEAT THE SEQUENCE UNTIL BOLTS DO NOT TURN WHEN 15 INCH LBS. IS APPLIED.
C. REPEAT STEP b APPLYING 30 INCH LBS, THEN 50 INCH LBS, THEN 70 INCH LBS.
d. REPEAT STEP b APPLYING 90-100 INCH LBS FOR FINAL TORQUE.

* NEXT AVAILABLE NOTE NUMBER

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	LCD 1894	83

REASON FOR EO: TO CLARIFY TORQUE REQUIREMENTS

DESCRIPTION OF EO: REMOVED NOTE 1; ADDED NOTE *

(R) GAEC EO RELEASE: JC 9/22/67

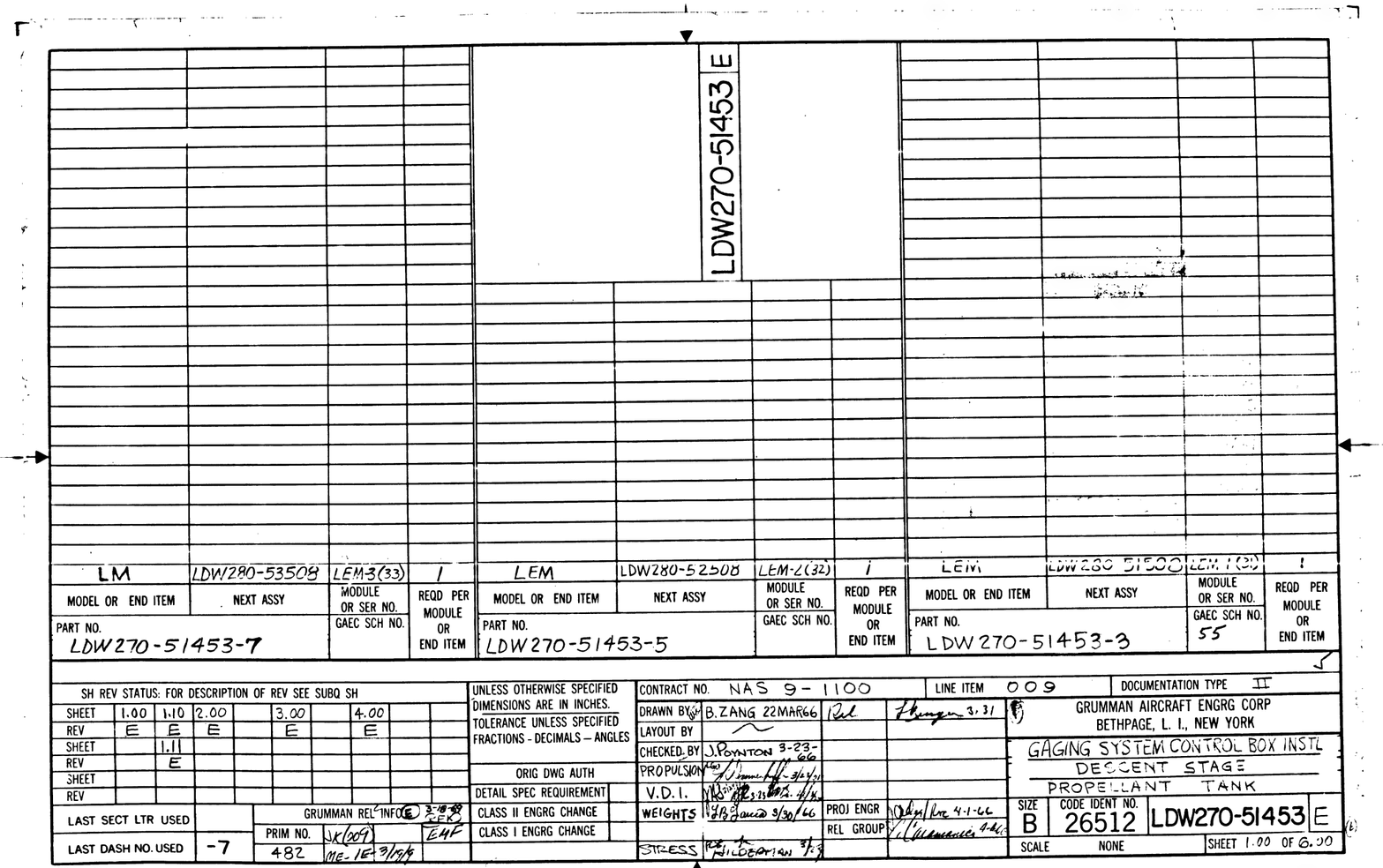
MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG / RECORD EO	DISPOSITION OF PARTS: REWORK / SCRAP	APPROVED BY						
						DATE	RP 18 Oct	RB 30 Oct		PCK 10/18/67		BS PE BPA 18 Oct
LM		LM1 (31)				SYS	PR EO SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	DESIGN APPROVAL	PROJ ENGRG 10-20

PRIORITY: C
DRAWING TITLE: SENSING UNIT INSTL. - PROPELLANT LEVEL - DESC - PROP FEED SYSTEM
DRAWING NO.: LDW 270-51452
EO NO.: D2

ISSUED BY P. KLUG x3906 SECTION PROJ. ENG. KSC GROUP NO. 812 PL 83 K

01

NAS 9-1100



LM	LDW280-53508	LEM-3(33)	1	LEM	LDW280-52508	LEM-2(32)	1	LEM	LDW280 51500	LEM-1(31)	1
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW270-51453-7		GAEC SCH NO.		PART NO. LDW270-51453-5		GAEC SCH NO.		PART NO. LDW270-51453-3		GAEC SCH NO. 55	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00		3.00		4.00	
REV	E	E	E		E		E	
SHEET		1.11						
REV		E						
SHEET								
REV								

LAST SECT LTR USED

LAST DASH NO. USED -7

GRUMMAN REL INFO (E) 3-18-66 KEK

PRIM NO. 482 JK(009) ME-1E 3/19/66 E4F

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100 LINE ITEM 009 DOCUMENTATION TYPE II

DRAWN BY B. ZANG 22MAR66 Rel Thurgen 3.31

LAYOUT BY ~

CHECKED BY J. POYNTON 3-23-66

PROPULSION

V.D.I.

WEIGHTS

STRESS Re-Location 3/30

PROJ ENGR

REL GROUP

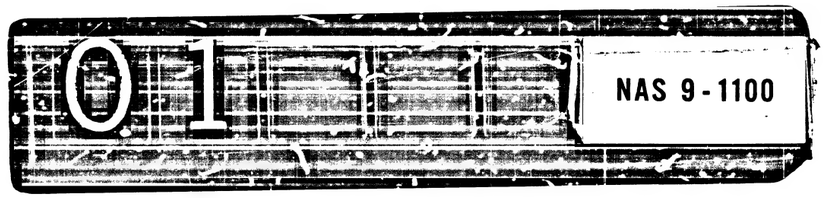
GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

GAGING SYSTEM CONTROL BOX INSTL
DESCENT STAGE
PROPELLANT TANK

SIZE B | CODE IDENT NO. 26512 | LDW270-51453 E

SCALE NONE | SHEET 1.00 OF 6.00

ENG 77.1 12-65



REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	APPD
A	1	2.00							I&T CALLOUT "S" WAS "E" FOR LSC270-00009-23 & ADDED "E" TO -1 CALLOUT	NOTED			ZANG 3-31-66 I		
	2	1.00							ADDED SHEET 1.10						
B	1	1, 1.10						EO B1	IN-1 MOD/BLK ADDED EFF. LEM-7 THRU LEM-11	LEM-7-8-9-10-11	NOT	REQD	FAENANNO 7-20-66		
	2	1.10						EO B2	SUPERSEDED BY EO B3	NOT REQD					
	3	1, 1.10						EO B3	SUPERSEDES EO B2, REVISED N/A FOR LEM-1(31) THRU LEM-6(36) WAS LDW280-51509, 52509, 53509 54509, 55509, 56509.	LEM-1 THRU LEM-6					
C	1	1.00						EO C1	IN-1 MOD/BLK N/A REVISED: LEM-7 LDW280-57508, LM-8 LDW 280-58508, LEM-9 LDW280-59508, LEM-10 LDW 280-60508 & LEM-11 LDW280-61508 (WAS) LEM 7 THRU 11 LDW 280-52900	NOTED	NOT	REQD	ZANG 7SEP66		
	2							EO C2	CANCELS EO C1			✓	(B) EJR		
	3	1.00 1.10 2.00 4.00							SH 1 OF 5 (WAS) 1 OF 4. REMOVED -1 FROM LEM-2 THRU 11. ADDED -3, -5 & -7.						
D	1	1.00						EO D1	ON-7: N/A FOR LM-5 WAS LDW280-55508, LM-6 WAS LDW 280-56508, LM-7 THRU LM-15 WAS LDW 280-57508.	NOTED	NOT REQD		J. REBHOLZ 1-9-67		
	2	1.00 2.00 4.00		LCR 817					IN BIM&FID: REMOVED -1 INSTL CONSISTING OF LSC 270-00009-23 CONTROL UNIT ASSY & INSTALLATION BOLTS & WASHERS FROM LM-1 VEHICLE. ADDED -3 INSTL FOR LM-1. REVISED LM-2 & LM-3 EFF AS FOLLOWS: -5 USED ON LM-2 (WAS -3), -7 USED ON LM-3 (WAS -5)	LM-1 (31) THRU LM-15 (45)	✓	✓			
E	1	1.10, 3.00							INC. LEO 270-53	LM-2 THRU LM-15			A. HENDRICKS 3-7-69		
	2	1.10, 3.00							INC. LEO 270-59	LM-3					
	2	1.10, 2.00 & 4.00	5C						INC. EO E3	LM-2					
	3	1.10, 2.00 4.00	5C						INC EO E4	LM-5 THRU LM-15		WD			

CHG APPVD	LTR	GRP LDR	PROP	V.D.I.	WEIGHTS	STRESS	REL	PROJ ENG
	E							

FOR CONTINUATION OF REVISIONS SEE SHEET 1.11

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51453	E

SCALE NONE — SHEET 1.10

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR / ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
F 5	1.00, 1.11, 2.00 & 4.00						(B)	INC. EO E5. ADDED SHEET 1.11	LM-4 THRU LM-15			HENDRICKS 3-7-69		3-19-69

CHG APPROVED	LTR	GROUP LDR	PROPULSION	VEH DES INT	WEIGHTS	STRESS	RELIABILITY	PROJ ENG
	E							

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51453	E

SCALE NONE SHEET 1.11 (C)

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY			CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
3	3	3		NAS1133V3	E	BOLT	STD PART						
3	3	3		AN960C10L	E	WASHER	STD PART						
	1	1		LSC270-00009-43	S	CONTROL UNIT ASSY (SEE NOTE 1)							
		1		LSC270-00009-41	S	CONTROL UNIT ASSY (SEE NOTE 1)							
				LDW270-51453-7	E	GAGING SYST CONTROL BOX INSTL							
				LDW270-51453-5	E	GAGING SYST CONTROL BOX INSTL							
				LDW270-51453-3	E	GAGING SYST CONTROL BOX INSTL							
-7	-5	-3											

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

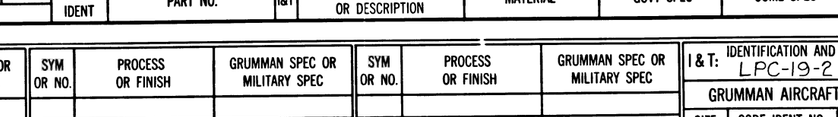
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : LPC-19-2 (GRUMMAN), LPC-19-3 (VENDOR)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51453	E

SCALE NONE SHEET 2.00

ENG 77.2 7-65



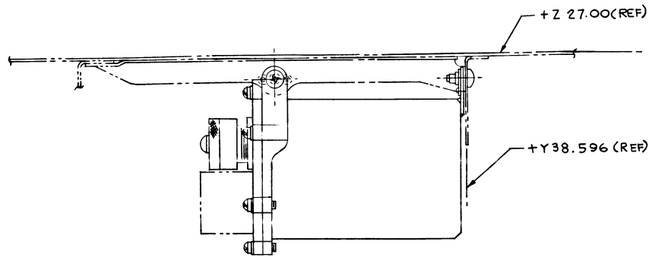
NOTES:

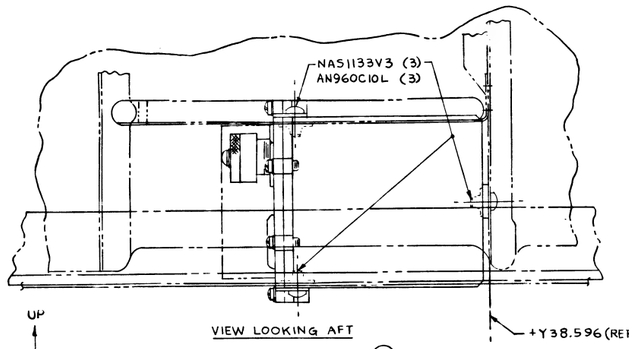
1. COMMERCIAL PART SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING.
2. BOND IN ACCORDANCE WITH FIGURE 7C & 7G OF LSP-14-13334, EFF LM2 (32) & LM-3 (33).
3. BONDING REQUIREMENTS FOR LM-2 (32) & LM-3 (33) ARE ACCEPTABLE PROVIDED THE REQUIREMENTS OF PARAGRAPH 4.2 OF LSP-14-13334 ARE COMPLIED WITH.

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-51453	E
SCALE —		SHEET 3.00	

ENG 73.1 6-64

NAS 9-1100



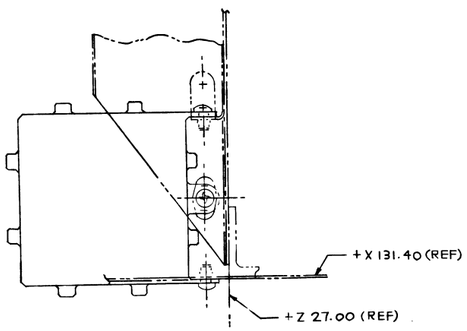


VIEW LOOKING AFT

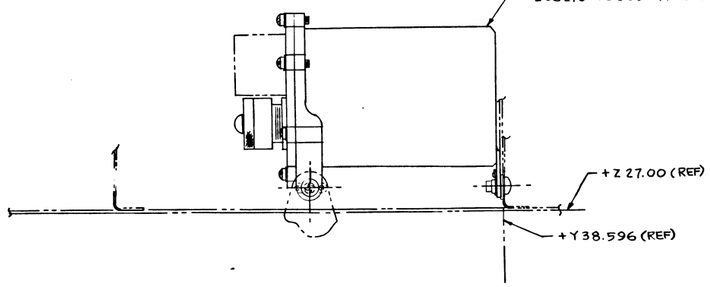
UP
OUTBD

(C3) LDW270-51453-3 INSTL
LDW270-51453-5 INSTL
LDW270-51453-7 INSTL

(D2)



LSC270-00009-43 FOR-5 & -7 (E3)
LSC270-00009-41 FOR-3 (C3)
(D2)



MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.

PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.

FILLET AND INSIDE CORNER RADII TOLERANCES
.016R TO .062R ± .010
.063R TO .250R ± .015
OVER .250R ± .030

DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.

EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.

DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.

MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.

DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING

HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.

ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES

125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10

200 FOR ALL DRILLED HOLES

REMOVE ALL BURRS. BREAK ALL EDGES .015-.031

INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS

SYMBOL ⌀ DENOTES SURFACE TO BE MACHINED

UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32

LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.

TOLERANCE ON LOFTED DELINEATIONS IS

DWG SIZE F

01

NAS 9-1100

LEM	GRUMMAN AIRCRAFT ENGR'G CORP., BETHPAGE, L. I., NEW YORK		
MODEL OR END ITEM	SIZE F	CODE IDENT NO. 26512	LDW270-51453 E
	SCALE FULL		SHEET

LDW270-51456

C					1	1		LDW270M10024-1	E	FLANGE	(SEE DWG)							
J					1			LSC270-826-3	E	BELLOWS ASSY	(SEE NOTE 1)							
J						1		LSC270-826-1	E	BELLOWS ASSY	(SEE NOTE 1)							
G								LDW270-51456-3	E	BELLOWS ASSY	(OXIDIZER)					SW	NONE	
G								LDW270-51456-1	E	BELLOWS ASSY	(FUEL)					SW	NONE	
C.L.	QTY PER ASSEMBLY				-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE		PROCESS SYM	FINISH NO.	ZONE

CLEANLINESS LEVEL PER LSP 14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
SW	FUS. WELD-STEEL	MIL-W-8611						

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW270-51456

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTES:

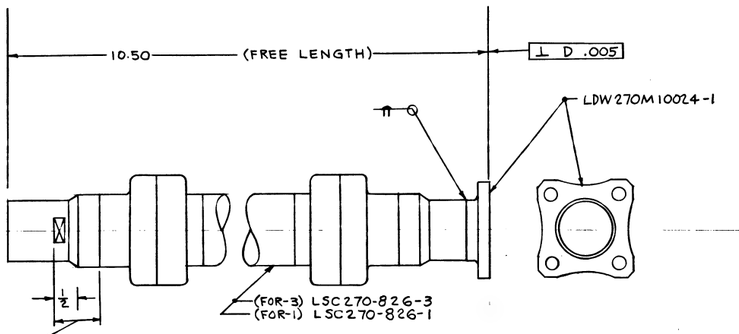
1. COMMERCIAL PART SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING.
2. ALL WELDS ARE CRITICAL.
3. OPERATING PRESSURE 270 PSIG. PRESSURE TEST PER LSP-14-19150.
4. BUTT WELDS SHALL HAVE 100 PERCENT PENETRATION & FUSION FOR 100 PERCENT OF THE LINEAL LENGTH OF WELD.
5. ALL MARKINGS TO BE ELECTROLYTIC-ETCHED IN ACCORDANCE WITH LSP-14-4706.
6. ALL ASSYS SHALL BE CLEANED PER LSP-14-7062.
7. REMOVE ALL INTERNAL WELD BEADS IN EXCESS OF .010.

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-51456	
SCALE NONE			SHEET 3.00

ENG 72.1 6-64

01

NAS 9-1100



-1 BELLOWS ASSY (FUEL)
-3 BELLOWS ASSY (OXIDIZER)

MARK RE-IDENTIFICATION DATA AS REQUIRED WITHIN THIS DISTANCE EITHER OR BOTH ENDS MAY BE USED, SEE NOTE #5.

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.

PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.

FILLET AND INSIDE CORNER RADII TOLERANCES
.016R TO .062R ± .010
.063R TO .250R ± .015
OVER .250R ± .030

DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.

EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.

DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.

MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.

DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING

HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.

ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES

125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10

200 √ FOR ALL DRILLED HOLES

REMOVE ALL BURRS. BREAK ALL EDGES .015-.031

INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS

SYMBOL ⚷ DENOTES SURFACE TO BE MACHINED

UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32

LENGTHS OF AN, MAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.

TOLERANCE ON LOFTED DELINEATIONS IS

LEM	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK		
	SIZE D	CODE IDENT NO. 26512	LDW270-51456
MODEL OR END ITEM	SCALE FULL		SHEET 4.00

LDW270-51456

NAS 9-1100

LDW270-51457

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	GAEC VIBRATION TEST		1
LEM	LTM270-50000	HA4 (AD)	1
LEM	LDW270-51010	LEM-1 (31)	1
PART NO. LDW270-51457-1		GAEC SCH NO. 45	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00	3.00	4.00					
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED	A
LAST DASH NO. USED	-1

GRUMMAN REL INFO
PRIM NO. VE(009)6328-6X
450 MP

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/8 — —

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS9-1100 | LINE ITEM 009 | DOCUMENTATION TYPE II

DRAWN BY	SCIARROTTA 5-2-66	WEIGHTS	L. Garcia 6/29/66
LAYOUT BY			
CHECKED BY			
GRP.LDR	J. Lioman 6-9-66		
PROP	H. Dawidziak 6/13/66		
V.D.I.		PROJ ENGR	
RELIAB.		REL GROUP	7.9.66

(B) GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

HOSE ASSY - A/S
ENGINE INSTL

SIZE	CODE IDENT NO.	
B	26512	LDW270-51457

SCALE NONE | SHEET 1.00 OF 2

ENG 77.1 12-65

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
1	06851	R4200CC-10-90		FITTING, ASSY	COM'L PART						
1	06851	R3910CC		FITTING, ASSY	COM'L PART						
A/R	06851	R500-10		HOSE, TEFLON	COM'L PART						
J		LDW270-51457-1	E	HOSE, ASSY.							
-1											

CLEANLINESS PER LSP-14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW270-51457

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

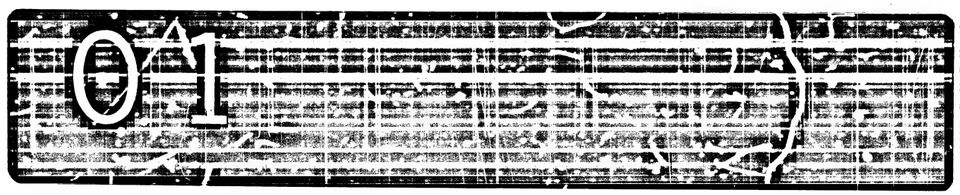
NOTES:

1. FABRICATION OF HOSE ASSY SHALL BE IN ACCORDANCE WITH LSP-14-17102.
2. ONE -1 HOSE ASSY IS TO BE USED FOR GAEC VIBRATION TEST IN ADDITION TO MEETING THE REQUIREMENTS OF LSP-14-17102.

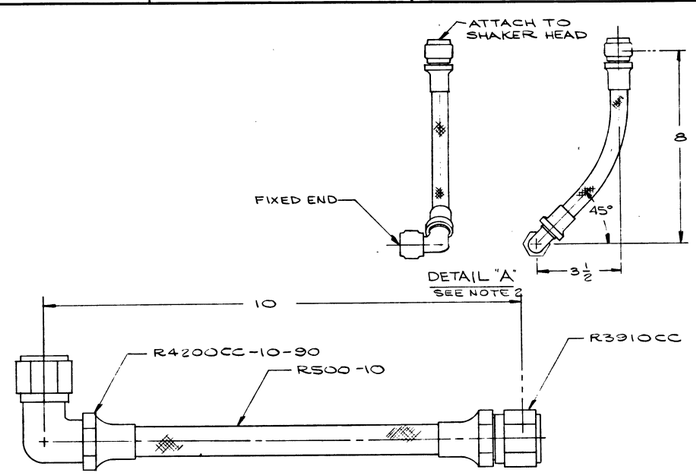
   VIBRATION TEST - THE ASSY SHALL BE INSTALLED ON THE VIBRATION EQUIPMENT IN THE POSITION SIMULATING THE INSTALLATION ON THE LEM VEHICLE (SEE DETAIL A) ONE END SHALL BE FIXED BY BEING RIGIDLY ATTACHED BY A CLAMP AND THE OTHER END, WHICH IS THE ENGINE INTERFACE, FIXED TO THE SHAKER HEAD & VIBRATED FOR ONE SWEEP FROM 5-2000-5 CPS AT ONE OCTACE PER MINUTE PER AXIS IN EACH OF THREE MUTUALLY PERPENDICULAR AXES. THE LINE SHALL BE PRESSURIZED WITH WATER TO THE OPERATING PRESSURE AND THE VIBRATION LEVELS SHALL BE 5-56 CPS 0.125 INCH DOUBLE AMPLITUDE 56-2000 CPS 20g's.
3. OPERATING PRESSURE 460 PSI

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-51457	
SCALE —		SHEET 3.00	

ENG 72.1 8-64



NAS 9-1100



-1 HOSE ASSY (FUEL)

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.	
FILLET AND INSIDE CORNER RADII TOLERANCES: .016R TO .062R ± .010; .063R TO .250R ± .015; OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
250 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ∿ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	LDW270-51457
C	26512	

LEM — MODEL OR END ITEM — SCALE 1/1 — SHEET 4.00

LDW270-51457 B

NAS 9-1100

LM	LDW270-25100	LTA-5(15)	4
LM	VIBRATION TEST	———	1

LDW 270-51458-9

LM	LDW270-54100	LM-15(45)	1
		LM-14(44)	1
		LM-13(43)	1
		LM-12(42)	1
		LM-11(41)	1
		LM-10(40)	1
		LM-9(39)	1
		LM-8(38)	1
		LM-7(37)	1
		LM-6(36)	1
		LM-5(35)	1
	LDW270-54100	LM-4(34)	1
	LDW270-53100	LM-3(33)	1
	LDW270-52100	LM-2(32)	1
LM	LDW270-51100	LM-1(31)	1

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW270-51458-19		GAEC SCH NO.	

LDW 270-51458 B

LM	LDW270-54100	LM-15(45) THRU LM-4(34)	1EA
LM	LDW270-53100	LM-3(33)	1EA
LM	LDW270-25100	LTA-5(15)	1EA
LM	VIBRATION TEST	———	1EA
LM	LDW270-52100	LM-2(32)	1EA
LM	LDW270-51100	LM-1(31)	1EA

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW270-51458-1,-7		GAEC SCH NO.	

LM	LDW270-54100	LM-15(45)	1EA
		LM-14(44)	1EA
		LM-13(43)	1EA
		LM-12(42)	1EA
		LM-11(41)	1EA
		LM-10(40)	1EA
		LM-9(39)	1EA
		LM-8(38)	1EA
		LM-7(37)	1EA
		LM-6(36)	1EA
		LM-5(35)	1EA
	LDW270-54100	LM-4(34)	1EA
	LDW270-53100	LM-3(33)	1EA
	LDW270-25100	LTA-5(15)	1EA
	LDW270-52100	LM-2(32)	1EA
	LDW270-51100	LM-1(31)	1EA

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW270-51458-3,-17		GAEC SCH NO. 55	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH								
SHEET	1.00	1.10	2.00	2.01	3.00	4.00	5.00	
REV	B	B	B	B	B	B	B	
SHEET	1.01	1.11						
REV	B	B						
SHEET								
REV								

LAST SECT LTR USED	
LAST DASH NO. USED	-23

GRUMMAN REL' INFO B
PRIM NO. [illegible]
470 MP-165 2-470

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES ± 1/8 — —
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100 LINE ITEM 009 DOCUMENTATION TYPE II

DRAWN BY	E. Sciarrotta 8-1-66	WTS	L. Garcia 9/15/66
LAYOUT BY		RELIAB.	[illegible] 9/19
CHECKED BY			
GRP LDR	[illegible] 8/31/66		
V.D.I.			
STRUCT.	[illegible]	PROJ. ENGR	R M Carbee 9-V
STRUCT.	[illegible] 9/2	REL GROUP	[illegible] 10-5-66
PROP.			

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

HOSE ASSY - D/S BLEED & DRAIN LINES

SIZE	CODE IDENT NO.		
B	26512	LDW270-51458	B
SCALE NONE		SHEET 1.00 OF 3	

NG 77.1 12-65

NAS 9-1100

LDW270-51458 B

LM	NONE	DVT (70)	4
LM	LDW270-54100	LM-15(45)	4
		LM-14(44)	4
		LM-13(43)	4
		LM-12(42)	4
		LM-11(41)	4
		LM-10(40)	4
		LM-9(39)	4
		LM-8(38)	4
		LM-7(37)	4
		LM-6(36)	4
		LM-5(35)	4
	LDW270-54100	LM-4(34)	4
LM	LDW270-53100	LM-3(33)	4

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	
PART NO. LDW270-51458-23			

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW270-52100	LM-2(32)	4
LM	LDW270-51100	LM-1(31)	4
PART NO. LDW270-51458-21		GAEC SCH NO.	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBG SH

SHEET									
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED

LAST DASH NO. USED

GRUMMAN REL INFO

PRIM NO.

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO.

LINE ITEM

DOCUMENTATION TYPE

DRAWN BY

LAYOUT BY

CHECKED BY

PROJ ENGR

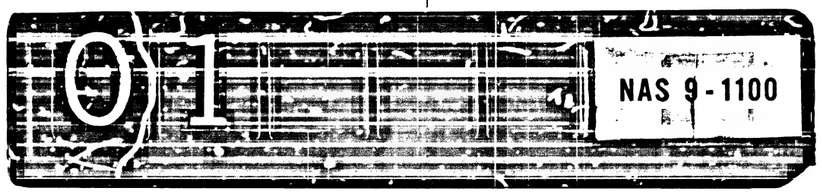
REL GROUP

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW270-51458 B

SCALE NONE SHEET 1.01 OF

ENG 77.1 12-65



REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	QUAL APPD
	1	1.00, 1.10 & 3.00							ADDED SHT. 1.10 SHT. 1 OF 6 WAS: 1 OF 5 IN THE NOTES SHT. 3.00 ADDED NOTE #7	LM-1, -2 LTA-5	✓		9-22-66		
	1	1.00, 2.00 2.01, 3.00 4.00, 5.00						E0 B1	DELETION OF -5 HOSE ASSY & REPLACING IT WITH -17 HOSE ASSY. REVISE NOTE 3: ONE EACH OF -7, -13 & -17... ETC. WAS: ONE EACH OF -5, -7 & -13... ETC. (ADDED SHEET 5.00)	LTA-5, LM-1, LM-2, VIB TEST		-5			
	2	1.00 2.00 2.01 3.00 4.00 5.00						E0 B2 CCA 332	ADDED -19. REMOVED -11, -13 & -15 ASSY. ON -9 ASSY "17" DIM WAS "18 FOR -9 & -11, 20 FOR -13 & -15, SEE NOTE 1" AND "GH 510N-6-0170 (SEE NOTE 1)" WAS GH 510N-6-0170 FOR -9 & -11, GN 510N-6-0190 FOR -13 & -15 (SEE NOTE 1). ON -1 & -3 ASSY: 27 DIM. WAS "24 (SEE NOTE 1)" "GH 510L-4--0270 (SEE NOTE 1)" WAS GH 510L-4-0230 (SEE NOTE 1)". ON -7: 49 DIM WAS "42 (SEE NOTE 1)" "GH 510L-4-0490 (SEE NOTE 1)" WAS "GH 510L-4-0410 (SEE NOTE 1)" ON -17: 42 DIM. WAS "40 (SEE NOTE 1)", GH 510L-4-0420 (SEE NOTE 1) WAS "GH 510L-0392 (SEE NOTE 1), REMOVED FOLLOWING CALLOUTS AND DIM: "CLAMP & ATTACH TO SHAKER HEAD (SEE NOTE 3)", "ATTACH TO SHAKER HEAD (SEE NOTE 3)", "FIXED END (SEE NOTE 3)", "LOCATION TO BE DETERMINED AT INSTL", REMOVED 2" DIM. & PICTURE OF PHANTOM RECTANGLE LOCATED BY 2" DIM. REVISED NOTE 1, WAS "LENGTHS INDICATED ARE APPROXIMATE. TRUE LENGTHS TO BE ESTABLISHED AT INSTALLATION & ENGINEERING TO BE INFORMED." REVISED NOTE 3, WAS "ONE EACH OF -7, -13 & -17... ETC. LDW 270-51458-3, -17, -19 WAS "-1, -3, -9, -11, & -15; ADDED LM-3 THRU LM-15 EFF. LDW 270-51458-1, -7 WAS "-7, -13, & -17"; ADDED LM-3 THRU LM-15 EFF. LDW 270-51458-9 ADDED VIB TEST, LM-4 THRU LM-15 EFF.	LTA-5 LM-1 THRU LM-15 VIB TEST		-11 -13 -15	J. CHUPAS 8-21-68		

L.D.

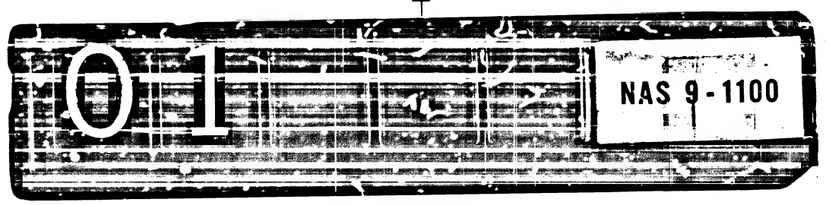
FOR CONTINUATION OF REVISIONS SEE SHEET 1.11

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW 270-51458	B

SCALE NONE | SHEET 1.10



REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
D	3	1.00,1.01,1.11 2.00,2.01 5.00						EO B3 LCD 669	REF EO B2, ADDED (4) -21 HOSE ASSY FOR LM-1 (31) & LM-2 (32) & (1) -21 FOR VIBRATION TEST. REMOVED (4) -9 HOSE ASSY FROM LM-1 (31) & LM-2 (32). (ADDED SHEETS 1.01 & 1.11)	LM-1 LM-2		-9	J. CHUPAS 9-9-68		
	4	1.00,3.00 1.01					✓	EO B4	DELETED -21 FROM VIBRATION TEST; ADDED LDW 270--25100, LTA-5 4 REQ'D TO N/A OF -9; DELETED -19 FROM LTA-5 (15). REVISED NOTE 6: WAS "-1 & -3 HOSE ASSYS ARE VIBRATION QUALIFIED BY SIMILARITY TO LDW 270-28457 HOSE ASSYS. LDW 270-28457 HOSE ASSYS ARE TESTED TO LEM VEHICLE VIBRATION LEVELS."	LTA-5 LM-1 LM-2 VIB TEST		-21 -19			
	5	1.00,2.00, 4.00		B		✓		EO B5 LCD 2860	IN M/B FOR -9: RESTRICTED EFF TO VIBRATION TEST (1), LTA-5 (4) & LM-3 (4). ADDED -9-1 EFF LM-4 THRU LM-15 (4 REQD)	LM-4 THRU LM-15	✓				
	6	1.00,1.01, 2.00,2.01 4.00,5.00		B		✓		EO B6 LCD-2860	DELETED -9-1. ADDED -23 EFF LM-4 THRU LM-15 (4 REQD)			-9-1			
	7	1.00,1.01					✓	EO B7	IN M/B FOR LM-3 DELETED -9 (4) ADDED -23 (4).	LM-3		-9			
	8	1.01				✓		EO B8 LCD 2780B	ADDED EFF FOR -23 DVT (70) -4 REQD.	DVT-70	NOT	REQD			
	9	1.00,1.11						LCD669	REF EO B3, EFF. SHOULD INCLUDE VIBRATION TEST	LM-1, LM-2 VIB TEST		-9	L.D.	F. Zallocco 9-10-68 L.D.	L.D.

CHG APPROVED	LTR	GROUP LDR	VEH DESINT	STRUCTURES	STRUCTURES	PROP	WEIGHTS	RELIABILITY				
	B											

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51458	B

SCALE NONE SHEET 1.11

ENG 77.16 3-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
1		GH510L-4-0490	E	HOSE, TEFLON	GRUMMAN STD						
1		-0420									
1 1		-0270									
1		GH510L-4-0210		HOSE, TEFLON							
1 1		GF503C-6		FITTING ASSY							
2 2 1 1 1		GF503B-4		FITTING ASSY							
1 1 1		GE510F-4-90		FITTING ASSY	GRUMMAN STD						
J		LDW270-51458-23		HOSE ASSY(FUEL)					NONE	NONE	
J		-21		HOSE ASSY(FUEL)							
J		-19		HOSE ASSY(FUEL)							
J		-17		HOSE ASSY(FUEL)							
J		-9		HOSE ASSY(FUEL)							
J		-7		HOSE ASSY (OX)							
J		-3		HOSE ASSY(FUEL)							
J		LDW270-51458-1	E	HOSE ASSY(OX)					NONE	NONE	

CLEANLINESS LEVEL PER LSP-14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51458	B

SCALE NONE SHEET 2.00

ENG 77.2 7-55

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
1 2 1		MS27053-6C	E	FITTING ASSY	STD PART						
1 1		GS530E-375-0040	E	SHIELD	GRUMMAN STD						
1		GH510N-6-0182	E	HOSE, TEFLON	GRUMMAN STD						
1 1		GH510N-6-0170	E	HOSE, TEFLON	GRUMMAN STD						

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51458	B

SCALE NONE SHEET 2.01

ENG 77.2 7-65

01

NAS 9-1100

NOTES:

1. LENGTHS INDICATED ARE APPROXIMATE.

2. FABRICATE HOSE ASSYS IN ACCORDANCE WITH LSP-14-17102.

3. ONE EACH OF -7 & -9 HOSE ASSY TO BE USED FOR VIBRATION TEST IN ADDITION TO MEETING THE REQUIREMENTS OF LSP-14-17102. VIBRATION TEST - THE HOSE ASSY SHALL BE INSTALLED ON THE VIBRATION EQUIPMENT IN THE POSITION SIMULATING THE INSTALLATION ON THE LEM VEHICLE, SEE F/D, ONE END TO BE FIXED, THE CLAMP # THE OTHER END, WHICH IS THE ENGINE INTERFACE, ATTACHED TO THE SHAKER HEAD # VIBRATED SINUSOIDALLY ONE SWEEP 5-2000-5 CPS AT ONE OCTAVE PER MINUTE PER AXIS IN EACH OF THREE MUTUALLY PERPENDICULAR AXES. THE LINE SHALL BE PRESSURIZED TO OPERATING PRESSURE # VIBRATION LEVELS SHALL BE 5-28 CPS 0.500 INCH DOUBLE AMPLITUDE 28-2000 CPS 20 gs.

4. OPERATING PRESSURE 280 PSI.

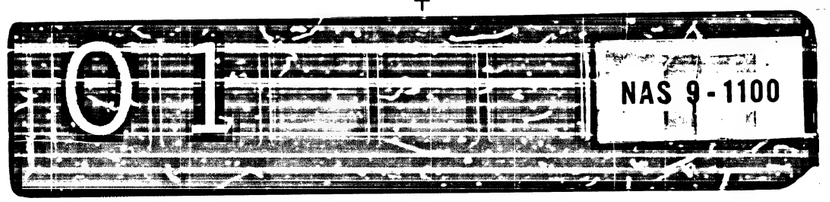
5. ALL HOSE ASSY'S TO BE PRESSURE PROOF TESTED AT 600 PSI.

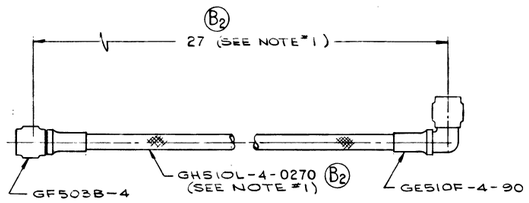
6. -3, -17, -19, & -21 HOSE ASSYS ARE VIBRATION QUALIFIED BY SIMILARITY TO -1, -7 & -9 HOSE ASSYS. -1, -7, & -9 HOSE ASSYS ARE TESTED TO LM VEHICLE VIBRATION LEVELS.

7. ALL HOSE ASSY'S SHALL BE LEAK CHECKED AT 600 ± 5 PSIG AT ROOM TEMPERATURE FOR 3 TO 5 MINUTES, ANY EVIDENCE OF LEAKAGE OR MALFUNCTION SHALL BE CAUSE FOR REJECTION.

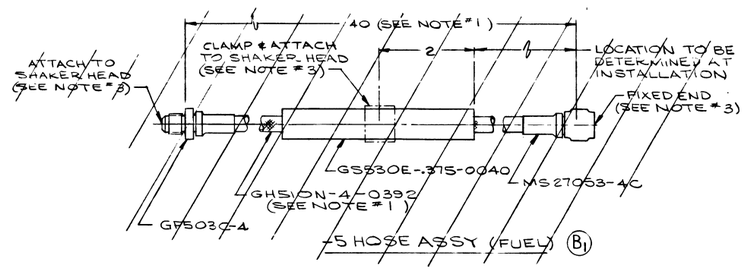
GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-51458	B
SCALE —		SHEET 3.0	

ENG 72.1 6-64

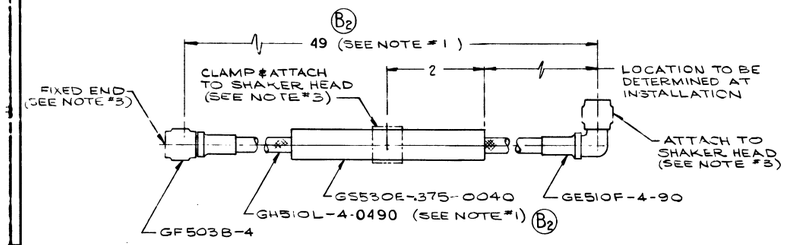




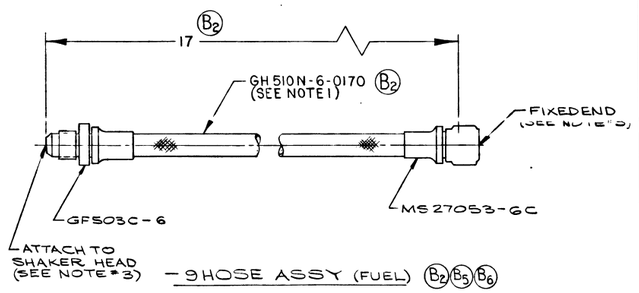
-1 HOSE ASSY (OX)
-3 HOSE ASSY (FUEL)



-5 HOSE ASSY (FUEL) B1



-7 HOSE ASSY (OX)



-9 HOSE ASSY (FUEL) B2 B5 B6

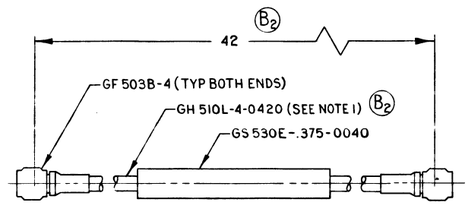
MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

- PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED — USE BOTH SIDES IF NECESSARY.
- FILLET AND INSIDE CORNER RADII TOLERANCES
  .015R TO .062R ± .010
  .063 TO .250R ± .015
  OVER .250R ± .030
- DEPTH SHOWN FOR TAPPED HOLES IS FULL THD + 3 IMP. THDS. BEYOND PERMISSIBL.
- EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
- DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
- MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
- DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
- HOLES MUST BE KEPT FREE OF CHROMIE PLATING SOLUTION
- ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES
- 125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
- 200 FOR ALL DRILLED HOLES
- REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
- INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
- SYMBOL ✓ DENOTES SURFACE TO BE MACHINED
- UNLESS OTHERWISE STATED TOLERANCE ON FLANGES IS ± 1/32
- LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED
- TOLERANCE ON LOFTED DELINEATIONS IS

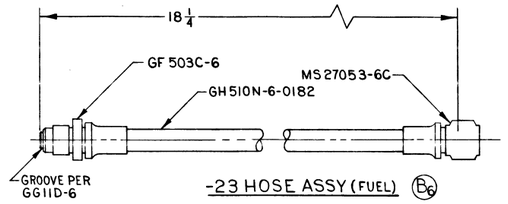
	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I. NEW YORK		
LEM	SIZE D	CODE IDENT NO. 26512	LDW270-51458 3
MODEL OR END ITEM	SCALE 1/1		SHEET 4 5

LDW270-51458B

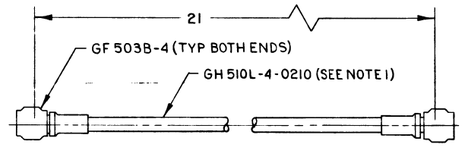
SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED (✓) APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH MIL STD 130.	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ☐ USE BOTH SIDES IF NECESSARY.	
LENGTHS OF AN, MS & NS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
INSTALL RIVETS IN ACCORDANCE WITH	



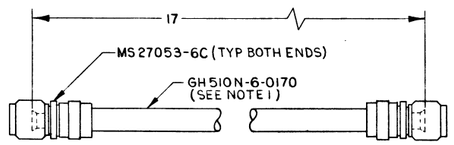
-17 HOSE ASSY (FUEL) (B1)



-23 HOSE ASSY (FUEL) (B6)



-19 HOSE ASSY (FUEL) (B2)



-21 HOSE ASSY (FUEL) (B3)

GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714			
SIZE D	CODE IDENT NO 26512	LDW270-51458	B
SCALE FULL		SHEET 500	

LDW270-51458B

NAS 8-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.2 REV 3-65

DWG NO. LEO 270		EO NO. 81
CONTROL INFO NO. LM 270-1370		

REMOVE LM-15(45) EFFECTIVITY FROM THE FOLLOWING DWGS:

DRAWING NUMBER	TITLE	CHANGE NO.
LDW270-23101-15	SEE DWG.	B4
-28012-9		C5
-28013-1		B9
-51458-1,-3,-7,-17,-19,-23		C1
-53204-5		B8
-514020-7		D2
-54100-11		B9
-56402-1,-3		A4
-56452-1,-3		A3
P10002-11		A2
P10003-11		A7
M10037-11-15		A6
M10038-11		A3
M10071-13-1, -14-1		B8
M10081-11		A1
M10082-11		A1
M10083-11		A1
M10084-11		A1
M10085-11		A1
M10086-11		A1
LDW270M10087-11	SEE DWG.	A1

LEO 270
NAS 9-1100

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD 3587		LCRP 270-1	(5)

REASON FOR EO: ELIMINATION OF PROPULSION SUBSYSTEM FROM LM-15 (REF TWX JC32-68-1977 & -2028)

DESCRIPTION OF EO: For * REMOVED LM-15(45) EFFECTIVITY

GAEC EO RELEASE: 12-12-68

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP	APPROVED BY / DATE	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
LM		LM-15(45)		✓			✓	12-1-68						12/4/68	12/12/68

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	SEE DRAWING	LEO 270	81

ISSUED BY J. REBHOLZ 12-6-68 X1471 SECTION PROPULSION GROUP NO. 345 PL 25

ENG 32.1 REV 3-65

GRUMMAN AEROSPACE CORPORATION

CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LDW270-51458	—	EO NO. 2
CONTROL INFO NO. LM270-1437		

REVISE MODEL BLOCK AS FOLLOWS:
ADD EFF LTA-5/R (159)

LM	LDW270-25100	LTA 5/R(159)	1 EA
LDW270-51458-1 & -7			

LM	LDW270-25100	LTA-5/R(159)	1EA
LDW270-51458-3 & -17			

LM	LDW270-25100	LTA-5/R(159)	4
LDW270-51458-23			

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD 5134 B (PKG 1 REV B)

REASON FOR EO: ADDED EFF. LTA-5/R REQMTS

DESCRIPTION OF EO: FOR -1,-7,-3,-17 & -23 ADDED LTA-5/R (159) REQMTS.

GAEC EO RELEASE

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG ✓	RECORD EO	DISPOSITION OF PARTS: NOT REWORK	REQD SCRAP
LM		LTA-5/R(159)					

APPROVED BY									
DATE	4/21/70	—	—	RB 4/16/70	—		R2 4/14/70	Bottle 5/1/70	
	PROP	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG		

PRIORITY: C

DRAWING TITLE: HOSE ASSY- D/S BLEED & DRAIN LINES

DRAWING NO.: LDW270-51458

EO NO.: C2

CDR 515-7

ISSUED BY B. ZANG X1472 21 APR 1970 SECTION PROPULSION DESIGN GROUP NO. 345 PL 39

01

NAS 9-1100

LDW270-51459 A

				LM	LDW280-16077	LTA-3(13)	2 EA				
					LDW280-16077	LTA-3D/R	2 EA				
					LDW270-51451	LM-14(44)	1 EA				
						THRU		LM	LDW270-51451	LM-2(32)	1 EA
				LM	LDW270-51451	LM-3(33)	1 EA	LM	LDW270-51451	LM-1(31)	1 EA
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO. LDW270-51459-5&-7		GAEC SCH NO.		PART NO. LDW270-51459-1&-3		GAEC SCH NO. 45	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00	1.10	2.00	3.00						
REV	A	A	A	A						
SHEET										
REV										
SHEET										
REV										
LAST SECT LTR USED		GRUMMAN REL'D INFO A								
LAST DASH NO. USED	-7	PRIM NO. 470	DK(009) ME-1	5/14/19						

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES ±.010
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100 | LINE ITEM 009 | DOCUMENTATION TYPE II

DRAWN BY	REBHOLZ 8-26-66	WEIGHTS	L. Garcia 9/1/66
LAYOUT BY	~	RELIABILITY	9/1
CHECKED BY	~		
GR LDR			
PROP			
		PROJ ENGR	8/29
VDI		REL GR LDR	9-15-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

REWORK - FUEL & OXIDIZER FILL & DRAIN COUPLING ASSY DESCENT STAGE

SIZE	CODE IDENT NO.		
B	26512	LDW270-51459	A
SCALE NONE		SHEET 1.00 OF 4	

ENG 77.1 12-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00 1.10 2.00							INC EO A1 ADDED SH 1.10	NOT REQD			L. GAVRIL 5-2-69		
	2	1.00							INC EO A2	LM-2			H.D.	J.W.	
	3	1.00 2.00 3.00							INC EO A3	LM-3 THRU LM-15					
	4	1.00							INC EO A4	LTA-3 D/R					
	5	1.00							INC EO A5						
	6	1.00							INC EO A6	LTA-3					
	7	1.00						(B)	INC EO A7	LM-15					

CHG APPROVED	LTR	GROUP LDR	VEH DES INT	PROP	WEIGHTS	RELIABILITY
	A					

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51459	A

SCALE NONE SHEET 1.10 (A)

ENG 77.10 3-66

01

NAS 9-1100

	QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
J			LDW270-51459-7	S	OXID COUPLING ASSY	MAKE FROM LSC270-803-1)						
J			LDW270-51459-5	S	FUEL COUPLING ASSY	(MAKE FROM LSC270-802-1)						
J			LDW270-51459-3	S	OXID COUPLING ASSY	(MAKE FROM LSC270-803-1)						
J			LDW270-51459-1	S	FUEL COUPLING ASSY	(MAKE FROM LSC270-802-1)						
CL												

CL-CLEANLINESS LEVEL PER LSP-14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : LPC-19-2(GRUMMAN), LPC-19-3(VENDOR)

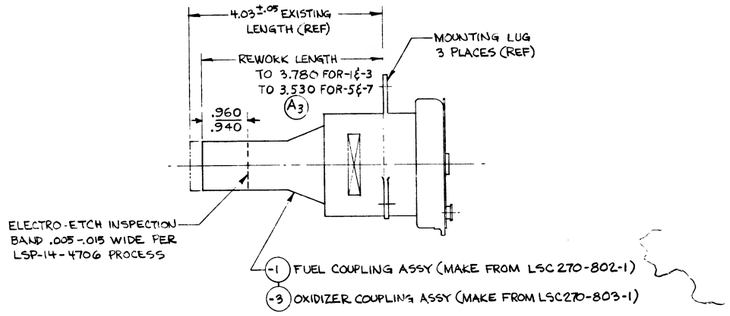
GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-51459	A

SCALE NONE SHEET 2.00 (4)

ENG 77.2 7-65

NAS 9-1100



MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.

ELECTRO-ETCH PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010; .063R TO .250R ± .015; OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
250 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES [redacted] .005-.015	√
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ∇ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
C	26512	LDW270-51459	A

LM — MODEL OR END ITEM — SCALE 1/1 — SHEET 5 OF 10

LDW270-51459 A

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG NO. LDW270-51459 | EO NO. B1
CONTROL INFO NO. LM 270-1422

REVISE AS SHOWN:

	LM	LDW280-16077	LTA-3 D/R	2EA SEE NOTE *
	LM	LDW280-16077	LTA-3(13)	2
	LM	LDW280-16077	LTA-11(23)	2EA SEE NOTE *
	MODEL	NEXT ASSY	MODULE	REQ'D

NOTE * LDW270-51459-5 & -7

" THESE PARTS EXISTING ON LTA-3D/R SHALL BE REMOVED, PREINSTALLATION TEST PERFORMED IN STRICT ACCORDANCE WITH LSC 270-802 FOR -5 & LSC 270-803 FOR -7. IF ACCEPTABLE, INSTALL ON LTA-11."

* USE NEXT SEQUENTIAL NUMBER.

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG ✓ LCD 3994 PKG 1 (5)

REASON FOR EO: TO ADD EFF LTA-11

DESCRIPTION OF EO: ADDED: LTA-11 EFF TO -5 & -7 & NOTE *.

GAEC EO RELEASE: EMB 1/20/70; JK 1/20/70; RKH; WM

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	DATE	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ. ENGRG
LM		LTA-11 (23)		✓		✓			1.20.70	PROP		1/19/70	1/28/70		1/20/70 1/21/70

PRIORITY: C

DRAWING TITLE: REWORK FUEL & OXID FILL & DRAIN CPLG ASSY DESCENT STAGE

DRAWING NO.: LDW270-51459

EO NO.: B1

ISSUED BY B. ZANG X1471 20JAN 1970 SECTION PROPULSION DESIGN GROUP NO. 345 PL 25

01

NAS 9-1100

LDW270-52000 F

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	LM	NEXT ASSY	LM-2(32)	
PART NO.	LDW270-52000		MODULE OR SER NO. GAEC SCH NO. 55	REQD PER MODULE OR END ITEM

FOR ENGRG INFO ONLY 5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SH REV	1	1.21	1.22	1.28					
		F	F	F					
SHEET	1.00	1.10	1.11	1.12	1.13	1.14	1.15	1.16	1.17
REV	F	F	F	F	F	F	F	F	F
SHEET	1.18	1.19	1.20	2.00	2.01	2.02	3.00	3.01	3.02
REV	F	F	F	F	F	F	F	F	F
SHEET	3.03	3.04	4.00	5.00	6.00	7.00	8.00	9.00	10.00
REV	F	F	F	F	F	F	F	F	F

LAST SECT LTR USED	
LAST DASH NO. USED	

GRUMMAN REL INFO B/F
PRIM NO. 434
JR(009) MP-1 11-3-67

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES	
ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS 9-1100		LINE ITEM 9	DOCUMENTATION TYPE II
DRAWN BY	R. ROBERTO	SA&I	
LAYOUT BY	RS/ATA/BZ		
CHECKED BY ENGR	ARROYO 6-16-66		
LEVEL 3 COORD	R. SICHEL 6-17-66		
PROP COG ENGR	R. WILLIAMS	SUBSYS PROJ ENGR	RP/29 JUNE
ELEC PWR S/S ENGR	H.G. FOR R. GEDNEY 6/29	PROJ ENGR	PLUNKETT 29 JUNE
PRO S/S ENGR	R.W. FOR M. DANDRIDGE	REL GROUP	BOTTI 6-29-66

® GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SCHEMATIC
LEVEL 3 LM-2
PROPULSION SUBSYSTEM

SIZE	CODE IDENT NO.	
B	26512	LDW270-52000 F

SCALE NONE SHEET 1.00 OF 30

NG 77.1 12-66

SUPERSEDES LDW270-52000 REV "B" 4-28-67

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00, 1.10, 1.11, 1.12, 1.13, 1.14, 1.15, 1.16, 1.17, 3.03, 9.00	7C					EO-A1	SHEET 1.00 OF 22 WAS SHEET 1.00 OF 13 ADDED SHEETS 1.10, 1.11, 1.12, 1.13, 1.14, 1.15, 1.16, 1.17 & 3.03 ADD LSC 270-826-13 AND DELETE LSC 270-826-9 (AT FUEL TANK)	LM-2 (32)	NOT	REQD	O. ULMAN 12-19-1966		
	2	9.00	7A, 7D					EO-A2	LSC 270-801-13 & -14 WERE LSC 270-801-7 & -8 RESP						
	3	3.03						EO-A3	ADDED NOTE 40						
	4	3.01, 6.00, 7.00	53A, 56B, 62B					EO-A4	ADDED * (3PLACES) IN F/D.NOTE 26 WAS: "K346-26(A) K347-26(A) & K7-26(A) ARE CONNECTED---- " WHT K198 WAS WHT K199. J173 PINS 221 & 239 WERE 62 & 63						
	5	3.02, 8.00	9B					LEO270-8	LSC270-818-5 & -6 VALVES WERE LSC 270-818-3 (OR-1) AND -4 (OR-2)						
	6	2.01, 10.00	B15	16, C17, 20, 21				LEO270-10	ADDED PRESSURE TRANSDUCERS 10MT60 THRU 10MT64 WITH ASSOC. WIRE CHANGES. ADDED CABLE NO'S 10W1, 10W2 AND 10W3						
	7	4.00	27B, C6D					LEO270-12	REVISED WIRING FOR MEASUREMENTS GQ7498U & GQ7499U						
	8	2.01, 5.00, 7.00, 9.00	B34, 62A, 6A	35, C34, 35, 6D				LEO270-13	J556 PIN "B" WAS "R" GP7615T WAS GP7606T, GP7625T WAS GP7608T						
	9	7.00	68C					LEO270-14	10M1 TERMINAL 6 WAS 7 10M1 TERMINAL 7 WAS 6						

FOR CONTINUATION OF REVISIONS SEE SHEET 1.11

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52000	F

SCALE NONE | SHEET 1.10

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
		2.01, 8.00	D7,0						LSC270-00009-32 WAS LSC270-00009-16 (2 PLACES)						
		2.01, 8.00	A7,8						LSC270-00009-31 WAS LSC270-00009-15 (2 PLACES)						
		2.00, 8.00	8B						LSC270-00009-41 (REF) WAS LSC270-00009-23 (REF)						
		2.00, 8.00	10D						LDW390-28070-13 WAS LDW390-28070-1						
		2.00, 8.00	10D						LSC270-713-10 (REF) WAS LSC270-713-6 (REF)						
		2.00, 8.00	11A						LSC270-713-9 (REF) WAS LSC270-713-5 (REF)						
		2.00, 8.00	11A						LDW390-28070-11 WAS LDW390-28070-1						
		8.00	11D						LSC270-714-113(2) WAS LSC270-714-111 (2)						
		8.00	9A 9C						LSC270-714-113(2) WAS LSC270-714-111 (2) (2 PLACES)						
		8.00	6D						LSC270-820-11 WAS LSC270-820-9						
		8.00	13A						LSC270-821-53-1 WAS LSC270-821-53						
		8.00	11B						LSC270-714-3 WAS LSC270-714-1						
		8.00	11B						LSC270-714-113(2) WAS LSC270-714-111 (2)						
		8.00	11B, 11C, 11D						LSC270-813-31 WAS LSC270-813-21 (3 PLACES, 4 PIECES)	LM-2 (32)	NOT	REQ'D	12-19-1966 O. ULMAN		
A	10	8.00	11B					EO-A10	LSC270-814-3 WAS LSC270-814-1						
		9.00	11A, 11B, 11D						LSC270-813-31 WAS LSC270-813-21 (3 PLACES)						
		9.00	7A						LSC280-7-58 WAS LSC280-7-56						
		9.00	7B						LSC280-7-57 WAS LSC280-7-55						
		2.00, 9.00	10A, 10D						LSC270-713-19 (REF) WAS LSC270-713-15 (REF) (2 PLACES)						
		2.00, 9.00	10A, 10D						LDW390-51070-3 WAS LDW390-51070-1						
		9.00	9D						LSC270-715-7-1 WAS LSC270-715-7						
		9.00	9A						LSC270-715-5-1 WAS LSC270-715-5						
		9.00	11A, 11D						LSC270-714-113(2) WAS LSC270-714-111 (2)						
		9.00	8A, 8D						LSC270-714-113(4) WAS LSC270-714-111 (4)						
	11	6.00	44C					LEO270-17	REVISED WIRING FOR 10MT47 (GQ 347GT) 10 MT47 HAD 3 WIRES						
	12	7.00	63B					LEO 270-18	ADDED WIRES TO PIN "B" OF P55A, P55B FOR SHIELD RETURN						

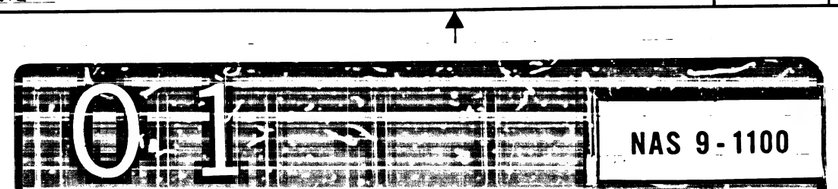
FOR CONTINUATION OF REVISIONS SEE SHEET 1.12

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52000	F

SCALE NONE SHEET 1.11

ENG 77.3 5-65



REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
	13	8.00	6C					LEO 270-20	REROUTED HEAT EXCHANGER LINES -8(3), -32, -6 AND REVISED TANK COILS ACCORDINGLY						
	14	3.01, 3.03 6.00 8.00	45B 13B					LEO 270-22	DELETED NOTE 33, ADDED NOTE 41, YEL, BLK, RED, GRN WAS RED, BLK, YEL, WHT ON 10MT45; DUAL BURST DISC ASSY LSC270-821-87 WAS BURST DISC LSC 270-821-35						
	15	2.01 5.00	34B 35B					LEO 270-23	10MT65 WAS 10MT33 (GP7606T ENGINE INTERFACE FUEL). 10MT66 WAS 10MT34 (GP7608T ENGINE INTERFACE OXID).						
	16	9.00	7A					LEO 270-24	LSC 270-717-5 WAS LSC 270-717-3						
	17	9.00	9A 9D					EO-A17	ADDED LSC 270-715-5-2 DELETED LSC 270-715-5-1 ADDED LSC 270-715-7-2 DELETED LSC 270-715-7-1						
A	18	8.00	6B					LEO 270-25	ADDED LSC 270-813-26, LINE RUN AND FLEX LINE FOR TEST SHUTOFF VALVE PREVALVE. REMOVED "PLUGGED GQ 9475 FROM 1/4 PORT (REF) CALLOUT	LM-2 (3?)	NOT	REQD	O. ULMAN 12-19-1966		
	19	9.00	5D					EO-A19	LSC270-00500-10 ASCENT ENGINE MODIFIED BY LDW 270-51010-7 WAS LSC 270-00500-10 ASCENT ENGINE						
	20	4.00	23C 24C 30B					LEO 270-26	ORN WAS GRN AT J562 PIN HH; REMOVED "NO7", "NO2" AND "NO4" AT J564 PINS L, K, F R, Z, S & X, FF, W						
	21	8.00 3.01	10A					LEO 270-28	LSC 270-816-11-2 WAS LSC 270-816-11						
	22	7.00	67A					LEO 270-29	D 6080 WAS D1314 D 6081 WAS D1319						

FOR CONTINUATION OF REVISIONS SEE SHEET 1.13

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52000	F

SCALE NONE SHEET 1.12

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
	23	4.00	23C 24C					LEO270-31	CHANGED GQ7213T TO GQ7208T AND GQ7214T TO GQ7209T	LM-2(32)	NOT	REQD	O. ULMAN 12-19-1966	X	X
	24	8.00	4C					LEO270-32	GQ7208T WAS GQ7213T GQ7209T WAS GQ7214T						
	25	9.00	7A 7B					LEO270-33	REMOVED LSC 270-717-4 & -5 ADDED LSC 270-717-6 & -7						
	26	2.01							REFERENCE EO-A2 LSC 270-801-13 WAS LSC360-801-13						
	27	5.00, 6.00 2.01	B31,32,34,36 B45,46,47,49,50						REFERENCE EO-A3- ADDED "SEE NOTE 40". ADDED * SEE NOTE 40 AT LSC360-601-XXX						
A	28	3.01 5.00 6.00 7.00	38A 38B 53C 53B 53A 62B 63C						REFERENCE EO-A10 IN NOTE 32-LSC270-715-5-2 WAS LSC270-715-5 (4PLACES), LSC270-715-7-2 WAS LSC270-715-7 (4PLACES) LSC270-713-19 WAS LSC270-713-15 (2PLACES) LDW390-51070-3 WAS LDW390-51070-1 (2PLACES) LSC270-713-9 WAS LSC270-713-5 LSC270-713-10 WAS LSC270-713-6 LDW390-28070-11 WAS LDW390-28070-1 LDW390-28070-13 WAS LDW390-28070-3 LSC270-00009 41 WAS LSC270-00009-23 LSC270-00009-32 WAS LSC270-00009-16 (2PLACES) LSC270-00009-31 WAS LSC270-00009-15 (2PLACES)	LM-2(32)	NOT	REQD			
	29	8.00	13B						REFERENCE EO-A14 ADDED "SEE NOTE 41"						
	30	3.02							REFERENCE EO-A16 IN NOTE 35-LSC270-717-5 WAS LSC270-717-3 (2PLACES)						

FOR CONTINUATION OF REVISIONS SEE SHEET 1.14

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52000	F

SCALE NONE — SHEET 1.13

01 A

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
	31	3.01							REFERENCE EO-A17 IN NOTE 32 - LSC270-715-5-2 WAS LSC270-715-1 (4PLACES) LSC270-715-7-2 WAS LSC270-715-1 (4PLACES)						
	32	3.02 7.00	67A						REFERENCE EO-A22 IN NOTE39 — D6080 WAS D1314, D6081 WAS D1319 ADDED "SEE NOTE 39"						
	33	3.02							REFERENCE EO-A25 IN NOTE 35 — LSC270-717-6&7 WAS LSC270-717-4&5 (2PLACES)						
A	34	8.00	4A 4B 4C 4D 6A 6B 6C 6D						REPLACED BELLOWS WITH FLEXIBLE TUBE (7PLACES) REMOVED BELLOWS (4PLACES) ADDED FLEXIBLE TUBE (2 PLACES) REPLACED BELLOWS WITH FLEXIBLE TUBE TO TEST POINT LINE GQ 9477 AND REROUTED OUTLINE OF DESCENT ENGINE ADDED NOMENCLATURE AND - 4 PIPE LINE DESIGNATION TO TEST POINT GP3463T, GP3811T AND GP 4311T ADDED PART NO NTN510981-201 TO GP3666P AND GP 4116P LDW270-51459-1, LSC270-802-1 (REF) - - - COUPLING WAS LSC270-802-1 ----- COUPLING	LM-2 (32)	NOT	REQD	O. ULMAN 12 - 19 - 1966		
	35		8B 9A 9B 9C 10B						ADDED -4 PIPE LINE DESIGNATION TO TEST POINT GQ3501P, GQ3505P, GQ4001P, GQ 4005P REROUTED TEST POINT LINE GQ3018 P, GP3025 P, GP9440 AND GP9441 CONT						

FOR CONTINUATION OF REVISIONS SEE SHEET 1.15

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52000	F (F)

SCALE NONE | SHEET 1.14

ENG 77.3 5-65

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
	35		9B 10B						GQ3025P, LSC360-601-107 PRESSURE TRANSDUCER WAS GQ3025P. THRUST NEUTRALIZER WAS THRUST------TEE CORRECTED TEST POINT SYMBOL GQ9446 AND GQ9447						
	36		11A 11B 11C 11D						ADDED REDUCING FITTING SYMBOL RELOCATED FILTER LSC270-712-1, BOOSTER CARTRIDGE LSC270-714-3 AND LSC270-714-113 (2) REROUTED TEST POINT LINE GQ9415 GQ3015P, LSC360-624-111 PRESSURE TRANSDUCER WAS GQ3015P REROUTED -8 PIPE LINE AND RELOCATED FILTER LSC270-814-3	LM-2(32)	NOT	REQD	O. ULMAN 12-19-1966		
A	37	8.00	12B 12C 12D 13B 13C 13D 12D						THRUST NEUTRALIZER WAS THRUST------TEE -4 TEST POINT LINE DESIGNATION WAS -6 AND CORRECTED TEST POINT SYMBOL GQ9408 ADDED -4 PIPE LINE DESIGNATION AND NOMENCLATURE TO GQ3451T, GQ3455T AND GQ3459T REROUTED OUTLINE OF HELIUM TANK ASSY LSC 270-812-15 GQ3476T, NTN 510724-001, TRANSDUCER TEMPERATUFE WAS GQ3476T, NTN 510724-001						

FOR CONTINUATION OF REVISIONS SEE SHEET 1.16

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52000	F

SCALE NONE SHEET 1.15

ENG 77.3 5-65

01 NAS 9-1100

REVISIONS

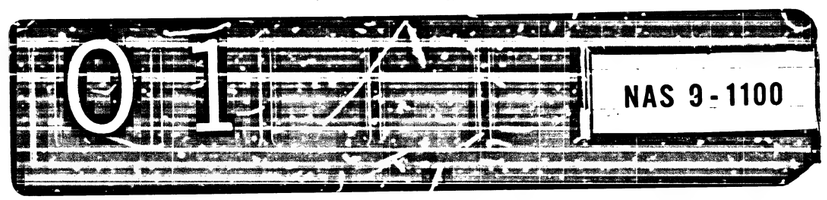
CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
			4A 4D 5A 5B 5C 5D						ADDED FLEXIBLE TUBE (4PLACES) REPLACED BELLOWS WITH FLEXIBLE TUBE (5 PLACES) REPLACED O B S SYMBOL WITH BELLOWS, RELOCATED TEST POINT GP 9476 AND GP 9477 OVERBOARD DRAINS (ENGINE VALVE SEAL) (2) WAS OVERBOARD (2) DRAINS BALD ENDS CUT DIAGONALLY AND OPEN TO AMBIENT. EXTENDED -4 AND -6 PIPE LINE. LDW270-52546-1, LSC270-826-9 (REF)						
	38		6A 6C						BELLOWS WAS LSC270-826-13 BELLOWS. LDW270-52546-3, LSC270-826-11 (REF) BELLOWS WAS LSC270-826-11 BELLOWS.	LM-2(32)	NOT	REQD	12-19-1966 O. ULMAN		
A		9.00	7A 7B 7C						ADDED -4 PIPE LINE DESIGNATION TO TEST POINT GP0501P, GP1001P, GP7615T AND GP7625T 1/4 BRAZED CAPS (2) INSTALLED BEFORE FLIGHT WAS 1/4 BRAZED CAPS (2) BEFORE FLIGHT (2 PLACES)						
	39		8A 8B 8C 8D 9A 9B 9C 10A						CORRECTED TEST POINT SYMBOL GP 9446 AND GP 9447 REROUTED -8 PIPE LINE, RELOCATED SYMBOLS FOR, GP0018P, GP0025P, GP 9401, GP 9402, GP 9406, GP 9425, GP 9440 AND GP 9441 ADDED -4 PIPE LINE DESIGNATION TO SYMBOLS GP 0504P, GP 1004P CONT.						

FOR CONTINUATION OF REVISIONS SEE SHEET 1.17

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52000	F (F)
SCALE NONE			SHEET 1.16

ENG 77.3 5-65



REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET 1.18

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	APPD
A	39	9.00	9C 9B 9D						CONT. GP 9444 AND GP 9445 GP 0018P, LSC 360-601-107, PRESSURE TRANSDUCER WAS GP0018P	LM-2 (32)	NOT	REQD	O.ULMAN 12-19-66		
	40	2.00							10MT10, 10MT9, 10MT8, 10MT7, LSC360-605-303 WAS 10MT10 ---------- LSC 350-605-303 10MT1, LSC 360-605-301 WAS 10TM1 350-605-301 1-4-67 E						
	41	3.01 9.00	3B						NOTE 31(2) (DELETED) "SEE GRAPH FIG. 1 (SH 9.00)" FROM CHARGE PRESSURE. (DELETED) "GRAPH FIG. 1"	LM-2 (32)	NOT	REQD	ZANG 30JAN67		
	42	3.00							ADDED REVISION LETTER "A" TO SHEET 3.00 FOR DISTRIBUTION & PROCESSING PURPOSE ONLY.	NOTED	NOT	REQD			
	43	2.00 2.01 4.00 THRU 10.00							CHANGED ZONE NUMBERS ON SHEETS 4.00 THRU 10.00 SH 4.00 WAS 23 TO 33, SH 5.00 WAS 29 TO 42, SH 6.00 WAS 43 TO 58, SH 7.00 WAS 59 TO 70, SH 8.00 WAS 1 TO 13, SH 9.00 WAS 1 TO 12, SH 10.00 WAS 14 TO 22, ON SHEETS 2.00 & 2.01 CHANGED ZONE NUMBERS	NOT REQD	NOT REQD		T.A.CRISPYN 3-3-67		

CHG APPROVED	LTR	LEVEL 3 COORD	PROP COG ENGR	ELEC PWR S/S ENGR	PROP SS ENGR	PROJ. ENGR
	A		30 JAN 1967		1-30-67	

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52000	F

SCALE NONE SHEET 1.17

ENG 77.16 3-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET 1.19

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
B	1	2.00 5.00	 13B					LE0270-35	LSC270-00822-7-2 WAS LSC270-00822-7	LM-2(32)	NOT	REQD	T. A. CRISPYN 4-25-67		
	2	8.00	64A 63D					EO B2	LDW390-28070-15 WAS LDW390-28070-11 LDW390-28070-17 WAS LDW390-28070-13						
	3	2.00 6.00	36A 36B					EO B3	LDW390-28070-15 WAS LDW390-28070-11 LDW390-28070-17 WAS LDW390-28070-13						
	4	2.00 7.00 8.00	 45B 61B					EO B4	LSC270-00009-42 WAS LSC270-00009-41(REF)						
	5	8.00	59C 60C 64B 66B 66C 66D					EO B5	LSC270-826-5-1 WAS LSC270-826-5; ADDED C/O "HELIUM STORAGE TANK" TO LSC270-825-1; REVISED CALLOUTS: "FILL COUPLING & CAP" WAS "HELIUM CPLG VENT", "VENT COUPLING & CAP" WAS "HELIUM CPLG VENT", "TANK PRESSURE SENSOR" WAS "TANK PRESSURE HELIUM", "TANK PRESSURE SENSOR (REDUNDANT)" WAS "TANK PRESSURE HELIUM SUPPLY (REDUNDANT)						
	6	2.01 9.00	 73A					EO B6	DELETED GP7625T MEASUREMENT						
	7	5.00	17B					EO B7	DISCONNECTED SENSOR FOR MEAS GP7625T						
	8	5.00 7.00	24B 48B	24C 53C				EO B8	REVISED CB RATINGS: 4CB53 5A WAS 3A, 4CB103, 4CB169, AND 4CB32 2A WAS 3A						

CHG APPROVED

LTR	GROUP LDR

ENG 77.16 3-66

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52000	F (F)

SCALE NONE SHEET 1.18

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET 1.20

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
B	9	6.00 7.00	38B					EO B9	WIRE SIZE CHANGED FROM NO. 26 GAUGE TO NO. 22 GAUGE IN PANEL I (ZONES 46 THRU 47B & 50 THRU 52)	LM-2-32	NOT	REQD	T. A. CRISPYN 4-25-67		
	10	2.01 4.00	11C					EO B10	ADDED MEAS NO.'S GQ7501T, GQ7502T, AND GQ7503T ADDED 10MT70, 10MT71, 10MT72 WITH ASSOC. WIRING						
	11	2.01 8.00	57B					EO B11	ADDED GQ7501T, GQ7502T AND GQ7503T MEASUREMENTS						
	12	9.00	74A 74D					EO B12	DELETED LSC270-714-113 (4), ADDED LDW270M10027-1(4)						
	13	3.02 9.00	75D 76A					LE0270-36	LSC270-721-1 (SEE NOTE 32) WAS LSC270-715-5-2 (SEE NOTE 34); LSC270-721-3 (SEE NOTE 32) WAS LSC270-715-7-2 (SEE NOTE 34); REVISED NOTE 32 PARA "B" AS SHOWN AND ABOVE: 1.45 ±.05 WAS 1.55 ±10% (4 PLACES), 186 PSIG TO 194 PSIG WAS 192 TO 196, FOR -1 WAS -5 (2 PLACES), FOR -3 WAS -7 (2 PLACES), 178 PSIG TO 186 PSIG WAS 186 TO 190, 180 PSIG TO 188 PSIG WAS 194 TO 198, 172 PSIG TO 180 PSIG WAS 188 TO 192, "PRIMARY OR DOWNSTREAM" WAS "PRIMARY OR UPSTREAM"						
	14	2.00 4.00 8.00	1C 58C					EO B14	LSC270-00600-20 WAS LSC270-00600-14; IN B/M AT 10A1 DELETED "S.T.L." FROM DESCRIPTION, SHEET NO'S 4 & 8 WERE 10 & 11, ZONE NO'S 5C & 23C WERE 43C						
	15	9.00	78A 78C					LE0270-37	ADDED: GP0007T & GP0008T						

CHG APPROVED

LTR	GROUP LDR

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52000	F

SCALE NONE SHEET 1.19

ENG 77.16 3-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET 1.21

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
B	16	1.00 2.00 1.10 2.01 1.11 2.02 1.12 3.00 1.13 3.01 1.14 3.02 1.15 3.03 1.16 3.04 1.17 1.18 1.19 1.20							SHEET 1.00 OF 27 WAS 1.00 OF 22; ADDED SHEETS 1.18, 1.19, 1.20, 2.02 AND 3.04; RETRACED SHEETS 1.00, 2.00, 2.01, 3.00, 3.01, 3.02 AND 3.03, NO CHANGE; LAST REVISION WAS "A" FOR SHEETS 3.00, 3.02 AND 3.03; LAST REVISION WAS "B" FOR SHEETS 1.00, 2.00, 2.01 AND 3.01; ADDED REVISION LETTER "B" TO SHEETS 1.10, 1.11, 1.12, 1.13, 1.14, 1.15, 1.16, 1.17, 3.00, 3.02 AND 3.03 FOR DISTRIBUTION AND PROCESSING PURPOSE ONLY	LM-2(32)	NOT	REQD	T.A.CRISPYN 4-28-67		
	17	10.00	82B 85B						CORRECTED INCORPORATION OF LEO 10 ON REV A: CHANGED WIRE NOS K37(C) WAS K36(C): K36(C) → D68(H), D68(H) → D69(H), D69(H) → K36(C) K41(C) WAS K40(C): K40(C) → D59(H), D59(H) → D58(H), D58(H) → K41(C) K38(C) WAS K39(C): K39(C) → DG3(H), D63(H) → DG4(H), D64(H) → K38(C) D442(C) WAS D443(C): D443(C) → D440(H), D440(H) → D441(H), D441(H) → D442(C) D455(C) WAS D456(C): D456(C) → D453(H), D453(H) → D454(H), D454(H) → D455(C)	LM-2 (32)	NOT	REQD	E.J.GLUECKLER 5-19-67		
C	1	9.00	11C			✓		EO C1 LEO 38 LCD19-1134	ADDED: HIGH POINT BLEED LINE TO ENGINE PRE-VALVE FEED LINE	LM-2 (32)	NOT	REQD	T.MARKES 10-17-67		
C	2	2.01 8.00 4.00 4.00	57C 11B 2C			✓		EO C2 MCR 698B CCA472 LCD1033	DELETED 10MT70, 71 & 72 & GQ7208T, GQ7209T, GQ7501T THRU GQ7503T. "GQ7213T----#3 & GQ7214T----#4 WAS GQ7208T TEMP ENG THRT TI CASE #1 & "GQ7209T TEMP ENG THRT TI CASE #2.	LM-2 (32)	NOT	REQD	T.MARKES 10-17-67		

CHG APPROVED

LTR	GROUP LDR

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52000	F

SCALE NONE SHEET 1.20

ENG 77.16 3-66

0 1

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET 1.22

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
C	3	5.00	22 B,C 23 B,C 24 B,C 25 B,C				✓	EO C3 LCD-1297	AT PNL I & PNL XVI AND BETWEEN:-ON WIRES K1 THRU K6 AND ON WIRE P272, #20 AWG WAS #22 AWG	LM-2(32)	NOT	REQD			
	4	6.00	32C 33C				✓	EO C4 LCD1674	REVISED 10MT56 COLOR CODE: YEL WAS RED RED WAS YEL, GRN WAS WHT	LM-2 (32)	✓				
	5	2.01					✓	LEO 42	ITEM 10MT32 PRESS Δ "P" OX TANK INTERFACE (WAS) PRESS DROP____. ITEM 10MT29 PRESS Δ "P" FULL INTERFACE (WAS) PRESS DROP____ ITEM 10MT23 PRESS Δ "P" OX TK NO. 1 BOT TO ENG INTERFACE (WAS) PRESS DELTA____ ITEM 10MT21 PRESS Δ "P" FUEL TK NO. 2 BOT TO ENG INTERFACE (WAS) PRESS DELTA_____	NOT REQ'D	NOT	REQ'D			
	6	9.00 2.00	71-D				✓	LEO 43	LSC 270-00500-10-2 ASCENT ENGINE MODIFIED BY LDW 270-51010-7 WAS LSC 270-00500-10_____	NOT REQ'D					
	7	2.02 9.00	72A-C 73 D				✓	EO C7 LCD-1594A	IN F/D & B/M, DELETED GP7615T, ADDED GP7015T & GP 7025T.	LM-2 (32)					
	8	8.00 9.00	64C 78A-C				✓	LEO 45 LCD1299A	DELETED: GP0007T & GP0008T MEASUREMENTS ADDED: GP2910T, GP2911T & GQ3541T MEASUREMENTS	LM-2(32)					
	9	3.02 9.00	75A				✓	LEO 46 LCD-1031C	IN F/D & REF NOTE LSC 270-715-9 WAS LSC 270-721-1 LSC 270-715-11 WAS LSC 270-721-3	LM-2(32)					
	10	5.00	17B,C				✓	EO-C10 LCD 1594A	REPLACED 10MT66 XDUCER OXID TANK OUTLET TEMP., LSC360-605-301, GP7625T BY 10MT 80 XDUCER, ENGINE INTERFACE OXIDIZER TEMP NTN 510782-001, G7025T. DELETED NOTE "MEAS. NO. GP7625T NOT IMPLEMENTED ON LM-2. COLOR CODE ON LSC 360-605-301 XDUCERS WAS GRN, RED, YEL. REPLACED 10MT65 XDUCER FUEL TANK OUTLET TEMP, LSC360-605-301, GP7615T BY 10MT79 XDUCER ENGINE INTERFACE FUEL TEMP. NTN 510782-001 GP7015T	LM-2 (32)					

CHG APPROVED

LTR	GROUP LDR

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52000	F

SCALE NONE SHEET 1.21

ENG 77.16 3-66

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
	1	9.00	71MD				V	LEO 270-48 LVC 275	ADDED "LSC 360-624" AFTER GP1501P, GP1503P, GP2010P, GP2001P, GP2006P.	NOT REQD	NOT	REQD	W. VAN DYKEN		
	2	2.02 5.00 6.00	19A 20A 35C				V	LEO 270-49 LCD 1299A	ADDED: GP2910T & GP2911T 10MT81 & 10MT82 ADDED: GQ3541T 10MT83 WITH ASSOCIATED WIRING.	LM-2 (32)					
	3	8.00 9.00	59B 72A 72C				V	LEO 270-50 LCD 1843	ADDED: DASHPOT & RESTRICTOR (4); FUEL TEST POINT LSC270-813-26 (2); OXIDIZER TEST POINT LSC270-313-27(2)	LM-2 (32)					
	4	6.00	36				V	EO-D6 LCD 1032E	CANCELLED BY D7	LM-2 (32)					
D	5	6.00	52D 39B 50B				V	EO-D5 LCD 1594	CANCEL & DELETE ALL REFERENCE TO NOTES 26 & 39 DELETED MULTIPLE SPLICE ON WIRES D365, 1319, 1121 361 & 1314 AND ADDED P55A/J55/P55B-U,V,X,S&T PLUS PIGTAILS WITH MULTIPLE SPLICE ON P55B. ADDED P55A/J55/P55B D,F&G WITH END CAPPED PIGTAILS ON WIRES K346, K7 & K347 ADDED P55A/J55/P55B-M,Q,T,N,P,& W ON WIRES D365, D6081, D1121, D361, D6080 & D8000.	LM-2 (32)					
	6	3.01 3.02 5.00	13B				V	LEO 270-52 DSM-22	10L6 LSC 270-00822-7 & -7-2 SOLENOID VALVE PRE-VALVE (WAS) 10L6 LSC270-00822-7 & -7-2 ACTUATOR ISOLATION VALVE.	NOT REQD.					
	7	—					V	EO-D7 LCD 1032E	THIS EO CANCELS EO-D4	LM-2 (32)					
	8	2.00 6.00 8.00	36A 63A 64A				V	EO-D8 LCD 1032E	LDW 390-28070-15 WAS LDW 390-28070-11; LDW 390-28070-17 WAS LDW 390-28070-13; LSC 270-827-1 WAS LSC 270-816-11-2						
	9	5.00	72C				V	LEO-270-54	J39 WAS P39; P39 WAS J39	NOT REQD					
	10	9.00	70-72 AD				V	EO-D10 LCD-1572 LAV 270-789	DELETED FLEX. HOSE SYMBOL ON GP9473, GP9471, GP9461, GP9463, GP9455, GP9464, GP9462, GP9472 & GP9474	LM-2 (32)					
E	1	2.00 6.00 8.00	37A 63D				V	EO-E1 LCD 1995A	IN FLD & B/M LSC 270-713-10-1 WAS LDW 390-28070-17 IN THE B/M DELETED 10A7L1, 10A7A1CR1, 10A7A1CR2. IN FLD DELETED LSC 270-713-10 (REF); REVISED 10A7 EXT. WIRING, WAS NAT, BLK, RED; REMOVED A1 ASSY AND ADDED EMI SUPPR UNITS ACROSS COILS.	LM-2 (32)	NOT	REQD			

FOR CONTINUATION OF REVISIONS SEE SHEET _____

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW 270-52000	F

SCALE NONE SHEET 1.22

ENG 77.3 5-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
E	2	10.00 2.00	79 B C				V	LEO 270-55 LCD 1978	ADDED 10AB, LSC 270-00723 ROUGH COMB. CUT OFF CONTROL ASS'Y WITH ACCELEROMETERS A & B ADDED J/P 517, 618; WIRES 5551 & 5553 THRU 5561 ADDED REF TO CES; IN B/M ADDED 10AB LSC 270-00723	LM-2 (32)	NOT	REQD	W. VAN DYKEN		
	3	4.00	1-10 B	E			V	LEO 270-56 LCD 1767	ADDED P562 & J567 PINS FF, R, U, B, W, X, F, L, G, W, X, HH, GG, Q, R, CC, BB, J, D, H, C, Y, D, V, N, K M J Z P AA I Y E V PLUS ASSOCIATED WIRES, NO'S K719 THRU K753	LM-2 (32)					
	4	7.00 6.00	53B 38A	H			V	EO-E4 LCD 1701	ADDED DETAIL A ON SH. 7.00; DETAIL AA ON SH. 6.00; ADDED "SEE DETAIL A" BY WIRES D6080, 361, 1121, 6081 & 365 IN ZONE 49B AND BY P55B-U, V, X, S, I. IN ZONE 53B ADDED "SEE DETAIL AA BY WIRES K346, 347 FROM P55B-Z, AA & P AND BY P55B-D, F, G	LM-2 (32)					
	5	3.01 9.00	[illegible]	H			V	LEO 270-58 LCD 1631 F	IN FLD & NOTE 32 b LSC 270-721-5 WAS LSC 270-715-9 LSC 270-721-7 WAS LSC 270-715-11 SH. 1.00 OF 30 WAS SH. 1.00 OF 27 ADDED SH. 1.21, 1.22, 1.23.	LM-2 (32)					
F	1	6.00 7.00	38B 53B	H				LEO 300-72 LCD 2223	REMOVED MANNED CONFIGURATION FOR EO E4	LM-2 (32)	NOT	REQD	W. VAN DYKEN 11-7-67		
	2	2.00 600 800	36B 64B	H			V	EO F2 LCD 1995A	LDW390-28070-11 (WAS) LDW390-28070-15	LM-2 (32)	NOT	REQD	S. AMEER 11/17/67		
	3	6.00 7.00	38B 47A	H			V	E.O. F3 LCD 2223	IN F/D DWG REF LDW300-52001 WAS LDW300-21001	LM-2 (32)					
	4	5.00 7.00	51B 53C	H		V		E.C. F4 LCD 2223 CCA 745 CHG # 4CB169	ADDED NOTE "COLLAR CKT BKR" BY 4CB103	LM2 (32)					
	5								ADDED REVISION LETTER "F" TO ALL SHEETS FOR DISTRIBUTION & PROCESSING PURPOSES ONLY.						

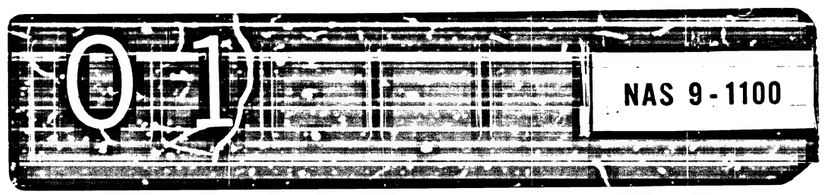
FOR CONTINUATION OF REVISIONS SEE SHEET _____

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52000	F

SCALE NONE SHEET 1.23

ENG 77.3 5-65



10MT13	LSC360-605-301	TEMP ENG INTERFACE INLET OX	6	34B	GQ4311T	~~10A7L1~~	~~LSC270-713-10~~	~~LATCHING HELIUM SOLENOID VALVE NO.2~~	~~6~~	~~36A~~	
10MT12	NTN510790-203	PRESS REG INLET	6	30C	GQ3010P	10A6L1	LSC270-713-9	LATCHING HELIUM SOLENOID VALVE NO.1	6	51C	
10MT11	NTN510790-203	PRESS REG INLET	6	32C	GQ3009P	10A5L1	LSC270-713-19	LATCHING HELIUM SOLENOID VALVE NO.2	5	21A	
10MT10	LSC360-605-303	TEMP TRANSDUCER	6	34C	GQ4219T	10A4L1	LSC270-713-19	LATCHING HELIUM SOLENOID VALVE NO.1	5	21C	
10MT9	↕	↕	6	34C	GQ4218T						
10MT8	↕	↕	6	34C	GQ3719T						
10MT7	LSC360-605-303	TEMP TRANSDUCER	6	34C	GQ3718T						
						~~10A7A1CR2~~	~~UZ5840~~	~~ZENER DIODE~~	~~6~~	~~37A~~	~~ARC SUPPR~~
						~~10A7A1CR1~~	↕	↕	~~6~~	~~37A~~	↕
						10A6A1CR2	UZ5840	ZENER DIODE	6	36C	
						10A6A1CR1	↕	↕	6	36C	
						10A5A1CR2			5	21A	
10MT1	LSC360-605-301	TEMP ENGINE INTERFACE FUEL	6	31B	GQ3811T	10A5A1CR1			5	21A	
						10A4A1CR2			5	21B	↕
						10A4A1CR1	UZ5840	ZENER DIODE	5	21B	ARC SUPPR
10MS	LSC350-00401-03-2	PROPELLANT QTY IND	7	47B							
10M4	LSC350-80179-13	DUAL VERT METER TEMP	7	51A							
10M3	LSC350-80125-13	DUAL VERT METER PRESS	7	51A							
10M1	LSC350-20100-02-1	HE TEMP/PRESS READOUT	7	51C							
						10A8	LSC270-00723	ROUGH COMB. CUT OFF CONTROL ASSY	10	79C	
						10A7	LSC270-713-10-1	VALVE ASSEMBLY	6	37A	
						10A6	LDW390-28070-11	VALVE ASSEMBLY	6	37C	
						10A5	LDW390-51070-3	VALVE ASSEMBLY	5	21A	
						10A4	LDW390-51070-3	VALVE ASSEMBLY	5	21B	
10LG	LSC270-00822-7-2	SOLENOID VALVE PRE-VALVE	5	12B		10A3	LSC270-00009-42	GAGING CONTROL UNIT PROPELLANT QUANTITY	7	45A	
						10A2	LSC270-00500-10-2	ASCENT ENGINE (BELL)	10	80C	
						10A1	LSC270-00600-20	DESCENT ENGINE	4	1C	
10FL4	LSC350-80402-04	DESCENT STATUS REG FLAG NO.2	6	39B		REF DESIGNATION	PART NUMBER	DESCRIPTION	SHEET	ZONE	
10FL3	LSC350-80401-04	DESCENT STATUS REG FLAG NO.1	6	39B							
10FL2	LSC350-80401-04	ASCENT STATUS REG FLAG NO.2	5	23B							
10FL1	LSC350-80401-04	ASCENT STATUS REG. FLAG NO.1	5	23B							
REF DESIGNATION	PART NUMBER	DESCRIPTION	SHEET	ZONE							

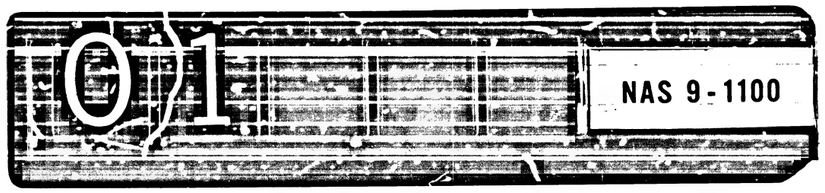
ENG 77.10 7-64

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52000	F

SCALE NONE SHEET 2.00

SUPERSEDES LDW270-52000 REV "B" 4-28-67



						10MT42	LSC360-601-107 *	TRANSDUCER PRESS ABS	5	15B	GP0025P
						10MT41	LSC270-801-13	FUEL TANK LEVEL LOW	5	15B	GP0908X
						10MT40	LSC360-605-303	TEMP TRANSDUCER	5	16B	GP1218T
						10MT39	LSC360-605-303	↕	5	16B	GP0718T
						10MT38	LSC360-605-405	↕	5	16B	GP0202T
						10MT37	LSC360-605-405	TEMP TRANSDUCER	5	17B	GP0201T
						10MT36	LSC360-601-101 *	TRANSDUCER PRESS ABS	5	17B	GP0002P
						10MT35	LSC360-601-101 *	TRANSDUCER PRESS ABS	5	17B	GP0001P
10MT64	LSC360-624-1	TRANSDUCER PRESSURE	10	85C	GP1503P	10MT32	NTN510981-201	PRESS Δ"P"OX TANK INTERFACE	5	18B	GP1116P
10MT63	LSC360-624-1	↕	10	86C	GP1501P	10MT31	NTN510790-201	PRESS OX TANK VENT RELIEF VALVE INLET	5	18B	GP1004P
10MT62	LSC360-624-3	↕	10	85C	GP2010P	10MT30	LSC360-601-107 *	PRESS OX TANK ULLAGE	5	19B	GP1001P
10MT61	LSC360-624-1	↕	10	82C	GP2006P	10MT29	NTN510981-201	PRESS Δ "P"FUEL TANK INTERFACE	5	19B	GP0616P
10MT60	LSC360-624-1	TRANSDUCER PRESSURE	10	82C	GP2001P	10MT28	NTN510790-201	PRESS FUEL TANK VENT RELIEF VALVE INLET	5	19B	GP0504P
10MT59	LSC360-624-111	TRANSDUCER PRESS AMB	6	34B	GQ3015P	10MT27	LSC360-601-107 *	PRESS FUEL TANK ULLAGE	5	20B	GP0501P
10MT58	LSC360-601-107*	TRANSDUCER PRESS ABS	5	14B	GP0018P	10MT26	NTN510790-202	PRESS HE SEC REG UPSTREAM INLET	5	20C	GP0020P
10MT57	LSC360-601-107*	TRANSDUCER PRESS ABS	6	33C	GQ3025P	10MT25	NTN510790-202	PRESS HE PRIM REG UPSTREAM INLET	5	20C	GP0019P
10MT56	LSC270-821-29	TANK PRESSURE SENSOR(REDUNDANT)	6	32C	GQ3436P	10MT24	LSC360-601-107 *	TRANSDUCER PRESS ABS	6	32C	GQ3611P
10MT55	LSC270-00009-31	SENSING UNIT OXIDIZER QUANTITY	7	46A		10MT23	NTN510981-201	PRESS Δ"P" OX TK NO 1 BOT TO ENG INTERFACE	6	28C	GQ4116P
10MT54	LSC270-00009-31	SENSING UNIT OXIDIZER QUANTITY	7	46A		10MT22	NTN510790-201	PRESS OX TANK VENT RELIEF VALVE INLET	6	29C	GQ4005P
10MT53	LSC270-00009-32	SENSING UNIT FUEL QUANTITY	7	46C		10MT21	LSC360-601-107 *	PRESS Δ"P" FUEL TK NO 2 BOT TO ENG INTERFACE	6	29C	GQ4001P
10MT52	LSC270-00009-32	SENSING UNIT FUEL QUANTITY	7	46C		10MT20	NTN510981-201	PRESS Δ" P" FUEL TK NO. 2 BOT TO ENG INTERFACE	6	30C	GQ3666P
10MT51	LSC360-605-407	TRANSDUCER TEMP	6	26C	GQ3463T	10MT19	LSC360-601-107 *	TRANSDUCER PRESS ABS	6	28C	GQ3018P
10MT50	LSC360-605-407	↕	6	26C	GQ3459T	10MT18	NTN510790-201	PRESS FUEL TANK VENT RELIEF VALVE INLET	6	30C	GQ3505P
10MT49	LSC360-605-407	↕	6	27C	GQ3455T	10MT17	LSC360-601-107 *	PRESS ULLAGE FUEL TANK NO1	6	30C	GQ3501P
10MT48	LSC360-605-409	↕	6	27C	GQ3451T	10MT16	LSC360-601-107 *	TRANSDUCER PRESS ABS	6	32C	GQ4111P
10MT47	NTN510724-001	TRANSDUCER TEMP	6	27C	GQ3476T	REF DESIGNATION	PART NUMBER	DESCRIPTION	SHEET	ZONE	
						* SEE NOTE 40					
10MT45	LSC270-821-65	TANK PRESS SENSOR	6	28C	GQ3435P						
10MT43	LSC270-801-14	OX TANK LEVEL LOW	5	14B	GP1408X						
REF DESIGNATION	PART NUMBER	DESCRIPTION	SHEET	ZONE							

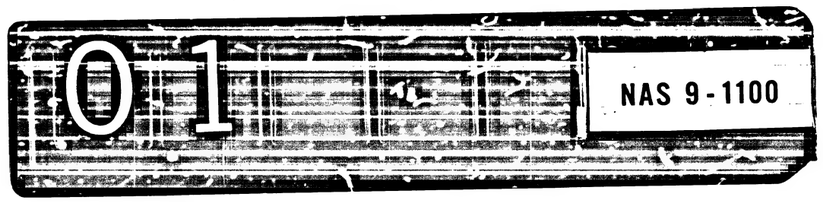
GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52000	F

SCALE NONE SHEET 2.01

ENG 77.10 7-64

SUPERSEDES LDW270-52000 REV "B" 4-28-67



						10W3	GC875BA-3	CABLE	10	81C	
						10W2	GC875BA-2	CABLE	10	81C	
						10W1	GC875BA-1	CABLE	10	80C	
						1058	LSC350-83-10211	PROPELLANT QTY MONITOR SEL SWITCH	7	47B	
						1057	LSC350-81-05311	DESCENT REG NO. 2 SW	6	39B	
						1056	LSC350-80305-11	HE TEMP/PRESS MON SW	7	51C	
						1055	LSC350-81-05311	DESCENT REG NO. 1 SW	6	39B	
10MT83	LSC450-10133-21	TEMP TRANSDUCER START TANK	6		GQ3541T	1054	LSC350-81-05311	ASCENT REG NO. 2 SW	5	23B	
10MT82	LSC450-10133-23	TEMP TRANSDUCER HE TANK #2	5	20B	GP2911T	1053	LSC350-81-05311	ASCENT REG NO. 1 SW	5	23C	
10MT81	LSC450-10133-23	TEMP TRANSDUCER HE TANK #1	5	20B	GP2910T						
10MT80	NTN510780-001	TEMP XDUCER, ENG. INTERFACE OXIDIZER LINE (SURF. TEMP)	5	17B	GP7025T	1051	LSC350-84-02011	TEMP/PRESS MON SW	7	51A	
10MT79	NTN510780-001	TEMP XDUCER, ENG INTERFACE FUEL LINE (SURF TEMP)	5	18B	GP7015T	REF DESIGNATION	PART NUMBER	DESCRIPTION	SHEET	ZONE	
REF DESIGNATION	PART NUMBER	DESCRIPTION	SHEET	ZONE							

ENG 77.10 7-64

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52000	F

SCALE NONE SHEET 2.02

01

NAS 9-1100

NOTES CHECKED ✓ APPLY TO THIS DRAWING

	1. SOLDERING OF ELECTRICAL CONNECTIONS TO BE IN ACCORDANCE WITH	
	2. BOND PER LSP-390-001.	
	3. WIRING INSTALLATION PER LSP-390-002.	
✓	4. WIRES ARE TO BE TWISTED IN ACCORDANCE WITH LSP-530-001, TABLE III.	✓
	5. QUANTITIES OF END CAPS, SPLICES AND TERMINALS ARE NOT SPECIFIED IN THE BILL OF MATERIALS. USAGE: AS REQ'D.	
	6. FOR SCHEMATIC WIRING DIAGRAM SEE DRAWING NO.	
	7. ALL WIRES TO BE HOT STAMPED EVERY INCHES WITH WIRE NUMBER.	
	8. WIRE BUNDLING AND ROUTING: WIRES OF THE SAME CLASSIFICATION MAY BE BUNDLED TOGETHER WHEN A CLASSIFICATION LETTER IS PRECEEDED BY A NUMBER, SUCH SUBCLASSIFICATION SHALL BE SEPARATED BY A MINIMUM OF ONE-INCH. (EXAMPLE: 1D, 2D SEPARATED ONE-INCH MINIMUM) A MINIMUM OF ONE-INCH SEPARATION REQUIRED BETWEEN CLASSIFICATION GROUPS A, B, C, D, & E. A MINIMUM OF ONE-INCH SEPARATION REQUIRED BETWEEN CLASSIFICATION GROUPS F, G, & H. ANYONE OF THE CLASSIFICATION GROUPS A, B, C, D, OR E SHALL BE SEPARATED BY A MINIMUM OF FOUR-INCHES FROM ANYONE OF THE CLASSIFICATION GROUPS F, G, & H. WIRE BUNDLES TO BE ROUTED IN CONSOLE AS SHOWN.	✓
	9. WIRE LENGTHS SHOWN ARE APPROXIMATE. EXACT LENGTHS TO BE DETERMINED ON FIRST MANUFACTURED UNIT AND ENGINEERING DEPARTMENT NOTIFIED.	✓
	10. STENCIL OR MARK CHARACTERS PER MS33558, ( ) HIGH UNLESS OTHERWISE SPECIFIED, USING BLACK LACQUER PER TT-L-595, #1775 (GRUMMAN FINISH #69). COVER WITH CLEAR FLAT LACQUER PER TT-L-58 TYPE I (GRUMMAN FINISH #133).	✓
	11. ENGRAVE CHARACTERS ( ) HIGH x 0.005 MINIMUM DEPTH PER MS33558 (EXCEPT AS NOTED). FILL WITH BLACK LACQUER PER TT-C-595, #1775 (GRUMMAN FINISH #69).	✓
	12. ENGRAVE ALL INDEX DIVISIONS APART 3/16 LONG, ROTATING OUTWARD FROM RADIUS.	✓
	13. CENTRALIZE ALL CHARACTERS.	
	14. BREAK ALL SHARP EDGES.	
	15. BEND RELIEF TO BE MINIMUM RADII.	
	16. ALL BEND RADII TO BE MINIMUM RADIUS.	
	17. FINISH: APPLY EPOXY POLYAMIDE PRIMER MIL-P-23377 OR G.M.S. #1012. APPLY COATS OF MIL-L- LACQUER COLOR # ( ) PER FEDERAL STANDARD #595.	

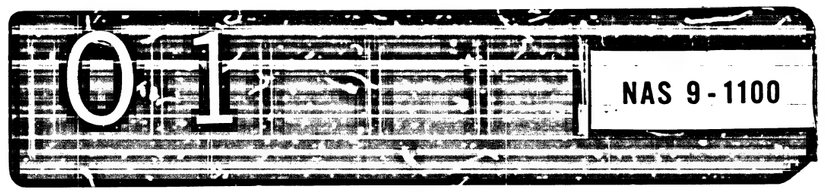
	18. INSTRUMENTATION CALLOUT ON MEASUREMENT LIST AND NOT SHOWN ON THIS DRAWING ARE TELEMETERING NOTATIONS INDICATING COMBINATIONS OF TRANSDUCERS.
✓	19. THIS DRAWING INCORPORATES MEASUREMENTS SHOWN IN LM-1-3 MEASUREMENT LIST, LED360-22, REV E, DATED 11 APRIL 1966 AND THIS PROJECT APPROVED MCR'S: 305, 305A, 321, 341, 364, 392A, 392C, 427, 428, 429C, 468, 478 AND 504
✓	20. ELECTRICAL DRAWING SYMBOLS SHOWN ON THIS DRAWING ARE IN ACCORDANCE WITH SECTION 15 OF THE MSFC DRAFTING MANUAL MIL-STD-15-1A AND GS22B.
✓	21. REFER TO LDW320-52000 SYSTEM SCHEMATIC LEVEL 3 FOR ELECTRO EXPLOSIVE DEVICES ASSOCIATED WITH PROPULSION SUBSYSTEM
✓	22. GROUND DESIGNATIONS: N1=AC GRD, N2=DC GRD, N3=SIGNAL GRD, N4=STRUCTURE GRD
✓	23. NOTED FLAGS WILL SHOW A STRIPE INDICATION WHEN SIGNAL POWER IS APPLIED TO PIN 1 (NORMALLY GRAY)

ENG 77.13 8-64

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52000	F (f)
SCALE NONE		SHEET 3.00	

SUPERSEDES LDW270-52000 REV "A" 4-28-67



NOTES CHECKED ✓ APPLY TO THIS DRAWING

✓	24. NOTED FLAG WILL SHOW GRAY INDICATION WHEN SIGNAL POWER IS APPLIED TO PIN 1 (NORMALLY STRIPED)	✓	29. FLUIDS (CONTINUED): B. PROPELLANT; NITROGEN TETROXIDE IN ACCORDANCE WITH MIL-P-26539 C. PROPELLANT; HYDRAZINE IN ACCORDANCE WITH MIL-P-27402
✓	25. CAP AND STOW THESE WIRES. ANTICIPATE UTILIZATION ON LATER VEHICLES.		
✓	26. WIRES K346-22(A)*, K347-22(A)* AND K7-22(A)* ARE CONNECTED AS SHOWN FOR MANNED FLIGHTS ONLY. FOR UNMANNED FLIGHTS DISCONNECT WIRES ABOVE AT TERMINAL STRIP AND CAP AND STOW AND REPLACE WITH NOTED WIRES.	✓	30. HELIUM STORAGE PRESSURE (MAXIMUM): A. 1555 PSIA AT 100°R (DESCENT STAGE) B. 3500 PSIA AT 100°F (ASCENT STAGE)
✓	27. ASCENT AND DESCENT ENGINE ELECTRICAL CIRCUITS AND INTERFACES ARE NOT DOCUMENTED BY LSC DRAWINGS. ENGINE WIRING DIAGRAMS SHOWN IN THIS LEVEL 3 ARE BASED ON THE BEST INFORMATION AVAILABLE.	✓	31. HELIUM STORAGE VESSEL DATA: A. DESCENT STAGE; CHARGE PRESSURE-CAPACITY=52.66 LBS TOTAL, 41.85 LBS USABLE B. ASCENT STAGE; CHARGE PRESSURE-CAPACITY=6.5 LBS PER STORAGE VESSEL.
✓	28. SEE SHEET 8.00 FOR SCHEMATIC OF DESCENT STAGE PROPULSION FLUID LINES. SEE SHEET 9.00 FOR SCHEMATIC OF ASCENT STAGE PROPULSION FLUID LINES.	✓	32. PRESSURE REDUCER REQUIREMENTS: A. LSC270-816-11-2 (DESCENT STAGE) INLET PRESS APPLIED TO EITHER OF TWO INLET PORTS (BUT NOT TO BOTH SIMULTANEOUSLY)=350 PSIG TO 1750 PSIG. PRESSURE AND FLOW AT OUTLET PORT=243 PSIG TO 248 PSIG AT 0.43 LBS TO 4.25 LBS PER MINUTE. (CONTINUED)
✓	29. FLUIDS: A. PRESSURIZING AGENT; HELIUM IN ACCORDANCE WITH MIL-P-27407. (CONTINUED)		

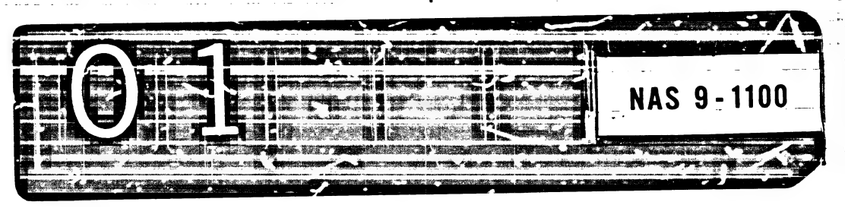
ENG 73.1 6-64

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52000	F

SCALE NONE | SHEET 3.01

SUPERSEDES LDW270-52000 REV "8" 4-28-67



NOTES CHECKED ✓ APPLY TO THIS DRAWING

✓

32. PRESSURE REDUCER REQUIREMENTS (CONT.)
B. LSC270-721-5 AND LSC270-721-7 (ASCENT STAGE) PRESSURE AT INLET PORT FOR LSC270-721-5 AND LSC270-721-7 = 400 PSIG TO 3500 PSIG, PRESSURE AND FLOW AT OUTLET PORT (WITH SECONDARY STAGE REGULATING PRESSURE = 186 PSIG TO 194 PSIG AT 1.45 ±.05 LBS PER MINUTE FOR LSC270-721-5, AND 178 PSIG TO 186 PSIG AT 1.45 ±.05 LBS PER MINUTE FOR LSC270-721-7 , PRESSURE AND FLOW AT OUTLET PORT (WITH PRIMARY OR DOWNSTREAM STAGE REGULATING PRESSURE) = 180 PSIG TO 188 PSIG AT 1.45 ±.05 LBS PER MINUTE FOR LSC270-721-5 AND 172 PSIG TO 180 PSIG AT 1.45 ±.05 LBS PER MINUTE FOR LSC270-721-7

33. DELETED

✓

34. OVERBOARD DRAIN LINE SHALL HAVE AN OPEN END, EXACT DESCRIPTION OF TERMINAL TO BE PROVIDED LATER.

✓

35. PRESSURE RELIEF VALVE REQUIREMENTS:
LSC270-818-5 AND-6 (DESCENT STAGE)
LSC270-717-6 AND-7 (ASCENT STAGE)

	LSC270-818 -5 AND-6	LSC270-717 -6 AND-7
RATE FLOW PRESSURE	260 PSIG TO 275 PSIG AT 10.0 LBS PER MINUTE	250 PSIG
REPEAT PRESSURE	254 PSIG MINIMUM	225 PSIG MINIMUM
BURST DISC RUPTURE PRESSURE	268 PSIG TO 308 PSIG	226 PSIG TO 250 PSIG

✓

36. INSTALL LINE TO OUTSIDE OF VEHICLE AND PROVIDE EXTERNAL GSE CONNECTION FOR SENSING ΔP, FUEL TO OXIDIZER AT ENGINE INTERFACE.

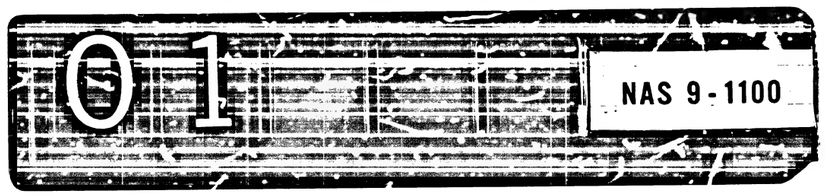
ENG 72.1 6-64

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52000	F (F)

SCALE NONE SHEET 3.02

SUPERSEDES LDW270-52000 REV "B" 4-28-67



NOTES CHECKED ✓ APPLY TO THIS DRAWING

37. MECHANICAL SYMBOLS SHOWN ARE IN ACCORDANCE WITH MSFC STD-162 WITH THE FOLLOWING ADDITIONS:

FUEL LINE

HELIUM LINE

OXIDIZER LINE

DIFFERENTIAL PRESSURE TRANSDUCER

LINE SIZES (OUTSIDE DIA):

(-2) 1/8 (-4) 1/4 (-6) 3/8 (-8) 1/2

(-10) 5/8 (-12) 3/4 (-16) 1" (-20) 1 1/4

(-24) 1 1/2 (-28) 1 3/4 (-32) 2 (-5) 5/16

38. TUBING DATA:

SIZE O. DIA	PRESS MAX	WALL THICK	MATL	SPEC
1/8				
1/4	4000	.028	304L	LSM-14-1001
1/4	250	.016	↑	↑
3/8	4000	.042	↑	↑
3/8	250	.016	↑	↑
1/2	4000	.058	↑	↑
1/2	250	.016	↑	↑
5/8	250	.016	↓	↓
3/4	250	.016	304L	LSM-14-1001

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52000	F

SCALE NONE SHEET 3.03

ENG 73.1 6-64

SUPERSEDES LDW270-52000 REV "B" 4-28-67

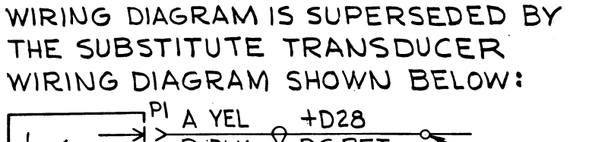
01 NAS 9-1100

NOTES CHECKED ✓ APPLY TO THIS DRAWING

✓ 39. WIRE NUMBERS D361, D365, D1121, D6080 AND D6081 ARE CONNECTED AS SHOWN FOR MANNED FLIGHTS ONLY. FOR UNMANNED FLIGHTS, DISCONNECT WIRES ABOVE AT PANEL SPLICE POINTS, CUT-OFF SPLICE ON LEADS TO LDW360-52507 AND SPLICE WIRES REFERENCED TO LDW360-52507 TO THOSE WIRES REFERENCED TO LDW360-52007 RESPECTIVELY. SHIELDS AND LEADS TO SWITCH AND METERS CAN BE CAPPED AND STOWED.

40. PRESSURE TRANSDUCER LSC360-624-XXX MAY BE SUBSTITUTED FOR ANY PRESSURE TRANSDUCER LSC360-601-XXX SHOWN ON THIS LEVEL 3 (PER LAV-262-34 DATED 6-23-66). IN THIS EVENT THE RESPECTIVE LSC360-601 WIRING DIAGRAM IS SUPERSEDED BY

✓ THE SUBSTITUTE TRANSDUCER WIRING DIAGRAM SHOWN BELOW:



✓ 41. DUAL BURST DISC ASSEMBLY, LSC270-821-87, IS SET TO BURST AT PRESSURES OF 1881 PSID TO 1967 PSID.

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

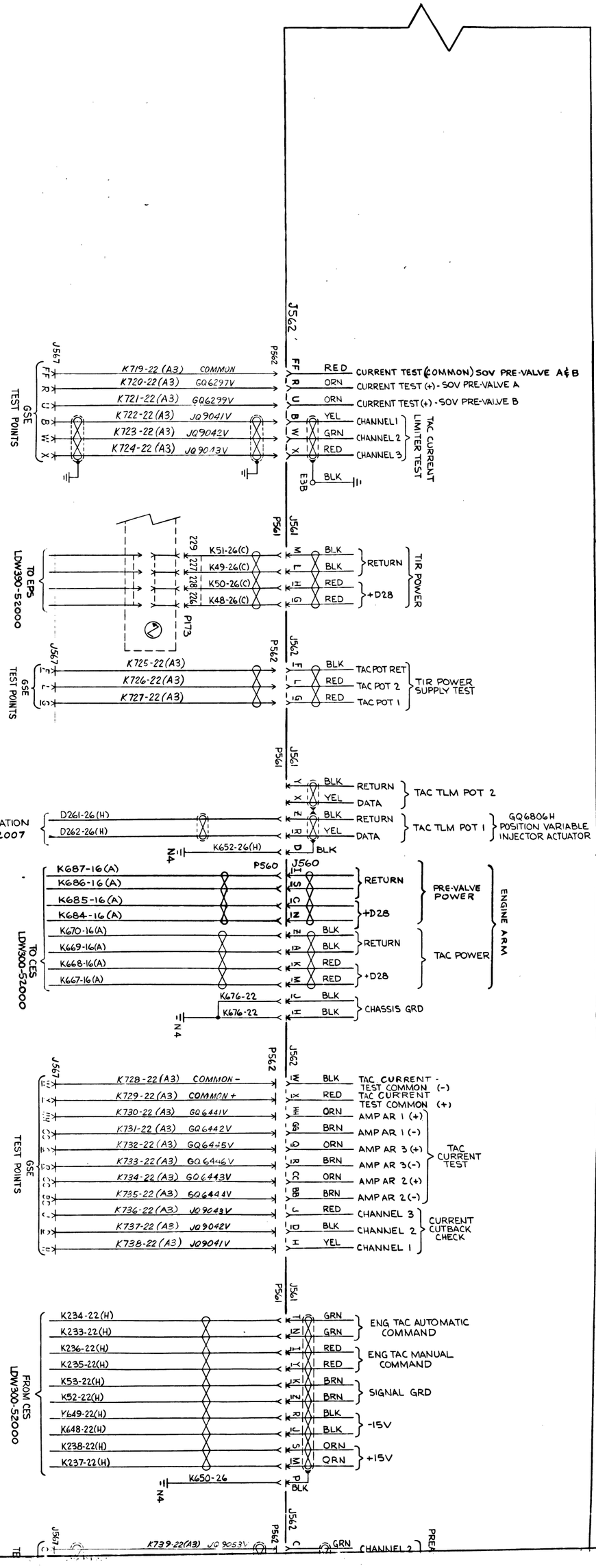
SIZE	CODE IDENT NO.		
B	26512	LDW270-52000	F

SCALE NONE SHEET 3.04

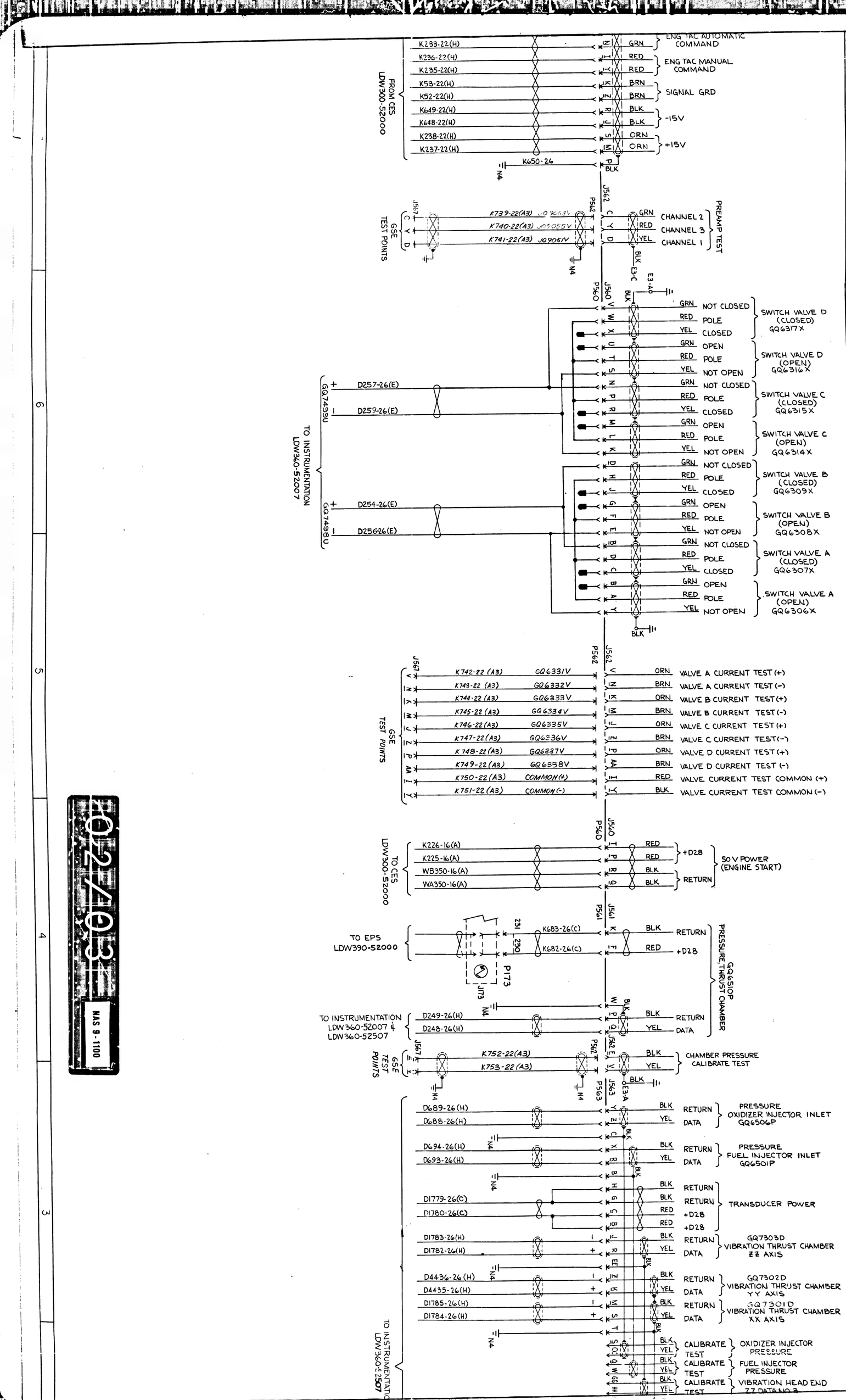
ENG 73.1 6-64

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NAS 9-1100

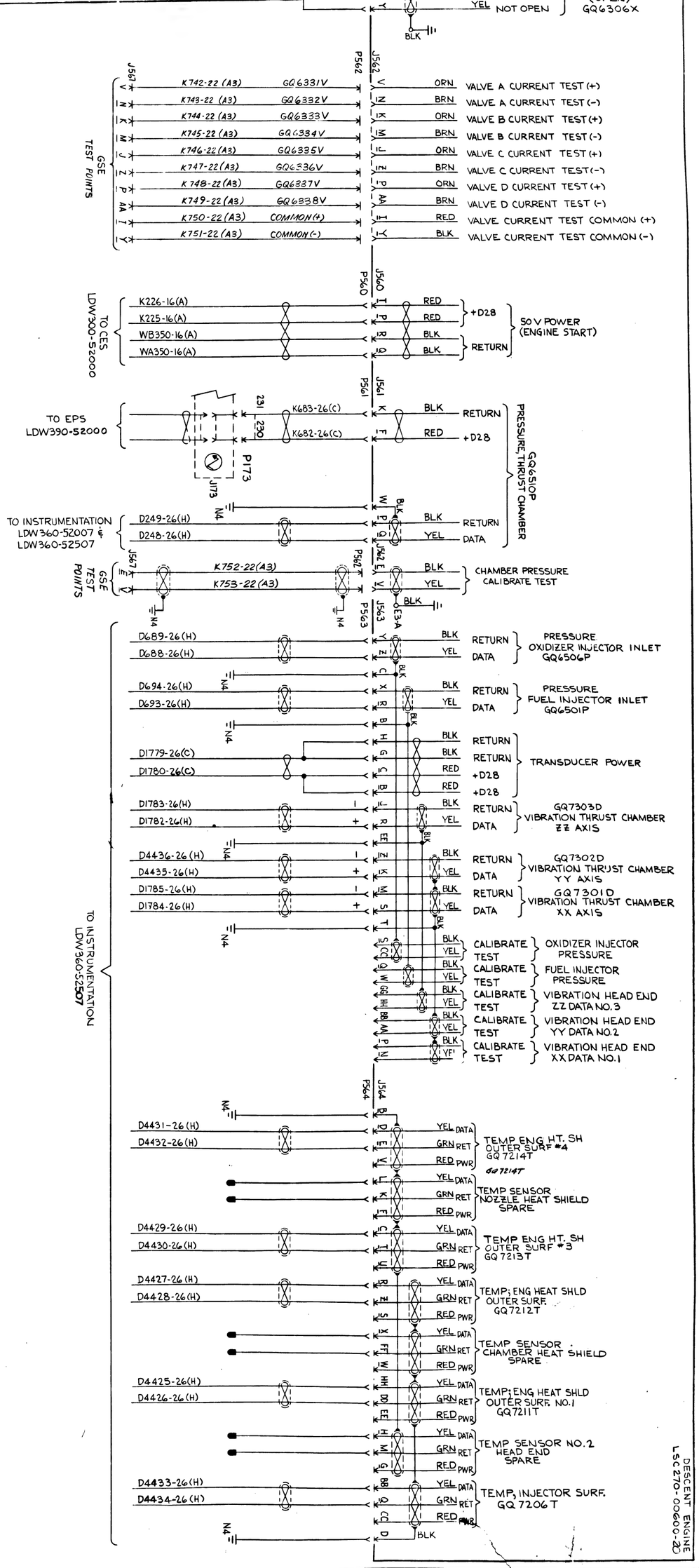


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NAS 9-1100



NAS 9-1100

SE 074203



FOR NOTES SEE SH 3.00
FOR ENGINEERING INFORMATION ONLY

		GRUMMAN AIRCRAFT ENGINEERING CORP., BETHPAGE, L.I., NEW YORK	
		SIZE J	CODE IDENT NO. 26512
		LEM	LDW270-52000
		MODEL OR THIS ITEM	SHEET 4.00
		SHEET NO. 6	F

THIS IS AN ORIGINAL DRAWING

NAS 9-1100

LDW270-00006

K6-20(A)

-D BUS

+D28 BUS

4CB53 5A

P272 20(C)

K1-20(A)

ASC He REG

K6 22(A) G

K1 22(A) F

P38

J38 K6-22(A) K6-20(A) K1-22(A)

J56 P56 105 K6-22(A) 106 K1-22(A)

K6-20(A)

K1-20(A)

ASC. He REG. SWITCH 1

OPEN 3

1053

CLOSED 1

K6-20(A)

K2-20(A)

K3-20(A)

K6-22(A) P55A K2-22(A) K3-22(A)

J55 BHD CONN GG FF W

P55B K6-22(A) (NAT) K2-22(A) (BLK) K3-22(A) (RED)

CR1 CR2

A1

GRN OPEN COIL

RED

WHT

VALVE OPEN

VALVE CLOSED

BLK

WHT

CLOSE COIL

LATCHING HELIUM SOLENOID VALVE NO.1 (PRI)

LSC270-713-19

LDW390-51070-3

L1

10A4

GY

BRN

"COLLAR" CKT BKR

4CB103 2A

K7-22(A)

TEMP/PRESS DISP

+D28 BUS

K10-22(A)

E K7-22(A)

D K10-22(A)

107 K7-22(A)

108 K10-22(A)

K1-20(A)

K6-20(A)

SEE SHEET 6&7

0-75V 400~

4 10FL1

5 3 1

ASC REG NO.1 STATUS FLAG (SEE NOTE 23)

1 2

K8-22(A) L K8-22(A)

K7-22(A) G K7-22(A)

GP03I8X FROM INST. LDW360-52007

K10-22(A) 2

K7-22(A) 1 SEE SHEET 6&7

ASC. He REG. SWITCH 2

OPEN 3

1054

CLOSED 1

K6-20(A)

K4-20(A)

K5-20(A)

K6-22(A) K4-22(A) K5-22(A) BB HH EE

K6-22(A) (NAT) K4-22(A) (BLK) K5-22(A) (RED)

CR1 CR2

A1

GRN OPEN COIL

RED

WHT

VALVE OPEN

VALVE CLOSED

BLK

WHT

CLOSE COIL

LATCHING HELIUM SOLENOID VALVE NO.2 (SEC)

LSC270-713-19

LDW390-51070-3

L1

10A5

GY

BRN

K10-22(A)

K7-22(A)

TO INTERNAL LIGHTING LDW340-21000 0-75V, 400~

4 10FL2

5 3 1

ASC REG NO.2 STATUS FLAG (SEE NOTE 23)

1 2

K9-22(A) X K9-22(A)

K7-22(A) Y K7-22(A)

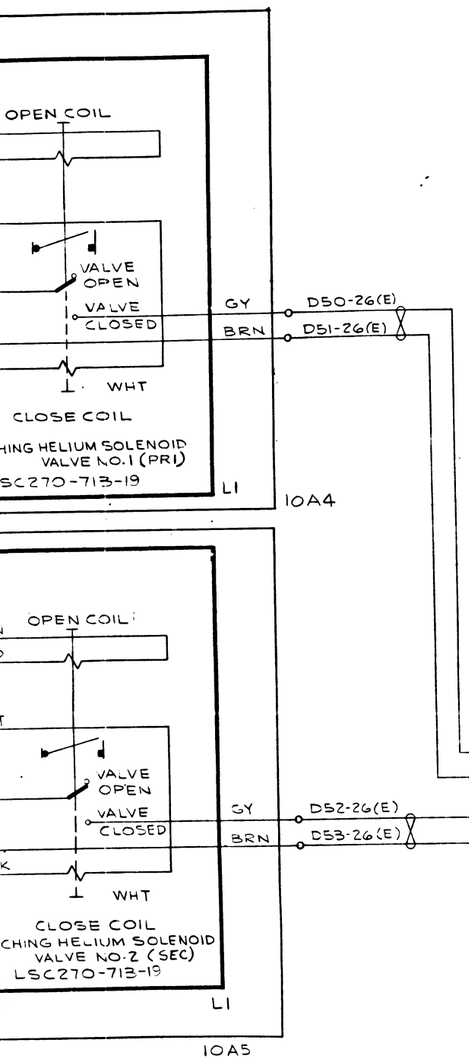
GP0320X FROM INST LDW360-52007

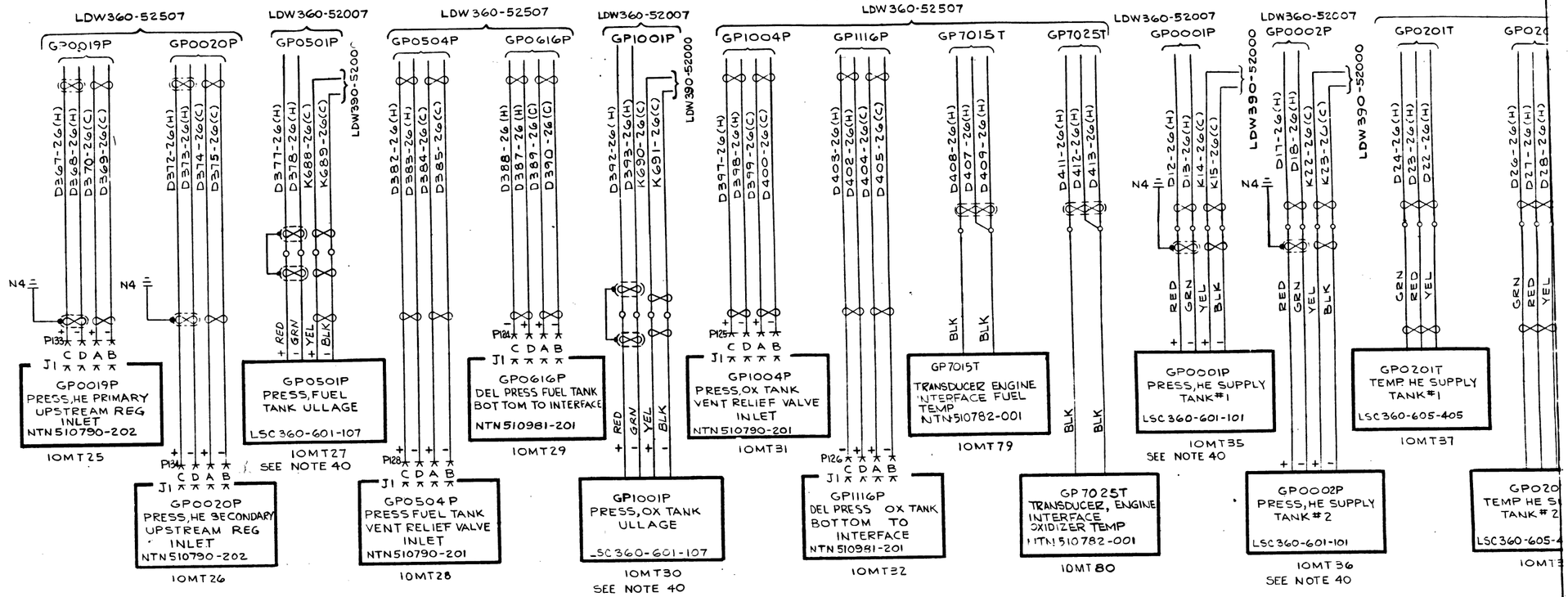
MAIN PROPULSION PANEL NO.1

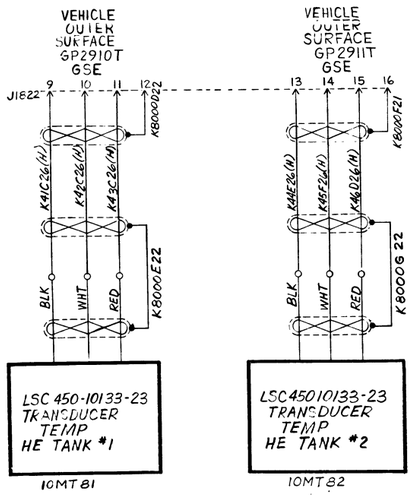
LDW390-52101

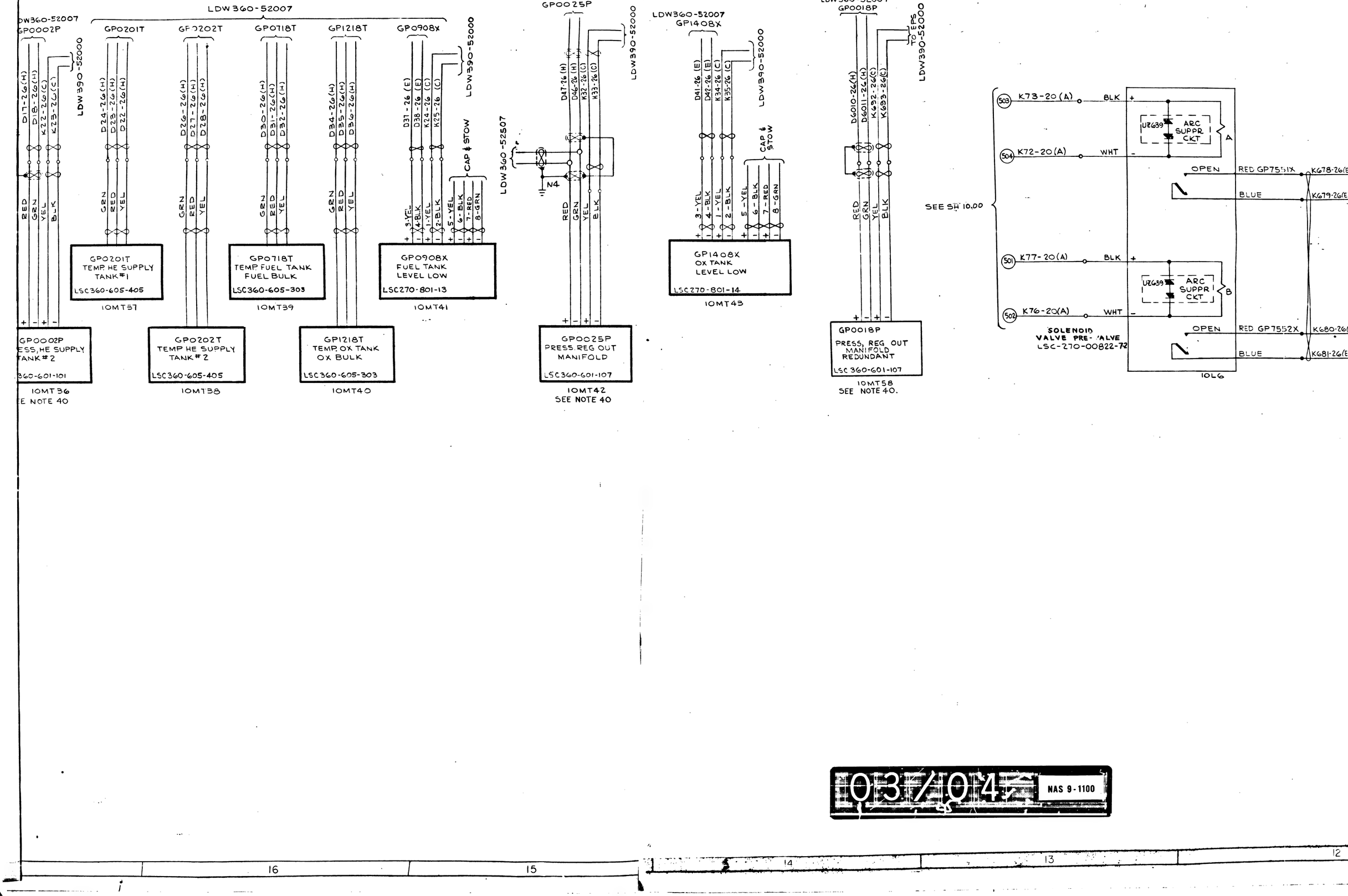
SYS ENGR'S CIRCUIT BREAKER PANEL XVI

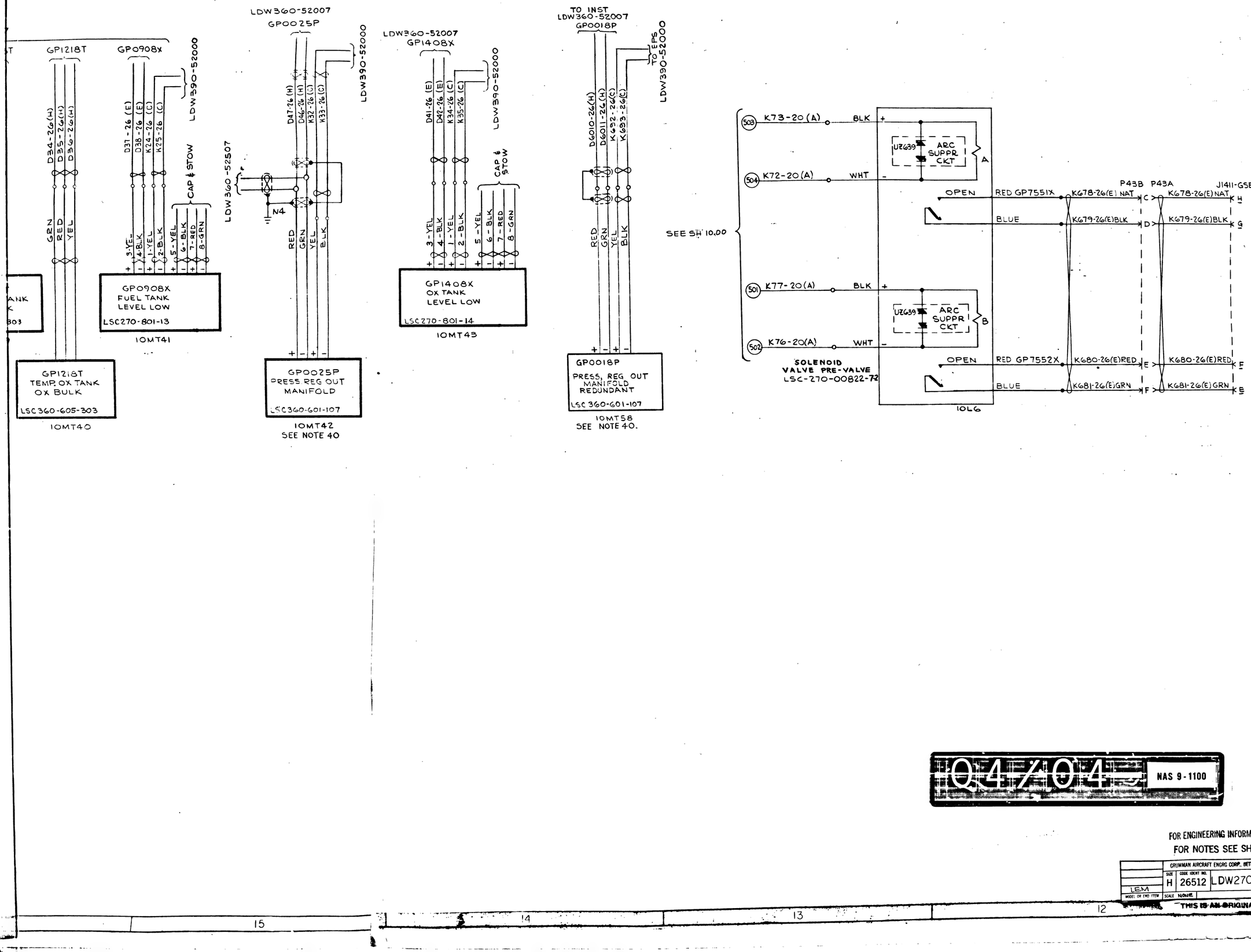
LDW 390-52114 (REF)


OPEN COIL
VALVE OPEN
VALVE CLOSED
WHT
CLOSE COIL
HING HELIUM SOLENOID VALVE NO.1 (PRI)
SC270-713-19
L1
10A4
OPEN COIL
VALVE OPEN
VALVE CLOSED
WHT
CLOSE COIL
CHING HELIUM SOLENOID VALVE NO.2 (SEC)
LSC270-713-19
L1
10A5
GY
BRN
D50-26(E)
D51-26(E)
D52-26(E)
D53-26(E)
GP0320X GP0318X TO INST. LDW360-52007


LDW360-52507
GP0019P
GP0020P
D367-26(H)
D368-26(H)
D370-26(C)
D369-26(C)
D372-26(H)
D373-26(H)
D374-26(C)
D375-26(C)
N4
P133
C D A B
J1
GP0019P PRESS,HE PRIMARY UPSTREAM REG INLET NTN510790-202
10MT25
GP0020P PRESS,HE SECONDARY UPSTREAM REG INLET NTN510790-202
10MT26
LDW360-52007
GP0501P
D377-26(H)
D378-26(H)
K688-26(C)
K689-26(C)
LDW390-52000
RED
GRN
YEL
BLK
GP0501P PRESS,FUEL TANK ULLAGE LSC360-601-107
10MT27
SEE NOTE 40
LDW360-52507
GP0504P
GP0616P
D382-26(H)
D383-26(H)
D384-26(C)
D385-26(C)
D388-26(H)
D387-26(H)
D389-26(C)
D390-26(C)
P128
P124
GP0504P PRESS FUEL TANK VENT RELIEF VALVE INLET NTN510790-201
10MT28
GP0616P DEL PRESS FUEL TANK BOT TOM TO INTERFACE NTN510981-201
10MT29
LDW360-52007
GP1001P
D392-26(H)
D393-26(H)
K690-26(C)
K691-26(C)
LDW390-52000
GP1001P PRESS,OX TANK ULLAGE LSC360-601-107
10MT30
SEE NOTE 40
LDW360-52507
GP1004P
GP1116P
GP7015T
GP7025T
D397-26(H)
D398-26(H)
D399-26(C)
D400-26(C)
D403-26(H)
D402-26(H)
D404-26(C)
D405-26(C)
D408-26(H)
D407-26(H)
D409-26(C)
D411-26(H)
D412-26(H)
D413-26(C)
P125
P126
BLK
GP1004P PRESS,OX TANK VENT RELIEF VALVE INLET NTN510790-201
10MT31
GP1116P DEL PRESS OX TANK BOTTOM TO INTERFACE NTN510981-201
10MT32
GP7015T TRANSDUCER ENGINE INTERFACE FUEL TEMP NTN510782-001
10MT79
GP7025T TRANSDUCER, ENGINE INTERFACE OXIDIZER TEMP NTN510782-001
10MT80
LDW360-52007
GP0001P
GP0002P
D12-26(H)
D13-26(H)
K14-26(C)
K15-26(C)
D17-26(H)
D18-26(H)
K22-26(C)
K23-26(C)
LDW390-52000
N4
RED
GRN
YEL
BLK
GP0001P PRESS,HE SUPPLY TANK#1 LSC360-601-101
10MT35
SEE NOTE 40
GP0002P PRESS,HE SUPPLY TANK#2 LSC360-601-101
10MT36
SEE NOTE 40
GP0201T
D24-26(H)
D23-26(H)
D22-26(H)
GP0201T TEMP HE SUPPLY TANK#1 LSC360-605-405
10MT37
D26-26(H)
D27-26(H)
D28-26(H)


VEHICLE OUTER SURFACE GP2910T GSE
VEHICLE OUTER SURFACE GP2911T GSE
J1822
9
10
11
12
13
14
15
16
K8000D22
K8000F21
K41C26(H)
K42C26(H)
K43C26(H)
K44E26(H)
K45F26(H)
K46D26(H)
BLK
WHT
RED
K8000E22
K8000G22
LSC450-10133-23 TRANSDUCER TEMP HE TANK #1
10MT81
LSC450-10133-23 TRANSDUCER TEMP HE TANK #2
10MT82


LDW360-52007
GP0002P
LDW390-52000
D17-26(H)
D18-26(H)
K22-26(C)
K23-26(C)
RED
GRN
YEL
BLK
GP0002P
ESS, HE SUPPLY
TANK #2
360-601-101
10MT36
E NOTE 40
LDW360-52007
GP0201T
GP0202T
GP0718T
GP1218T
GP0908X
D24-26(H)
D23-26(H)
D22-26(H)
D26-26(H)
D27-26(H)
D28-26(H)
D30-26(H)
D31-26(H)
D32-26(H)
D34-26(H)
D35-26(H)
D36-26(H)
D31-26(E)
D38-26(E)
K24-26(C)
K25-26(C)
3-YEL
4-BLK
1-YEL
2-BLK
5-YEL
6-BLK
7-RED
8-GRN
CAP & STOW
GP0201T
TEMP HE SUPPLY
TANK #1
LSC360-605-405
10MT37
GP0202T
TEMP HE SUPPLY
TANK #2
LSC360-605-405
10MT38
GP0718T
TEMP FUEL TANK
FUEL BULK
LSC360-605-303
10MT39
GP1218T
TEMP OX TANK
OX BULK
LSC360-605-303
10MT40
GP0908X
FUEL TANK
LEVEL LOW
LSC270-801-13
10MT41
LDW360-52007
GP0025P
LDW390-52000
D47-26(H)
D46-26(H)
K32-26(C)
K33-26(C)
LDW360-52507
N4
RED
GRN
YEL
BLK
GP0025P
PRESS. REG OUT
MANIFOLD
LSC360-601-107
10MT42
SEE NOTE 40
LDW360-52007
GP1408X
LDW390-52000
D41-26(E)
D42-26(E)
K34-26(C)
K35-26(C)
3-YEL
4-BLK
1-YEL
2-BLK
5-YEL
6-BLK
7-RED
8-GRN
CAP & STOW
GP1408X
OX TANK
LEVEL LOW
LSC270-801-14
10MT43
TO INST
LDW360-52007
GP0018P
TO EPS
LDW390-52000
D6010-26(H)
D6011-26(H)
K692-26(C)
K693-26(C)
RED
GRN
YEL
BLK
GP0018P
PRESS. REG OUT
MANIFOLD
REDUNDANT
LSC 360-601-107
10MT58
SEE NOTE 40.
SEE SH 10.00
503
K73-20(A)
BLK
+
UZ639
ARC
SUPPR
CKT
A
504
K72-20(A)
WHT
-
OPEN
RED GP7551X
K678-26(E
BLUE
K679-26(E
501
K77-20(A)
BLK
+
UZ639
ARC
SUPPR
CKT
B
502
K76-20(A)
WHT
-
OPEN
RED GP7552X
K680-26(
BLUE
K681-26(E
SOLENOID
VALVE PRE-VALVE
LSC-270-00822-72
10L6



104/104

NAS 9-1100

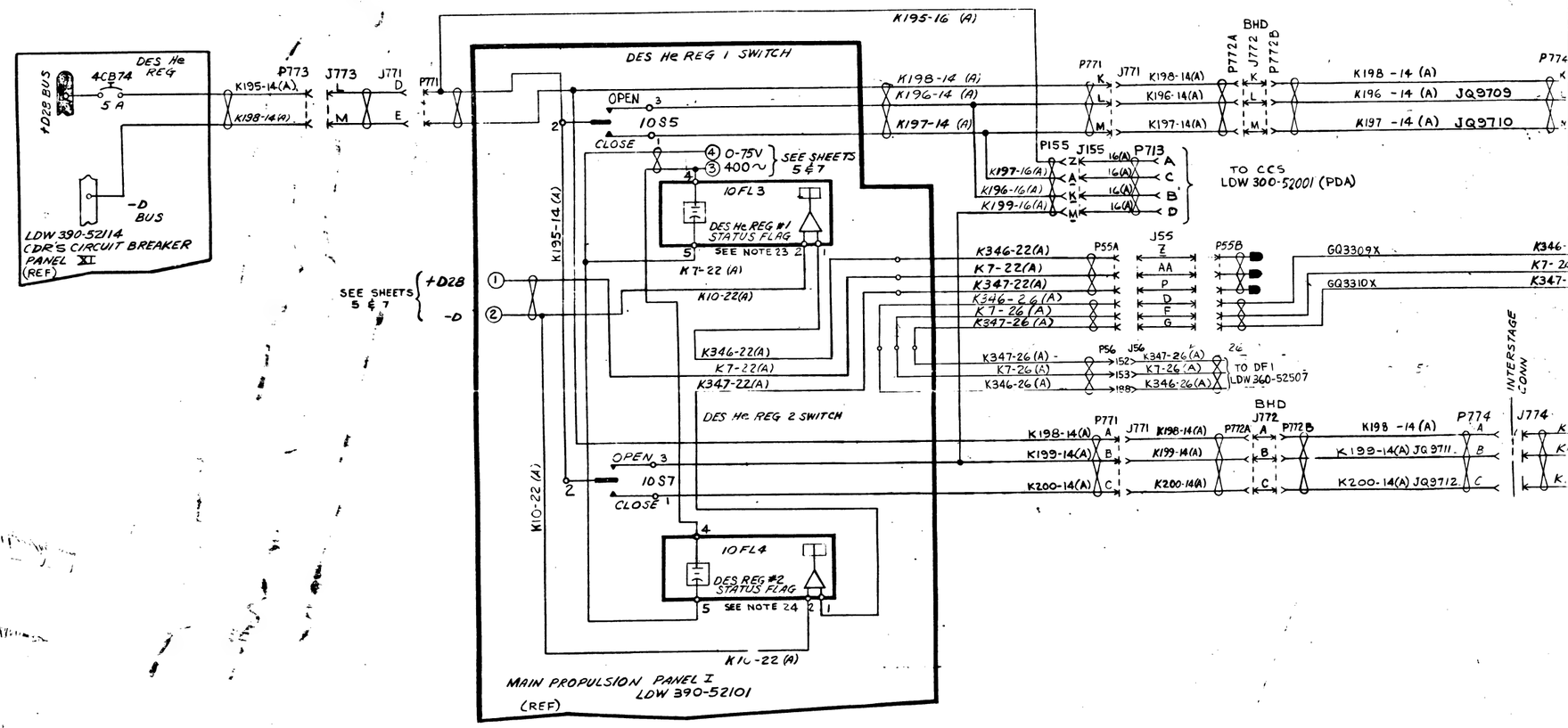
FOR ENGINEERING INFORMATION ONLY

FOR NOTES SEE SH 3.00

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK		
LEM	SIZE H	CODE IDENT NO. 26512	LDW270-52000 F
MODEL OR END ITEM	SCALE NONE		SHEET 5.00

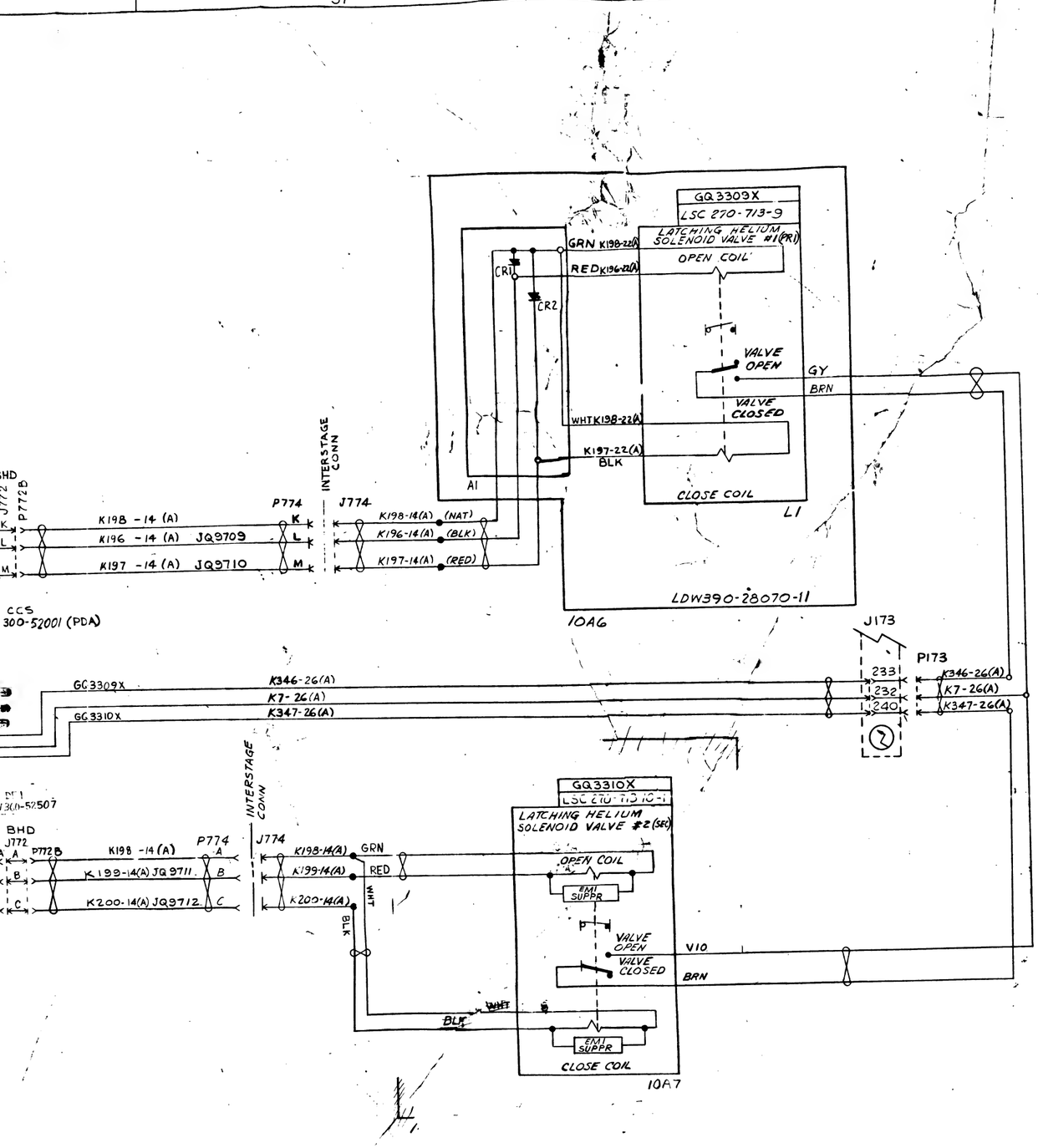
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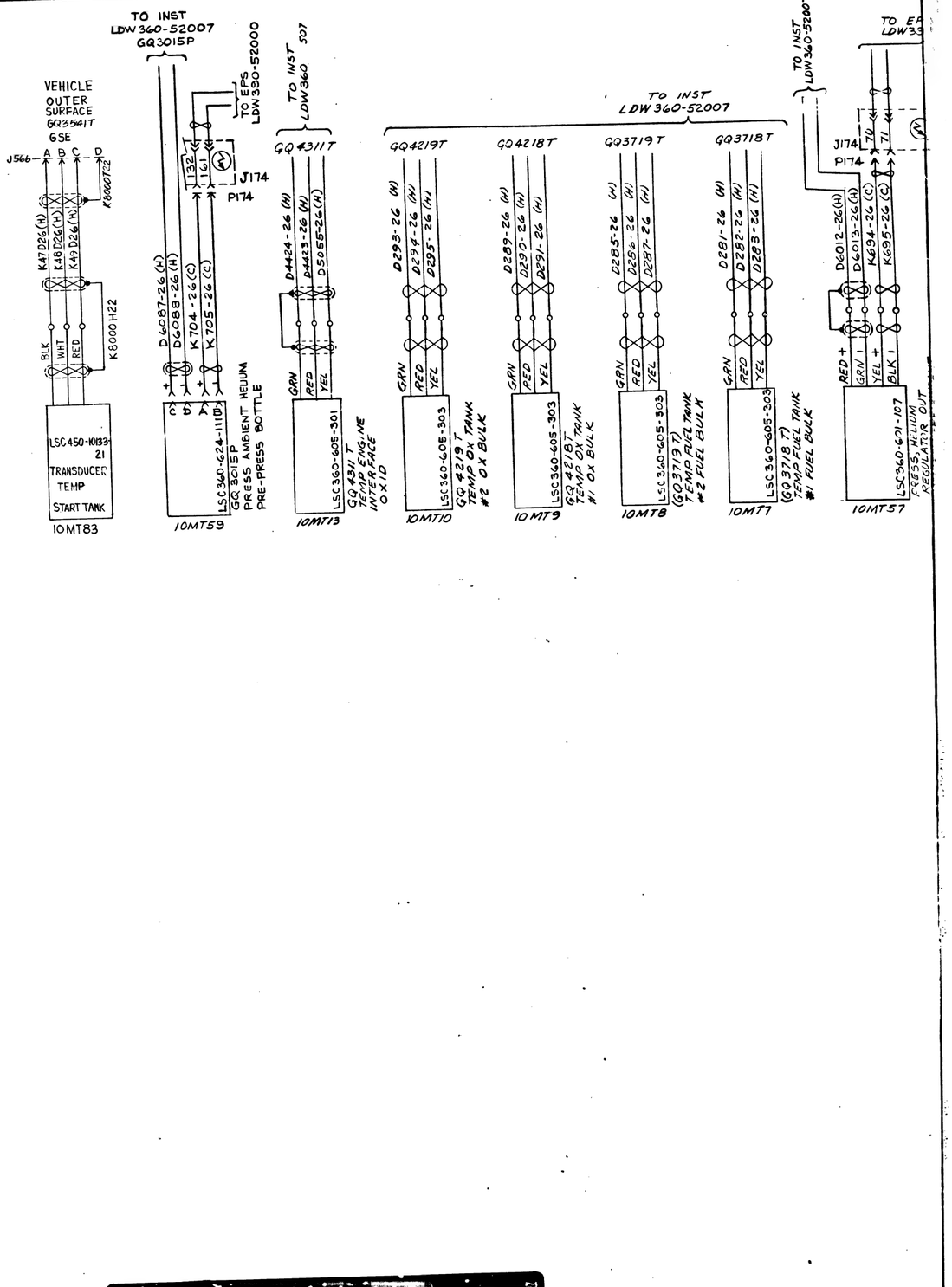
LDW270-52000 F

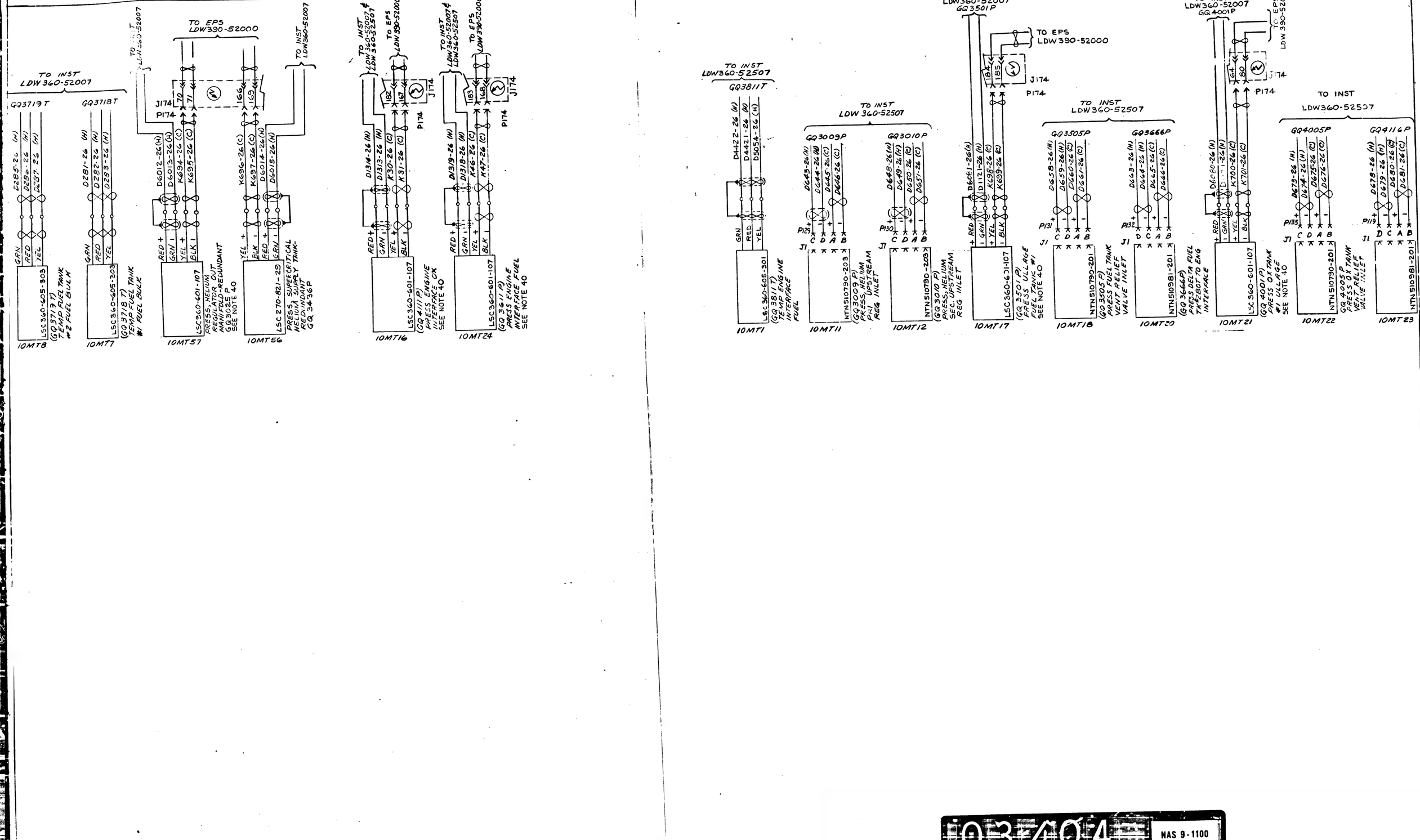


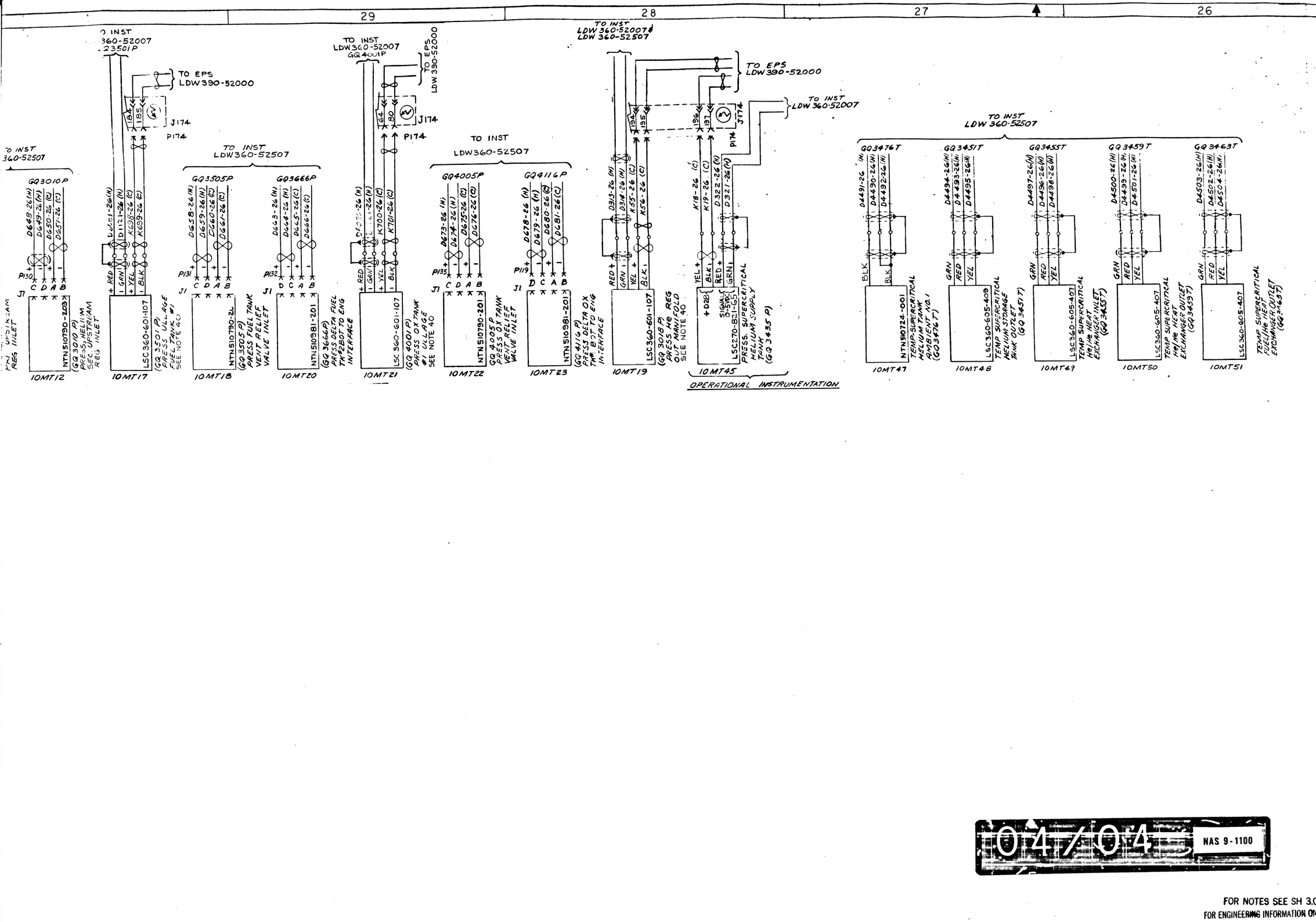
01 04

NAS 9-1100


GQ3309X
LSC 270-713-9
LATCHING HELIUM SOLENOID VALVE #1 (PRI)
OPEN COIL
GRN K198-22(A)
RED K196-22(A)
CR1
CR2
VALVE OPEN
VALVE CLOSED
GY
BRN
WHT K198-22(A)
K197-22(A) BLK
CLOSE COIL
A1
L1
LDW390-28070-11
10AG
INTERSTAGE CONN
P774
J774
K198-14(A) (NAT)
K196-14(A) (BLK)
K197-14(A) (RED)
K198 -14 (A)
K196 -14 (A) JQ9709
K197 -14 (A) JQ9710
CCS 300-52001 (PDA)
J173
P173
233
232
240
K346-26(A)
K7-26(A)
K347-26(A)
GQ3309X
GQ3310X
INTERSTAGE CONN
BHD J772
P772B
K198 -14 (A)
K199-14(A) JQ9711
K200-14(A) JQ9712
J774
P774
K198-14(A) GRN
K199-14(A) RED
K200-14(A) WHT
BLK
GQ3310X
LSC 270-713-10-1
LATCHING HELIUM SOLENOID VALVE #2 (SEC)
OPEN COIL
EMI SUPPR
VALVE OPEN
VALVE CLOSED
V10
BRN
BLK WHT
EMI SUPPR
CLOSE COIL
10A7


TO INST LDW360-52007 GQ3015P
TO EPS LDW390-52000
TO INST LDW360 507
TO INST LDW360-52007
TO INST LDW360-52007
TO EA LDW39
VEHICLE OUTER SURFACE GQ3541T
GSE
J566 A B C D
K8000T22
K47 D26(H)
K46 D26(H)
K49 D26(H)
K8000H22
BLK WHT RED
LSC450-K1337-21 TRANSDUCER TEMP START TANK
10MT83
D6087-26(H)
D6088-26(H)
K704-26(C)
K705-26(C)
132
161
J174
P174
LSC360-624-1111D
GQ 3015P
PRESS AMBIENT HELIUM PRE-PRESS BOTTLE
10MT59
GQ4311T
D4424-26 (H)
D4423-26 (H)
D5055-26(H)
GRN RED YEL
LSC360-605-301
GQ 4311 T TEMP ENGINE INTERFACE O X I D
10MT13
GQ4219T
D293-26 (H)
D294-26 (H)
D295-26 (H)
GRN RED YEL
LSC360-605-303
GQ 4219 T TEMP OX TANK #2 O X BULK
10MT10
GQ4218T
D289-26 (H)
D290-26 (H)
D291-26 (H)
GRN RED YEL
LSC360-605-303
GQ 4218 T TEMP OX TANK #1 O X BULK
10MT9
GQ3719T
D285-26 (H)
D286-26 (H)
D287-26 (H)
GRN RED YEL
LSC360-605-303
(GQ3719T) TEMP FUEL TANK #2 FUEL BULK
10MT8
GQ3718T
D281-26 (H)
D282-26 (H)
D283-26 (H)
GRN RED YEL
LSC360-605-309
(GQ3718T) TEMP FUEL TANK #1 FUEL BULK
10MT7
J174
P174
D6012-26(H)
D6013-26(H)
K694-26(C)
K695-26(C)
RED + GRN - YEL + BLK -
LSC360-601-107
PRESS HELIUM REGULATOR OUT
10MT57


TO INST LDW360-52007
GQ3719T
GQ3718T
D285-26 (H)
D286-26 (H)
D287-26 (H)
GRN
RED
YEL
LSC360-605-303
(GQ3719T) TEMP FUEL TANK #2 FUEL BULK
10MT8
D281-26 (H)
D282-26 (H)
D283-26 (H)
(GQ3718T) TEMP FUEL TANK #1 FUEL BULK
10MT7
TO INST LDW360-52007
TO EPS LDW390-52000
J174
P174
70
71
166
169
D6012-26(H)
D6013-26(H)
K694-26 (C)
K695-26 (C)
K696-26(C)
K697-26 (C)
D6014-26(H)
D6015-26(H)
RED +
GRN -
YEL +
BLK -
LSC360-601-107
PRESS, HELIUM REGULATOR OUT MANIFOLD-REDUNDANT GQ3025P SEE NOTE 40
10MT57
10MT56
LSC 270-821-29
PRESS, SUPERCRITICAL HELIUM SUPPLY TANK-REDUNDANT GQ 3436P
TO INST LDW360-52007 & LDW360-52507
TO EPS LDW390-52000
182
183
167
168
D1314-26 (H)
D1313-26 (C)
K30-26 (C)
K31-26 (C)
D1319-26 (H)
D1318-26 (C)
K46-26 (C)
K47-26 (C)
LSC360-601-107
(GQ4111P) PRESS ENGINE INTERFACE OX SEE NOTE 40
10MT16
(GQ 3611P) PRESS ENGINE INTERFACE FUEL SEE NOTE 40
10MT24
TO INST LDW360-52007
GQ3811T
D4422-26 (H)
D4421-26 (H)
D5054-26 (H)
LSC 360-605-301
(GQ 3811T) TEMP ENGINE INTERFACE FUEL
10MT1
TO INST LDW 360-52507
GQ3009P
GQ3010P
D643-26(H)
D644-26(H)
D645-26(C)
D646-26(C)
D648-26(H)
D649-26(H)
D650-26(C)
D651-26(C)
P129
P130
J1
NTN510790-203
(GQ3009P) PRESS, HELIUM PRI REG INLET
10MT11
NTN510790-205
(GQ 3010P) PRESS, HELIUM SEC. UPSTREAM REG INLET
10MT12
TO INST LDW360-52007 GQ3501P
TO EPS LDW390-52000
184
185
D6661-26(H)
D1121-26 (H)
K698-26 (C)
K699-26 (C)
LSC360-631-107
(GQ 3501P) PRESS ULLAGE FUEL TANK #1 SEE NOTE 40
10MT17
TO INST LDW360-52507
GQ3505P
GQ3666P
D658-26(H)
D659-26(H)
D660-26(C)
D661-26(C)
D663-26(H)
D664-26(H)
D665-26(C)
D666-26(C)
P131
P132
NTN510790-201
PRESS FUEL TANK VENT RELIEF VALVE INLET
10MT18
10MT20
TO INST LDW360-52007 GQ4001P
TO EPS LDW 390-52000
164
180
D6680-26 (H)
D6681-26(H)
K700-26 (C)
K701-26 (C)
LSC 360-601-107
(GQ 4001P) PRESS OX TANK #1 ULLAGE SEE NOTE 40
10MT21
(GQ 3666P) PRESS DELTA FUEL TK#2 BOT TO ENG INTERFACE
TO INST LDW360-52507
GQ4005P
GQ4116P
D673-26 (H)
D674-26 (H)
D675-26 (C)
D676-26 (C)
D678-26 (H)
D679-26 (H)
D680-26 (C)
D681-26 (C)
P133
P134
P135
NTN510790-201
(GQ 4005P) PRESS OX TANK VENT RELIEF VALVE INLET
10MT22
NTN510981-201
10MT23



04/04 NAS 9-1100

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GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE H	CODE IDENT NO. 26512	LDW270-52000	F
NEXT ASSY	SCALE NONE	SHEET 5.00	

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LDW270-52000F

FROM INST LDW360-5200

He TEMP/PRESS

115 VAC BUS COLLAR CKT BAR 4CB169

2A

K603-22(B)

AC RETURN BUS N1

LDW390-52110 CDRS CIRCUIT BREAKER PNL XI (REF)

P60 J60 J56 P56

K602-22(B) K602-22 (B) K602-22(B)

K603-22 (B) K603-22(B)

INTEGRAL LIGHTING LDW340-52000

15-115V 400CPS

10M1

LSC350-20100-02

HELIUM TEMPERATURE /PRESSURE INDICATOR

K317-22(H)

K318-22(H)

K604-22 CASE GND N4

K54-22(E) K335-22(E) K326-22(E) K42-22(E) K43-22(E) K44-22(E) K45-22(E)

DESCENT ASCENT

SUPCRIT PRESS

AMB PRESS

OFF

TEMP 1

TEMP 2

PRESS 1

PRESS 2

TEMP

PRESS

PRESS

He TEMP/PRESS MON SW 1056

P55A J55 P55B

D321-22(H) D331-22(H) D333-22(H) D323-22(H) D325-22(H) D322-22(H) D332-22(H) D334-22(H) D324-22(H) D326-22(H) D8000-22 D8000-22 D8000-22

GQ3436P GP0001P GP0002P GQ3015P

D321-26(H) D322-26(N) D323-26(H) D324-26(H) D325-26(H) D326-26(H) D6086-26(H) D6087-26(H) D331-26(H)

N4

TO INST LDW360-52007

D6080-26(H) D361-26(H) D1121-26(H) D6081-26(H) D365-26(H)

P55B J55 P55A

GP0501P GQ3501P RETURN GP1001P GQ4201P

J56 P56

D365-26(H) D1319-26(H) D1121-26(H) D361-26(H) D1314-26(H)

SEE SHEETS 5&6

RET K10-22(A)

K7-22(A)

4D28

INTEGRAL LIGHTING LDW340-52000

0-75V 400N

10M3

FUEL PRESSURE METER

LSC350-80125-13

OXIDIZER PRESSURE METER

K338-22(H) K340-22(H)

10M4

FUEL TEMPERATURE METER

LSC350-80179-13

OXIDIZER TEMPERATURE METER

K342-22(H) K344-22(H)

K7-22(A) K10-22(A)

P55A J55 P55B

D365-22(H) D6081-22(H) D1121-22(H) D361-22(H) D6080-22(H) D8000-22 D357-22(H) D355-22(H) D353-22(H) D1123-22(H) D351-22(H) D349-22(H) D347-22(H)

GP0718T GQ3718T GQ3719T RET GP1218T GQ4218T GQ4219T

ASC DES 1 DES 2

SEE INST LDW360-52007

MAIN PROPULSION PANEL I - LDW390-52101

PROPELLANT TEMP/PRESS MON SW 1051

01703 NAS 9-1100

FROM INST LDW360-52007

6P GP0001P GP0002P GQ3015P GP0201T GP0202T

D323-26 (H)
D324-26 (H)
D325-26 (H)
D326-26 (H)
D6086-26 (H)
D6087-26 (H)
D331-26 (H)
D332-26 (H)
D333-26 (H)
D334-26 (H)

10MT52

LSC 270-00009-32
FUEL QUANTITY
SENSING UNIT
DES-1-F

TEST C M D	(H)	E3318	NAT	1
SIGNAL RETURN	(H)	E3319	BRN	2
FUEL QUANTITY	(H)	E3320	VIO	3
FUEL LOW LEVEL	(H)	E3321	GRN	4
+D20	(H)	E3322	RED	5
RETURN	(H)	E3323	BLK	6

K671-22(H)

10MT53

LSC 270-00009-32
FUEL QUANTITY
SENSING UNIT
DES-2-F

TEST C M D	K615-22(H)	E3324	NAT	1
SIGNAL RETURN	K616-22(H)	E3325	BRN	2
FUEL QTY	K617-22(H)	E3326	VIO	3
FUEL LOW LEVEL	K618-22(H)	E3327	GRN	4
+D20	K619-22(H)	E3328	RED	5
RETURN	K620-22(H)	E3329	BLK	6

K672-22(H)

10A3

DES-1-F
DES-2-F

D4971-22(E)
D4972-22(E)
PROPELLANT LIQUID LOW

SPARES
OXIDIZER QUANTITY
10-M-5A
FUEL QUANTITY
10-M-5B
FROM INTEGRAL LIGHTING 15-115VAC 400~
LSC 350-00401-03-2

GQ3605Q FUEL QTY SELECTED
FUEL CLOCK
GROUND
GQ4105Q OXIDIZER QTY SELECTED
OXIDIZER CLOCK

P55A BHD CONN J55 P55B J173 P173

K621-22(F)	PP	K621-22(F)	214	202	BLU
K622-22(F)	NN	K622-22(F)			BLK
K623-22(F)	JJ	K623-22(F)	203		BRN
K624-22(F)	KK	K624-22(F)	204		GRN
K625-22(F)	LL	K625-22(F)	205		ORN

B
N4

PROPELLANT QUANTITY GAGING CONTROL UNIT LSC-270-00009-42

1058 PROPELLANT QUANTITY MONITOR SELECTOR SWITCH
DES-1
DES-2
OFF

P55A BHD CONN J55 P55B INTERSTAGE CONN P75 J75

K626-22(E)	MM	K626-22(E)	1	6	VIO
K627-22(E)	CC	K627-22(E)	2	5	NAT
K628-22(C)	DD	K628-22(C)	3	3	RED
K608-22(C)	R	K608-22(C)	238	4	BLK

J173 P173

+D28 PQG54CB32 2A
RET -D
SYS ENGR CKT BKR PANEL XVI LDW 390-52114 (REF)

P38 J38 J56 P56
K607-22(C) J K607-22(C) 177 K607-22(C) +D28
K608-22(C) K K608-22(C) 178 K608-22(C) RET

MAIN PROPULSION PANEL #1 LDW 390-52101

P155 J155
B K607-22(C)
H K628-22(C)

K703-22(C) K702-22(C)
J733
108 111 120 107 112 115 116 119
TO P733 SEE CCS LDW300-52001

10MT54

LSC-270-00009-31
OXIDIZER QUANTITY
SENSING UNIT
DES-1-OX

TEST CMD	K629-22(H)	E3330	NAT	1
SIGNAL RETURN	K675-22(H)	E3331	BRN	2
OXIDIZER QTY	K631-22(H)	E3332	VIO	3
OXIDIZER LOW LEVEL	K632-22(H)	E3333	GRN	4
+D20	K633-22(H)	E3334	RED	5
RETURN	K634-22(H)	E3335	BLK	6

K673-22(H)

10MT55

LSC-270-00009-31
OXIDIZER QUANTITY
SENSING UNIT
DES-2-OX

TEST CMD	K635-22(H)	E3336	NAT	1
SIGNAL RETURN	K636-22(H)	E3337	BRN	2
OXIDIZER QTY	K637-22(H)	E3338	VIO	3
OXIDIZER LOW LEVEL	K638-22(H)	E3339	GRN	4
+D20	K639-22(H)	E3340	RED	5
RETURN	K640-22(H)	E3341	BLK	6

K674-22(H)

DES-1-OX
DES-2-OX

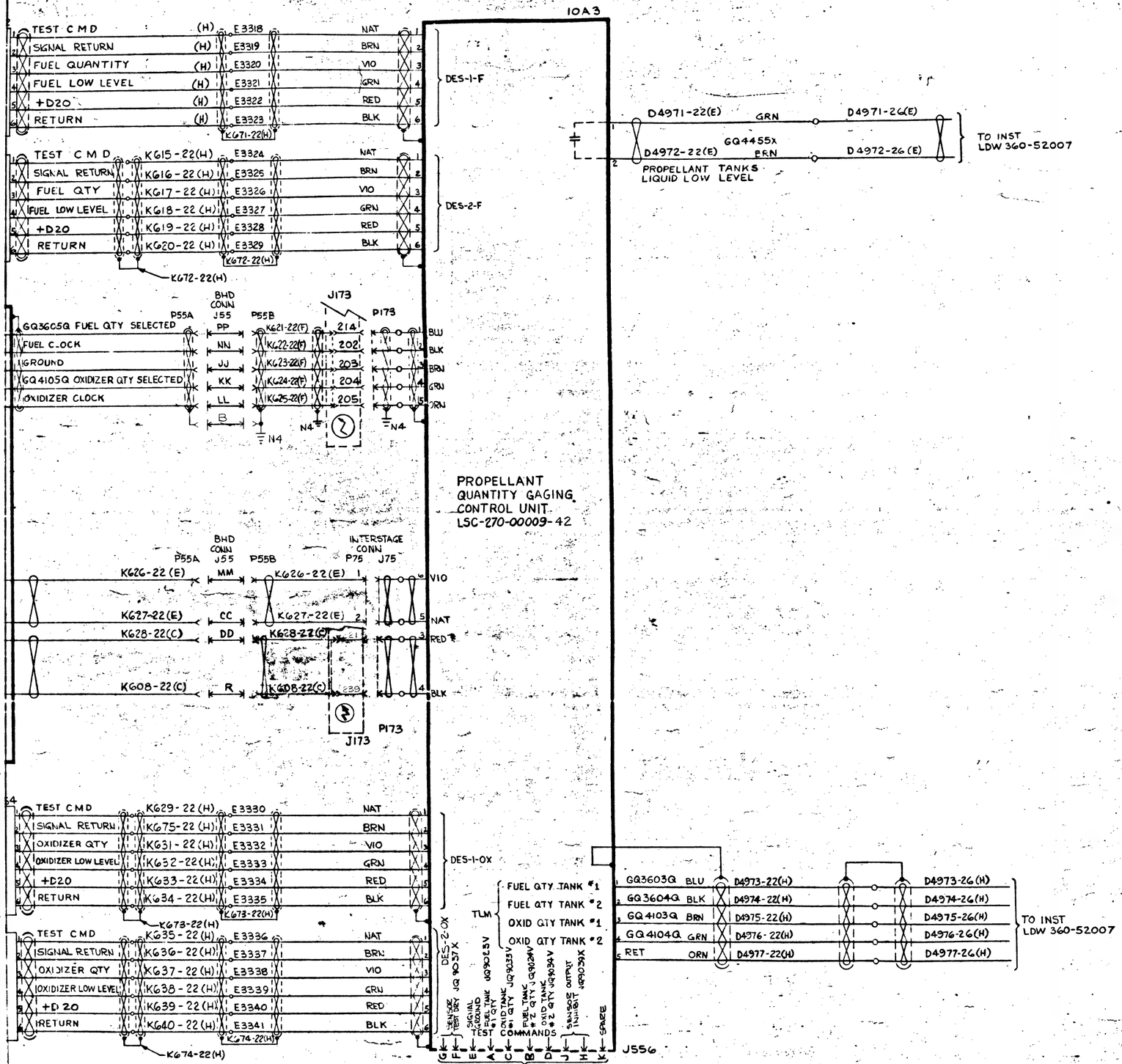
TLM
FUEL QTY TANK #1
FUEL QTY TANK #2
OXID QTY TANK #1
OXID QTY TANK #2

GQ3603Q	BLU	1
GQ3604Q	BLK	2
GQ4103Q	BRN	3
GQ4104Q	GRN	4
RET	ORN	5

J556
G TEMP SNSR RTN
F TEMP SNSR DRY
E SIGNAL GROUND
A FUEL TANK #1 QTY
C OXID TANK #1 QTY
B FUEL TANK #2 QTY
D OXID TANK #2 QTY
J SENSOR OUTPUT
H SENSOR OUTPUT
K SPARE
TEST COMMANDS
TO GSE

E INST
360-52007

02703 NAS 9-1100



10374137 NAS 9-1100

FOR NOTES SEE SH 3.00

FOR ENGRG INFO ONLY

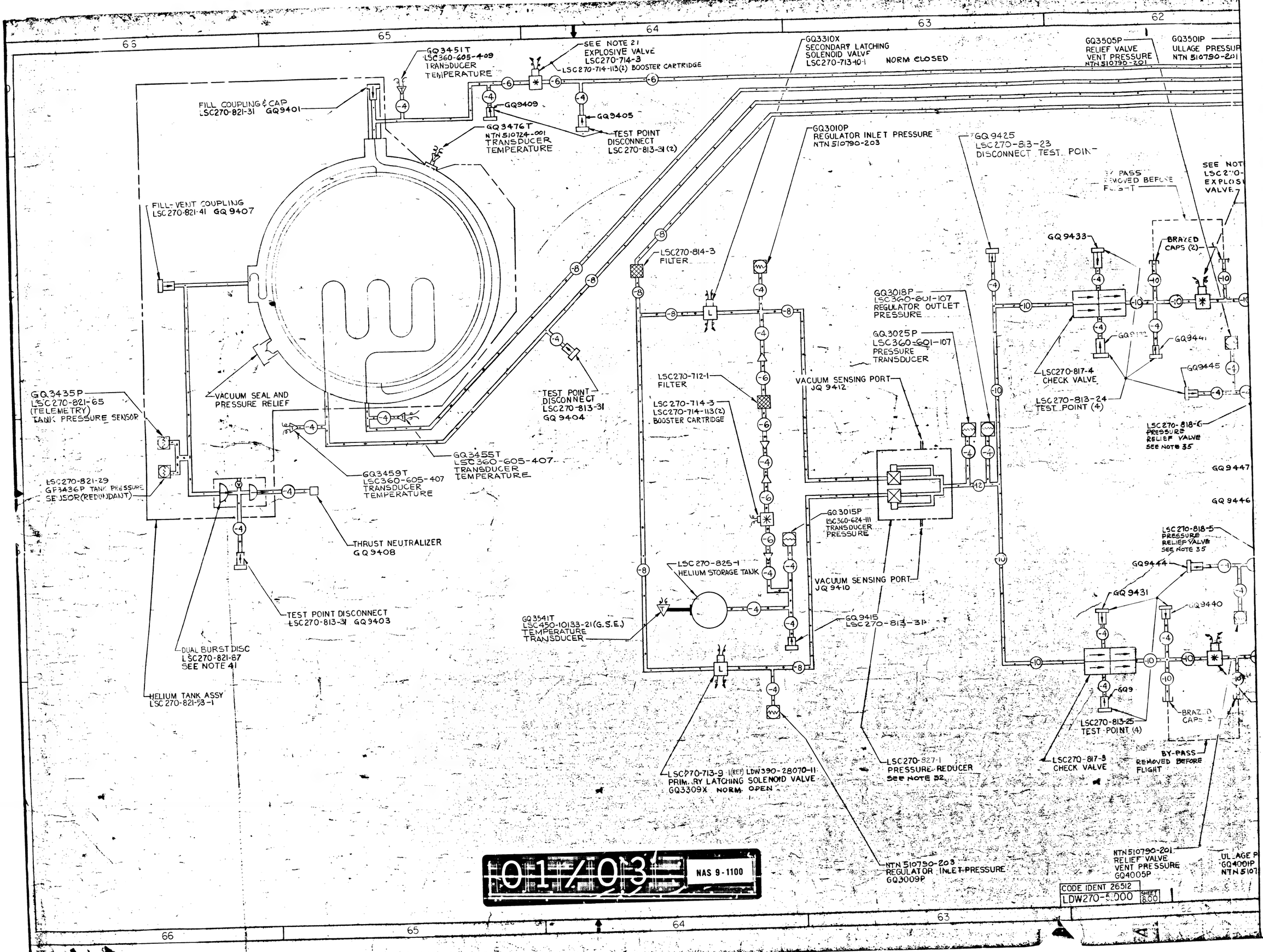
GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE L.I. N.Y.

SIZE	CODE IDENT NO	DWG NO	
J	26512	LDW270-52000	F

SCALE NONE SHEET 7.00

THIS IS AN ORIGINAL DRAWING

LDW270-52000F


66
65
64
63
62
GQ3451T LSC360-605-409 TRANSDUCER TEMPERATURE
SEE NOTE 21 EXPLOSIVE VALVE LSC270-714-3
LSC270-714-113(2) BOOSTER CARTRIDGE
GQ3310X SECONDARY LATCHING SOLENOID VALVE LSC270-713-10-1 NORM CLOSED
GQ3505P RELIEF VALVE VENT PRESSURE NTN 510790-201
GQ3501P ULLAGE PRESSUR NTN 510790-201
FILL COUPLING & CAP LSC270-821-31 GQ9401
GQ9409
GQ9405
GQ3476T NTN 510724-001 TRANSDUCER TEMPERATURE
TEST POINT DISCONNECT LSC270-813-31 (2)
GQ3010P REGULATOR INLET PRESSURE NTN 510790-203
GQ9425 LSC270-813-23 DISCONNECT TEST POINT
BY PASS REMOVED BEFORE FLIGHT
SEE NOT LSC270- EXPLOSI VALVE 7
FILL-VENT COUPLING LSC270-821-41 GQ 9407
LSC270-814-3 FILTER
GQ9433
BRAZED CAPS (2)
GQ3018P LSC360-601-107 REGULATOR OUTLET PRESSURE
GQ3025P LSC360-601-107 PRESSURE TRANSDUCER
GQ9441
GQ9445
LSC270-817-4 CHECK VALVE
LSC270-813-24 TEST POINT (4)
LSC270-818-6 PRESSURE RELIEF VALVE SEE NOTE 35
VACUUM SEAL AND PRESSURE RELIEF
TEST POINT DISCONNECT LSC270-813-31 GQ 9404
GQ3455T LSC360-605-407 TRANSDUCER TEMPERATURE
GQ3435P LSC270-821-65 (TELEMETRY) TANK PRESSURE SENSOR
GQ3459T LSC360-605-407 TRANSDUCER TEMPERATURE
LSC270-712-1 FILTER
VACUUM SENSING PORT JQ 9412
LSC270-714-3 LSC270-714-113(2) BOOSTER CARTRIDGE
GQ9447
GQ9446
LSC270-821-29 GP3436P TANK PRESSURE SENSOR (REDUNDANT)
GQ3015P LSC360-624-111 TRANSDUCER PRESSURE
LSC270-818-5 PRESSURE RELIEF VALVE SEE NOTE 35
THRUST NEUTRALIZER GQ 9408
LSC270-825-1 HELIUM STORAGE TANK
GQ9444
GQ9431
GQ9440
VACUUM SENSING PORT JQ 9410
TEST POINT DISCONNECT LSC270-813-31 GQ 9403
GQ3541T LSC450-10133-21 (G.S.E.) TEMPERATURE TRANSDUCER
GQ9415 LSC270-813-31
DUAL BURST DISC LSC270-821-87 SEE NOTE 41
HELIUM TANK ASSY LSC270-821-53-1
LSC270-813-25 TEST POINT (4)
BRAZED CAPS (2)
LSC270-713-9 (REF) LDW390-28070-11 PRIMARY LATCHING SOLENOID VALVE GQ3309X NORM OPEN
LSC270-927-1 PRESSURE REDUCER SEE NOTE 32
LSC270-817-9 CHECK VALVE
BY-PASS REMOVED BEFORE FLIGHT
NTN 510790-203 REGULATOR INLET PRESSURE GQ3009P
NTN 510790-201 RELIEF VALVE VENT PRESSURE GQ4005P
ULLAGE P GQ4001P NTN 5107
01 / 03
NAS 9-1100
CODE IDENT 26512
LDW270-5.000
SHEET 8.00

GQ3505P RELIEF VALVE VENT PRESSURE NTN 510790-201

GQ3501P ULLAGE PRESSURE NTN 510790-201

GQ3603Q LSC270-00009-32 QTY GAGING SYS

GQ3718T BULK TEMPERATURE LSC360-605-303

GQ3604Q LSC270-00009-32 QTY GAGING SYS

GQ3719T BULK TEMPERATURE LSC360-605-303

GQ3463T LSC360-605-407 TRANSDUCER TEMPERATURE

GQ3611P ENGINE INTERFACE FUEL PRESS LSC360-601-107

GQ6806H THROTTLE VALVE ACTUATOR

VARIABLE INJECTOR

LSC270-813-26 GQ9464 FUEL HIGH POINT BLEED FEED SYSTEM

FUEL LOW POINT DRAIN ENGINE LSC270-813-26 GQ 9477

GQ9457 LSC270-813-26 LOW POINT DRAIN

LSC270-804-1 GQ9443 FUEL FILL VENT, PURGE PORT & DRAIN

SEE NOTE 21 LSC270-819-11 EXPLOSIVE VALVE

LSC270-714-113(2) BOOSTER CARTRIDGE

BRAZED CAPS (2)

LSC280-4-71 FUEL TANK

#2 FUEL (-Y)

LSC270-820-11 HEAT EXCHGR

TRIM ORIFICE

LSC270-807-7 FUEL FILTER

GQ3811T LSC360-605-301 ENGINE INTERFACE FUEL TEMPERATURE

LSC270-00600-20 DESCENT ENGINE

LSC270-826-5-1 BELLOWS

GQ3605Q PQGS FUEL TK SELECTED

LSC270-826-5-1 BELLOWS

FUEL TEST POINT G.S.E. CONN. LSC270-813-26

GQ 9453 LDW270-51459-1 LSC270-802-1 (REF) FUEL FILL & DRAIN COUPLING

DASHPOT

GQ9462

GQ9451

JQ9482

.020 RESTRICTOR

ENG.NE INTERFACE

JQ9480 5/16 PORT

#1 FUEL (+Y)

GQ3666P NTN510981-201 DIFFERENTIAL PRESSURE

4 MECH FEMALE PORTS (2) F.R G.S.E. & NOTE NO.36

4 BRAZED CAPS (2) INSTALL BEFORE FLIGHT.

SHUTOFF VALVE PREVALVE

GQ4311T LSC360-605-301 ENGINE INTERFACE OXIDIZER TEMPERATURE

LSC280-4-67 FUEL TANK

DASHPOT

GQ9450

LSC280-4-73 OXIDIZER TANK

4 MECH FEMALE PORT

.020 RESTRICTOR

LSC270-8087 OXIDIZER FILTER

GQ9461 LSC270-813-27 OXIDIZER TEST POINT & GSE CONN

LSC270-813-26 GQ4115 TEST SHUT OFF VALVE PRE VALVE

4 PORT (REF)

GQ4455X PROPELLANT TANKS LIQUID LEVEL LOW LSC270-00009-42 (REF)

4 BRAZED CAPS INSTALL BEFORE FLIGHT

GQ4116P, NTN510981-201 DIFFERENTIAL PRESS

#1 OXIDIZER (-Z)

LSC270-826-7 BELLOWS

TRIM ORIFICE

SOLENOID VALVE "B"

LSC270-805-1 GQ9442 OXIDIZER FILL VENT, PURGE PORT & DRAIN

LSC270-826-7 BELLOWS

GQ4105Q PQGS OX TK SELECTED

SOLENOID VALVE "A"

#2 OXIDIZER (-Z)

GQ9452 LDW270-51459-3 LSC270-803-1 (REF) OXIDIZER FILL & DRAIN COUPLING

LSC270-813-27 GQ9476 OXIDIZER LOW POINT DRAIN ENGINE,

LSC270-813-27 GQ9463 OXIDIZER HIGH POINT BLEED, FEED SYSTEM,

PROPELLANT SHUT OFF VALVE "A" WITH V.P.I. GQ6306X GQ6307X

PROPELLANT SHUT O VALVE "B" WITH V.P.I. GQ6308X GQ6309X

GQ4111P ENGINE INTERFACE OXIDIZER PRESS LSC360-601-107

LSC270-813-27 GQ9456 LOW POINT DRAIN (OX)

GQ9433

GQ9432

GQ3441

GQ9445

GQ9447

THRUST NEUTRALIZER

GQ 9446

LSC270-818-5 PRESSURE RELIEF VALVE SEE NOTE 35

GQ9444

GQ 9431

GQ9440

LSC270-714-113(2) BOOSTER CARTRIDGE

LSC270-819-11 EXPLOSIVE VALVE SEE NOTE 21

BRAZED CAPS (2)

BY-PASS REMOVED BEFORE FLIGHT

TEST POINT (4)

GQ9

LSC280-4-69 OXIDIZER TANK

NTN510790-201 RELIEF VALVE VENT PRESSURE GQ4005P

ULLAGE PRESSURE GQ4001P NTN510790-201

QTY GAGING SYS LSC270-00009-31 GQ4103Q

BULK TEMPERATURE LSC360-605-303 GQ4218T

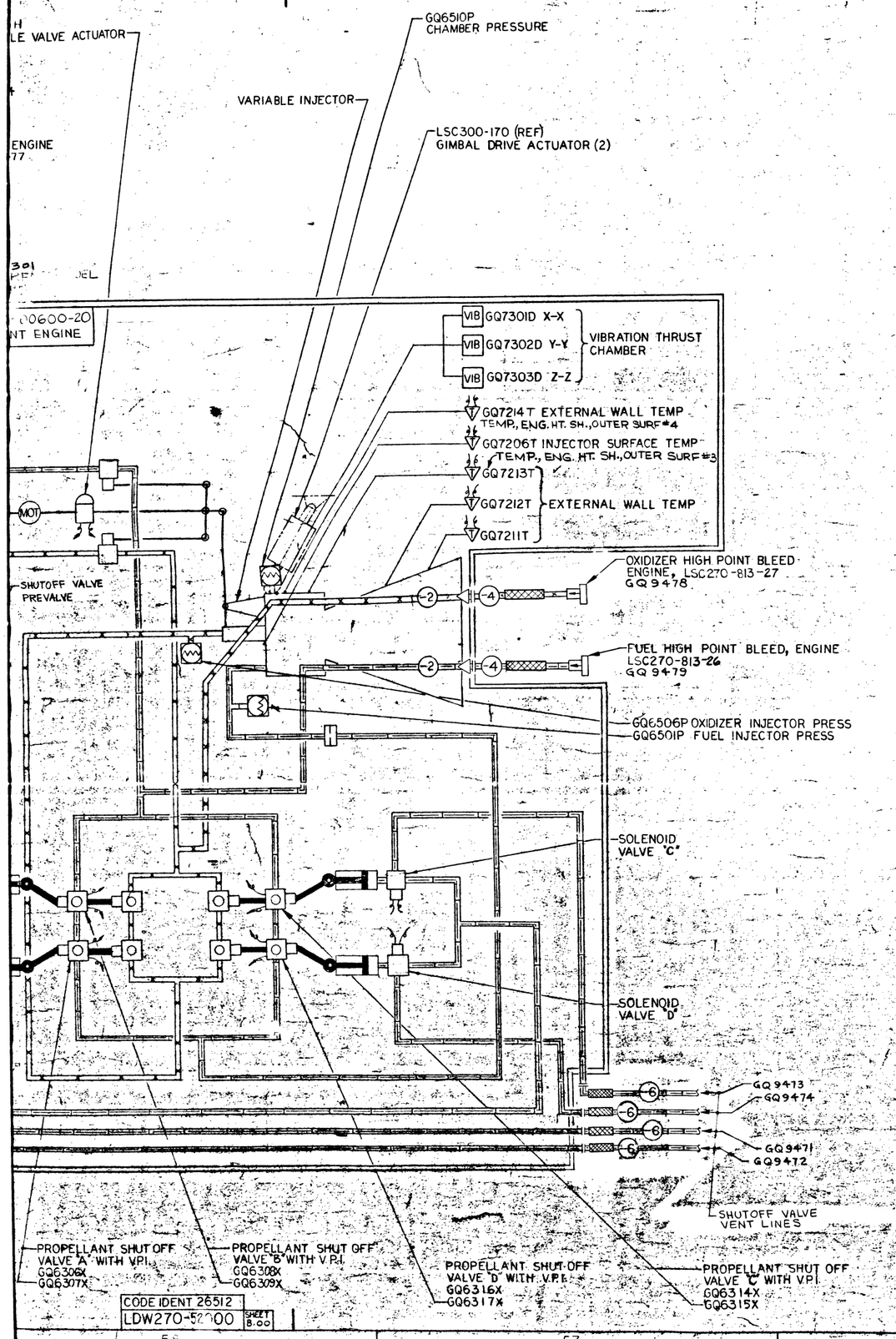
QTY GAGING SYS LSC270-00009-31 GQ4104Q

BULK TEMPERATURE LSC360-605-303 GQ4219T

CODE IDENT 26512 LDW270-52000 SHEET 8.00

02703

NAS 9-1100



CODE IDENT 26512
LDW270-52000 SHEET 8.00

DESCENT FLUID LINES-BASIC
FOR ELECTRICAL LINES SEE SH 6.00 & 7.00
SUPERCRITICAL PRESSURIZATION

FOR NOTES SEE SH 3.00
FOR ENGINEERING INFO. ONLY

103/103 NAS 9-1100

LEM	GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L.I., N.Y.		
	SIZE J	CODE IDENT NO. 26512	LDW270-52000
MODEL OR END ITEM	SCALE: NONE		SHEET 8.00

THIS IS AN ORIGINAL DRAWING

LDW270-52000F

78 77 76 75

GP0202T
LSC360-605-405
TEMPERATURE
TRANSDUCER

LSC270-813-31
HELIUM FILL &
DISCONNECT
GP9401

GP0002P
LSC360-601-101
PRESSURE
TRANSDUCER

SEE NOTE 21
LSC270-714-3
EXPLOSIVE
VALVE

LSC270-712-1
FILTER

GP 0320X
LSC270-713-19(REF)
SOLENOID
LATCHING VALVE
10A5LI NORM. OPEN
SECONDARY
LDW390-51070-3

NTN510790-202
PRESSURE
TRANSDUCER
GP0020P

LSC270-721-7
CLASS II
PRESSURE
REDUCER
SEE NOTE 32

LSC270-817-4
CLASS 2
CHECK VALVE

GP0018P
LSC360-601-107
PRESSURE
TRANSDUCER

SEE NOTE 21
LSC270-8
EXPLOSIVE
LSC270-7
BOOSTER
LDW270MIC

LSC270-714-113(2)
BOOSTER CARTRIDGE

HELIUM NO. 2

GP9425
LSC270-813-23
HELIUM TEST POINT
DISCONNECT

VACUUM REFERENCE
PORTS (ALSO USED
FOR TEST & CHECKOUT)

JP9412

JP9413

GP9433

GP2911T
LSC450-10133-23 (GSE)
TEMPERATURE
TRANSDUCER

LSC270-711-1
HELIUM
STORAGE TANK
SEE NOTE 30 & 31

GP9432

LSC270-813-24
HELIUM TEST POINT
DISCONNECT

HELIUM NO. 1

GP2910T
LSC450-10133-23(GSE)
TEMPERATURE
TRANSDUCER

GP9406
LSC270-813-31
HELIUM TEST POINT
DISCONNECT

GP9431

GP9430

JP9410

JP9411

VACUUM REFERENCE
PORTS (ALSO USED
FOR TEST & CHECKOUT)

SEE NOTE 21
LSC270-819-3
EXPLOSIVE VALVE (2)
LSC270-714-113(2)
BOOSTER CARTRIDGE
LDW270MIC027-1 PLUG

LSC360-605-405
TEMPERATURE
TRANSDUCER
GP0201T

LSC270-813-31
HELIUM FILL &
DISCONNECT
GP9402

LSC360-601-101
PRESSURE
TRANSDUCER
GP0001P

LSC270-714-3
EXPLOSIVE
VALVE
SEE NOTE 21

LSC270-712-1
FILTER

LDW390-51070-3
LSC270-713-19(REF)
SOLENOID
LATCHING VALVE
10A4LI NORM. OPEN
PRIMARY
GP0318X

NTN510790-202
PRESSURE
TRANSDUCER
GP0019P

LSC270-721-5
CLASS I
PRESSURE
REDUCER
SEE NOTE 32

LSC360-601-107
PRESSURE
TRANSDUCER
GP 0025P

LSC270-817-3
CLASS I
CHECK VALVE

NAS 9-1100

CODE IDENT 26512
LDW270-52000 SHEET 9.00

78 77 76 75

LSC270-817-4
CLASS 2
CHECK VALVE

GP0C18P
LSC360-601-1
PRESSURE
TRANSDUCER

SEE NOTE 21
LSC270-819-9
EXPLOSIVE VALVE (2)
LSC270-714-113(2)
BOOSTER CARTRIDGE
LDW270M10027- PLUG (2)

LSC270-717-6
TYPE 2
PRESSURE
RELIEF VALVE
SEE NOTE 35

LSC270-804-2
FUEL FILL-VENT
COUPLING
GP9443

GP 0501P
PRESSURE
TRANSDUCER
LSC360-601-107

GP 0908X
LSC270-801-13
LOW LEVEL
SENSOR

~~GP7715T~~ DELETED
LSC360-605-301
TEMPERATURE
TRANSDUCER

LSC270-701-1
FUEL FILL
COUPLING
(ALSO USED FOR
OVERBOARD DRAIN)
GP9453

GP1802X GP1812X
ISOLATION
VALVE CONTROL

ISOLATION
VALVE "B"

GP9472
SEE NOTE NO.34

GP9472
SEE NOTE NO.34

LSC270-00500-10-2
ASCENT ENGINE
MODIFIED BY
LDW270-51010-7

GP1501P LSC360-624

BY-PASS
REMOVED
BEFORE FLIGHT

BRAZED
CAPS (2)

GP9433

GP9441

GP9432

LSC270-813-24
HELIUM TEST POINT
DISCONNECT

GP9445

GP0504P
NTN510790-201
PRESSURE
TRANSDUCER

GP9447

TO REACTION
CONTROL SUB-
SYSTEM SEE DWG.
LDW310-52000

LSC270-813-26
FUEL TEST POINT
DISCONNECT GP9459

R.C.S.
(REF)

BELLOWS
LSC270-826-13,

LDW270-52456-1
LSC270-826-9 (REF)
BELLOWS

JP9482

⅜ PORT

ENGINE
FILTER

GP0616P
DIFFERENTIAL
PRESSURE
TRANSDUCER
NTN510981-
201

GP9451

TRIM
ORIFICE

GP9462

¼ MECH. FEMALE PORT (2)
FOR G.S.E. & SEE
NOTE NO. 36

GP7551X

GP7552X

GP7015T
NTN510780-001
TEMPERATURE
TRANSDUCER

LSC 280-7-57
FUEL STORAGE TANK

GP0718T
LSC360-605-303
TEMPERATURE
TRANSDUCER

GP9462
LSC-270-813-26
FUEL TEST
POINT & G.S.E.
CONN.

LSC270-00822-7-2

LSC 270-813-26
FUEL TEST POINT
GP9455

LSC 270-813-26FUEL
HIGH POINT BLEED
GP9464

ENGINE
INTERFACE

BIPROPELL
VALVE CON

CHAMBER PRESS

OVERBOARD DRAINS
(ENGINE VALVE SEAL) (2)

GP9476

GP9477

GP1218T
LSC360-605-303
TEMPERATURE
TRANSDUCER

GP1004P
NTN510790-201
PRESSURE
TRANSDUCER

GP9446

GP9444

GP9431

LSC270-813-25
HELIUM TEST POINT
DISCONNECT

LSC 280-7-58
OXIDIZER STORAGE TANK

GP9450

≠MECH. FEMALE PORT (2)
FOR G.S.E. & SEE
NOTE NO.36

≠BRAZED CAPS (2)
INSTALLED
BEFORE FLIGHT

GP9461
TRIM
ORIFICE
DASHPOT

.020
RESTRICTOR

LSC 270-813-27 OX
HIGH POINT BLEED
GP9463

GP7025T
NTN510780-001
TEMPERATURE
TRANSDUCER

JP9480

⅜ PORT

ENGINE
FILTER

ISOLATION
VALVE "A"

BELLOWS
LSC270-826-11

R.C.S(REF)

LDW270-52456-3
LSC270-826-11 (REF)
BELLOWS

GP9440

BRAZED CAPS(2)

GP9430

SEE NOTE 21
LSC270-819-9
EXPLOSIVE VALVE (2)
LSC270-714-113(2)
BOOSTER CARTRIDGE
LDW270M10027-1 PLUG(2)

BY-PASS
REMOVED BEFORE
FLIGHT

TO REACTION
CONTROL SUB-
SYSTEM SEE DWG.
LDW 310-52000

LSC270-813-27
OX TEST POINT
DISCONNECT
GP 9458

FOR REFERENCE ONLY

C360-601-107
PRESSURE
TRANSDUCER
GP 0C25P

LSC 270-817-3
CLASS 1
CHECK VALVE

LSC 270-805-2
OXIDIZER
FILL-VENT
COUPLING
GP9442

LSC270-717-7
TYPE 1
PRESSURE
RELIEF VALVE
SEE NOTE 35

LSC360-601-107
PRESSURE
TRANSDUCER
GP1001P

LSC 270-801-14
LOW LEVEL
SENSOR
GP1408X

LSC360-605-301
TEMPERATURE
TRANSDUCER
~~GP7625T~~ DELETED
BY MCR601B

LSC270-702-1
OXIDIZER FILL
COUPLING
(ALSO USED FOR
OVERBOARD DRAIN)
GP 9452

NTN 510981-201
DIFFERENTIAL
PRESSURE
TRANSDUCER
GP 1116P

GP1503P LSC360-624

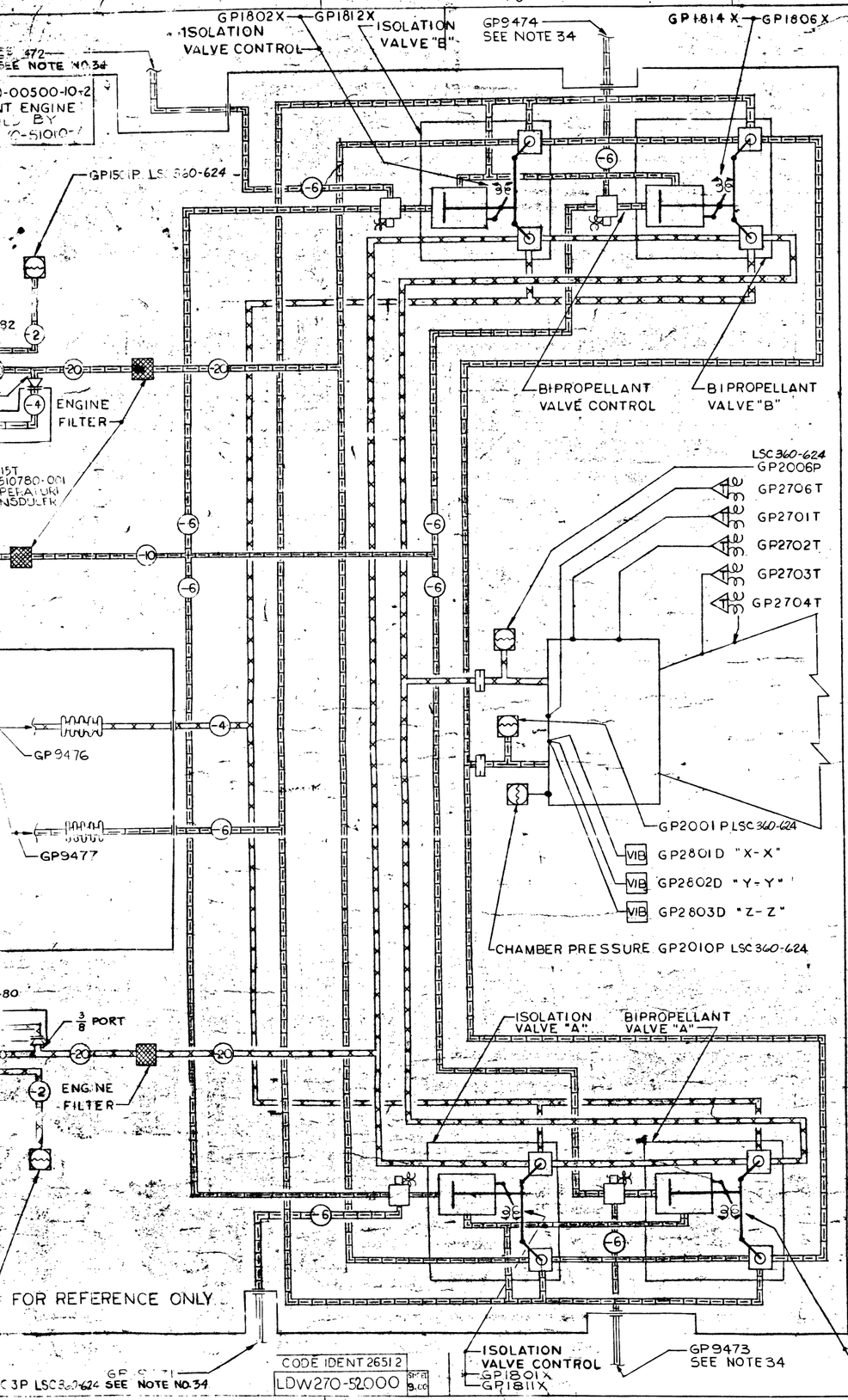
GP 9471
SEE NOTE NO.34

ISOLATION
VALVE CONTRO
GP1801X
GP1811X

CODE IDENT 26512
LDW270-52000 REV

CODE IDENT 26512
LDW270-52000 SHEET 9 REV

NAS 9-1100



CODE IDENT 26512 | LDW270-52000 | SHEET 3.00

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG

- PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.
- FILLET AND INSIDE CORNER RADII TOLERANCES .0160 TO .0620 ± .010 .0630 TO .2500 ± .015 OVER .2500 ± .030
- DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.
- EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
- DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
- MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
- DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
- HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
- ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
- 125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
- 250 FOR ALL DRILLED HOLES
- REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
- INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
- SYMBOL √ DENOTES SURFACE TO BE MACHINED
- UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
- LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
- TOLERANCE ON LOFTED DELINEATIONS IS

DWG SIZE 34 X

03 / 03 NAS 9-1100

ASCENT FLUID LINES - BASIC, FOR ELECTRICAL SEE SHTS 5 & 7 (BELL ENGINE)

FOR NOTES SEE SH 3.00

FOR ENGINEERING INFORMATION ONLY

FOR ENGRG. INFO

LEM	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK		
	SIZE J	CODE IDENT NO. 26512	LDW270-52000F
MODEL OR END ITEM	SCALE NONE		SHEET 3.00

THIS IS AN ORIGINAL DRAWING

LDW270-52000E

SOLENOID VALVE & DIODE ASSEMBLY (TYP)

A PRPLNT | A ISOL | B PRPLNT | B ISOL

ORN BLU | RED GRN | WHT BRN | YEL BLK

N4

K73-18(A) K72-18(A) K73-20(A) K72-20(A)

FROM CES LDW300-52000

SEE SHEET 5.00

K77-18(A) K76-18(A) K77-20(A) K76-20(A)

501 502

FROM CES LDW300-52000

SEE SHEET 5.00

PRESSURE XDUCERS

FUEL ISOLATION VALVE INLET 0-250 PSIA GP1501P

THRUST CHAMBER PRESSURE 0-150 PSIA GP2010P

OX ISOLATION VALVE INLET 0-250 PSIA GP1503P

IOTM 63 | IOTM 62 | IOTM 64

SENSOR

CONDITIONER

+ − + −

YEL BLK RED GRN

K38-26(C) K39-26(C) D63-26(H) D64-26(H) K41-26(C) K40-26(C) D59-26(H) D58-26(H) K37-26(C) K36-26(C) D68-26(H) D69-26(H)

TO E.P.S. LDW390-52000

TO INSTRUMENTATION LDW360-52007 LDW360-52507

VALVE POSITION INDICATING SWITCHES

OPEN POSITION | CLOSED POSITION

ISOLATION GP1801X/GP1802X | PROPELLANT GP1805X/GP1806X | ISOLATION GP1811X/GP1812X | PROPELLANT GP1813X/GP1814X

A B

NOT OPEN POLE OPEN | CLOSED POLE NOT CLOSED

RED BLK WHT

TL3101A22 TL3201A22 TL3103A22 TL3203A22 TL6101A22 TL6201A22 TL6103A22 TL6203A22

D416-26(E) D414-26(E) D719-26(E) D717-26(E)

GP2997U GP2998U

TO INSTRUMENTATION LDW360-52007

SURFACE TEMP XDUCERS

TEMP THRUST CHAMBER EXTERNAL WALL

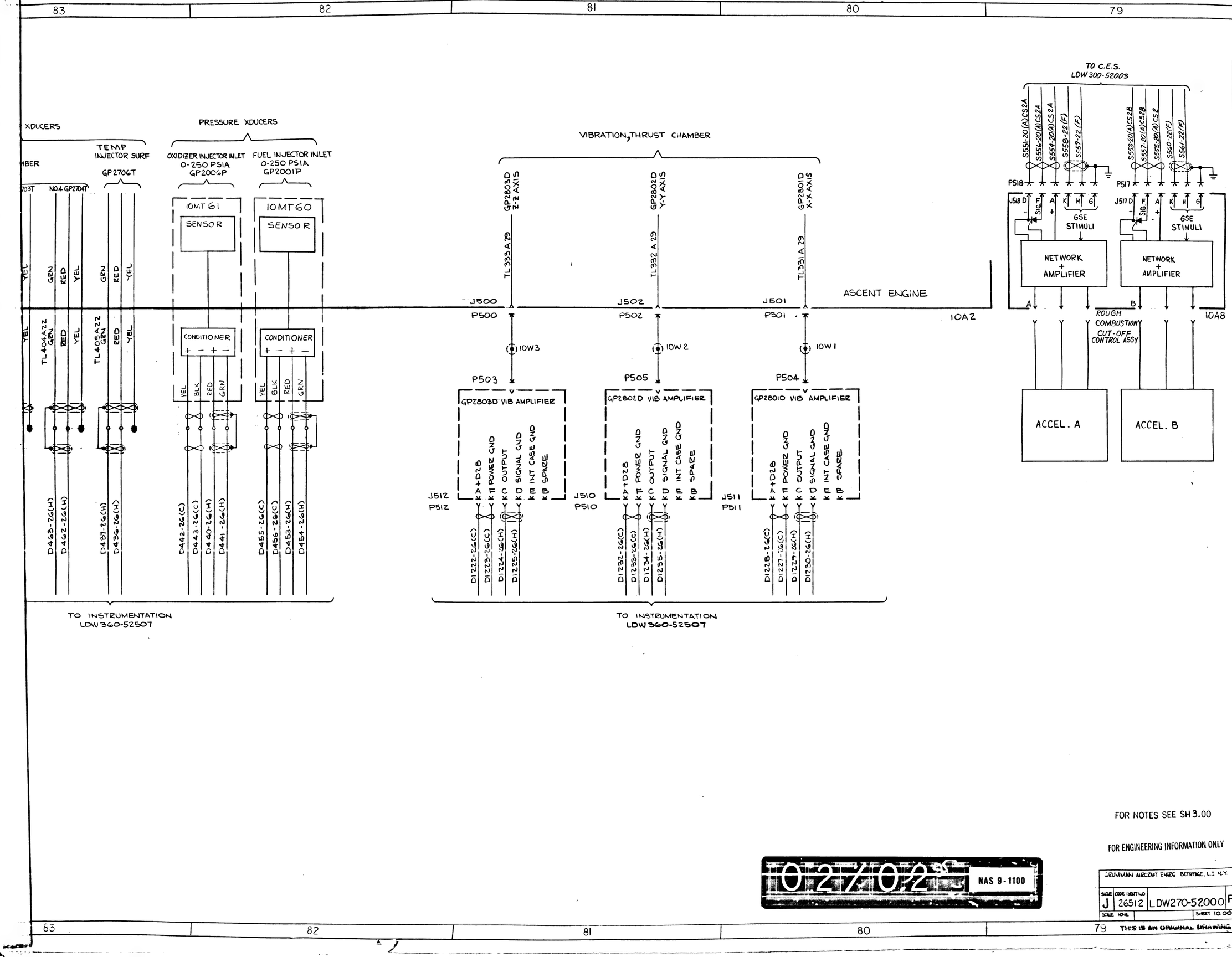
NO.1 GP2701T | NO.2 GP2702T | NO.3 GP2703T | NO.4 GP2704T

GRN RED YEL

TL401A22 TL402A22 TL403A22 TL404A22

D446-26(H) D445-26(H) D457-26(H) D458-26(H) D450-26(H) D449-26(H) D463-26(H) D462-26(H)

TO


XDUCERS
TEMP
INJECTOR SURF
GP2706T
PRESSURE XDUCERS
OXIDIZER INJECTOR INLET
0-250 PSIA
GP2006P
FUEL INJECTOR INLET
0-250 PSIA
GP2001P
10MT61
SENSOR
10MT60
SENSOR
CONDITIONER
VIBRATION, THRUST CHAMBER
GP2803D
Z-Z AXIS
GP2802D
Y-Y AXIS
GP2801D
X-X AXIS
TL333A29
TL332A29
TL331A29
ASCENT ENGINE
10A2
J500
P500
J502
P502
J501
P501
10W3
10W2
10W1
P503
P505
P504
GP2803D VIB AMPLIFIER
GP2802D VIB AMPLIFIER
GP2801D VIB AMPLIFIER
KA +D28
KB POWER GND
KC OUTPUT
KD SIGNAL GND
KE INT CASE GND
KB SPARE
J512
P512
J510
P510
J511
P511
TL404A22
TL405A22
D463-26(H)
D462-26(H)
D437-26(H)
D436-26(H)
D442-26(C)
D443-26(C)
D440-26(H)
D441-26(H)
D455-26(C)
D456-26(C)
D453-26(H)
D454-26(H)
D1222-26(C)
D1223-26(C)
D1224-26(H)
D1225-26(H)
D1232-26(C)
D1233-26(C)
D1234-26(H)
D1235-26(H)
D1228-26(C)
D1227-26(C)
D1229-26(H)
D1230-26(H)
TO INSTRUMENTATION
LDW360-52507
TO INSTRUMENTATION
LDW360-52507
TO C.E.S.
LDW300-52003
S551-20(A)CS2A
S556-20(A)CS2A
S554-20(A)CS2A
S558-22(F)
S559-22(F)
S553-20(A)CS2B
S557-20(A)CS2B
S555-20(A)CS2
S560-22(F)
S561-22(F)
P518
P517
J518 D
J517 D
SIG. RTN
GSE
STIMULI
NETWORK
+
AMPLIFIER
ROUGH
COMBUSTION
CUT-OFF
CONTROL ASSY
10A8
ACCEL. A
ACCEL. B
FOR NOTES SEE SH 3.00
FOR ENGINEERING INFORMATION ONLY
NAS 9-1100
GRUMMAN AIRCRAFT ENGRG BETHPAGE, L.I. N.Y.
SIZE J
CODE IDENT NO 26512
LDW270-52000 F
SCALE NONE
SHEET 10.00
THIS IS AN ORIGINAL DRAWING
LDW270-52000E
LDW270-52000E

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LEO-270 | EO NO. 65

CONTROL INFO NO. LDW267A47411

DWG NO	CHG NO.	TITLE	EFFECTIVITY	SH	ZONE
LDW270-52000	G1	SCHEMATIC LEVEL 3 LM-2 PROPULSION S/S	LM-2 (32)	8.00	59 D
LDW270-53000	E4	SCHEMATIC LEVEL 3 PROPULSION S/S	LM-3 (33)	4.00	6C
LDW270-54000	F5	SCHEMATIC LEVEL 3 PROPULSION S/S	LM-4(34) THRU LM-15(45)	9.00	71A

REVISE F/D AS FOLLOWS:

LSC270-820-13 WAS LSC270-820-11(*) ON LDW270-52000

LSC270-820-13 WAS LSC270-820-11-1(*) ON LDW270-53000 & -54000

* USE APPROPRIATE DASH NO.

CABLES AFFECTED: NONE
PANELS AFFECTED: NONE

LEVEL 3 DWG CHANGE ORDER
FOR ENGRG INFO ONLY (5)

DETAIL SPEC REQ		CL II ENGRG CHG	V	CL I ENGRG CHG		LCD 1982A

REASON FOR EO: INSTALL REDESIGNED HEAT EXCHANGER

DESCRIPTION OF EO: IN F/D LSC270-820-13 WAS LSC270-820-*

GAEC RELEASE: 12/8/67 (2) C

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		NOTED	

DRAWING CHANGE REQD: V REVISE DWG | RECORD EO

DISPOSITION OF PARTS: NOT REWORK | REQ'D SCRAP

APPROVED BY: H.C. | K.S. 75

DATE: 12/8/67 | 12/9/67

H | PROP | LTC

RELIAB GROUP | GROUP LEADER | STRESS GROUP | LIAISON ENGRG | PROJ. ENGRG

12/8/67 | 12-13-67 | REL

PRIORITY: E

DRAWING TITLE: NOTED

DRAWING NO.: LEO-270

EO NO.: 65

ISSUED BY B.ZANG X1472 8 DEC 1967 SECTION PROPULSION DESIGN GROUP NO. 345 PL 25

0/1

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-52000 | EO NO. G2
CONTROL INFO NO. LDW267A 53411

REVISE DWG AS FOLLOWS:

ON SH 2.00 RFF DESIGNATION 10A2
ON SH 9.00 ZONE 71 D

LSC 270-00500-10-3 WAS LSC270-00500-10-2

CABLES AFFECTED: NONE
PANELS AFFECTED: NONE

LEVEL 3 DWG CHANGE ORDER FOR ENGRG INFO ONLY (6)

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG
		✓

LCD 2443

REASON FOR EO: ASCENT ENGINE INJECTOR CONFIGURATION CHANGED

IN F/D & BM DESCRIPTION OF EO: LSC270-00500-10-3 WAS LSC270-00500-10-2

GAEC EO RELEASE: (2) 12/14/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-2 (32)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: NOT REWORK | REQ'D SCRAP

APPROVED BY								
			for WHD					
DATE	12-14-67		SPEC G1					12/14/67
H	PROP	LTC	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

PRIORITY: E
DRAWING TITLE: SCHEMATIC LEVEL 3 LM-2 PROPULSION SUB SYSTEM
DRAWING NO.: LDW270-52000
EO NO.: G2

ISSUED BY B.ZANG X1472 13DEC 1967 SECTION PROPULSION DESIGN GROUP NO. 345 PL 25

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

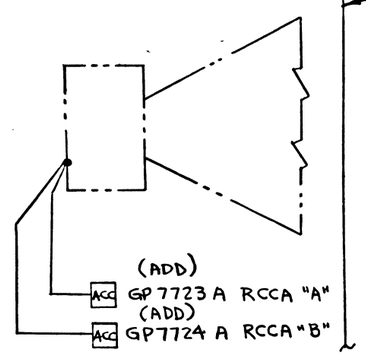
ENG 32.1 REV 3-65

ENGINFERING ORDER

DWG. NO. LDW270-52000 | EO NO. G3

CONTROL INFO NO LDW267A 85011

REVISE SH 9.00 ZONE 69-70 B AS SHOWN:



(ADD) (CALLOUT TO BE SHOWN OUTSIDE ENGINE OUTLINE)
LSC270-00723
ROUGH COMBUSTION
CUTOFF RELAY ASSY
JP 9071 "A" (GSE) (REF)
JP 9022 "B" (GSE) (REF)
LOCATED ON LDW280-11932 (REF)

CABLES AFFECTED: NONE
PANELS AFFECTED: NONE

LEVEL 3 DWG CHANGE ORDER FOR ENGRG INFO ONLY

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | LCD 2636 CCA760

REASON FOR EO: ADD ROUGH COMBUSTION CUTOFF RELAY ASSY. TO MECH. SHT.

DESCRIPTION OF EO: ADDED LSC 270-00723, GP7723A & GP7724A TO SH 9.00

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-2 (32)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: NOT REWORK | REQD SCRAP

APPROVED BY: EJG — DATE 2/23/68

RELIAB. GROUP: C | PROP | LTC

GROUP LEADER | STRESS GROUP | LIAISON ENGRG | PROJ ENGRG

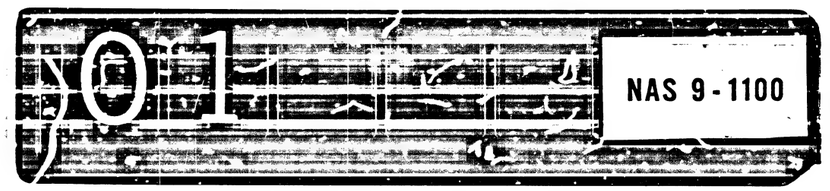
PRIORITY: E

DRAWING TITLE: SCHEMATIC LEVEL 3 LM-2 PROPULSION SUB SYSTEM

DRAWING NO.: LDW270-52000

EO NO.: G3

ISSUED BY B. ZANG X1472 23FEB 68 SECTION PROPULSION DESIGN GROUP NO. 345 PL 25



ISSUED

ENG 22.2 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-52000 | EO NO. G5
CONTROL INFO NO. LDW267B59011

ON SH 3.04 ADD NOTES:

* FOR DROP TEST & LM-2T POGO TEST CAP CONN'S P560, P561, P562, P563 & P564 DESCENT ENGINE 10A1 IS REPLACED BY A SIMULATOR.
** FOR POGO VIBRATION TEST (LM2T) REMOVE 10L6 SOLENOID VALVE PRE-VALVE LSC270-00822-7-2 AND CAP AND STOW ASSOC. WIRES.

ON SH 2.00:

FOR 10L6 ADD "SEE NOTE **" IN REMARKS COLUMN
FOR 10A1 ADD "SEE NOTE *" IN REMARKS COLUMN

ON SH 4.00, ZONE 1C & SH.8 ZONE 58C

ADD "SEE NOTE *" TO LSC270-00600-20

ON SH 5.00, ZONE 13B & SH.9.00 ZONE 72C

ADD "SEE NOTE **" TO LSC-270-00822-7-2

*,** = USE NEXT AVAILABLE NOTE NO.'S

PANELS AFF: None
CABLES AFF: LRA390-52014 c/N LRA390-7603
OTHER DWGS AFF:

LEVEL 3 DWG CHANGE OTHER FOR ENGRG INFO ONLY

DETAIL SPEC REQ	Cl II ENGRG CHG	Cl I ENGRG CHG	LCD3614 CCA1610, LCD3177, CCA1135 (5)

REASON FOR EO: RECONFIGURATION FOR POGO AND DROP TEST

DESCRIPTION OF EO: IN B/M & F/D: ADDED NOTES * & ** WITH ASSOC SEE NOTE * & ** CALLOUTS

EO RELEASE: JC 2/1/69

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM2T(320)	
LM	LFM 107	LM2(DROP TEST)	

DRAWING CHANGE REQ'D: REVISE DWG ✓ | RECORD EO —
DISPOSITION OF PARTS: NOT REWORK | REQD SCRAP

APPROVED BY	DATE
[illegible]	2-17-69
[illegible]	2-17-69
[illegible]	2-17-69

GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
CSS	PROP GR LDR		REL

PRIORITY: E
DRAWING TITLE: SCHEMATIC LEVEL 3 LM-2 PROPULSION SUBSYSTEM
DRAWING NO.: LDW270-52000 G5

ISSUED BY J. PERALO (X86533) / J. LONG SECTION CSS GROUP NO. 267 PL. 25

211

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-68

ENGINEERING ORDER

DWG. NO. LDW270-52000 | EO NO. G6

CONTROL INFO NO. LDW267B56011

SH 8.00 REVISE AS FOLLOWS

	(IS)		(WAS)
ZONE 60 B	LRA280-52002-3		LSC280-4-67
	↓	-5	LSC280-4-73
ZONE 61 A		-5	LSC280-4-69
ZONE 61 C		-3	LSC280-4-71

ISSUED

PANELS AFF: NONE
CABLES AFF: NONE
OTHER DWGS AFF: LDW280-52900
LRA 280-52002

LEVEL 3 DWG CHANGE AUTH
FOR EVAL USE ONLY

- DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | V | LCD 3552 CCA 1670 (5)

REASON FOR EO: D/S PROPELLANT TANK SUBSTITUTION

DESCRIPTION OF EO: IN F/D P/N LRA280-52002-3 WAS LSC280-4-67 & -71
LRA280-52002-5 WAS LSC280-4-69 & -73

GAEC & EO RELEASE: (18) 2/16/69 3-7-69

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-2 (32)	

DRAWING CHANGE REQD: V REVISE DWG | — RECORD EO

DISPOSITION OF PARTS: NOT REQ'D REWORK | SCRAP

APPROVED BY	CSS	PROP. INST.	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
DATE	2-24-69	2-18-69	2-4-69			REL

PRIORITY: E

DRAWING TITLE: SCHEMATIC, LEVEL 3 LM-2 PROPULSION SUBSYSTEM

DRAWING NO.: LDW270-52000

EO NO.: G6

ISSUED BY E. GLUECKLER (X2148) SECTION CSS GROUP NO. 267 PL 25

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENO 32.1 REV 3-68

ENGINEERING ORDER

DWG. NO. LDW270-52000 | EO NO. G7

CONTROL INFO NO. LDW267B60611

SHT 5 & 7 ZONE B-25 & C-53 RESPECTIVELY

IS

SEE NOTE *

WAS

COLLAR CKT BKR 4CB103 & 4CB169

ISSUED

ADD NOTES

* "COLLAR BREAKERS 4CB103 & 4CB169 ON LM-2, SEE NOTE ** FOR LM-2 DROP TEST CONFIGURATION."

** "REMOVE COLLAR FROM 4CB103 & 4CB169 FOR LM-2 DROP TEST CONFIGURATION."

Mech Assy AFF: LRA355-52125 c/w LRA355-5367
DWG AFF: NONE
PANEL AFF: None
CABLE AFF: None

LFM

LEVEL 3 DWG CHANGE ORDER
FOR ENGRG INFO ONLY

*
** } = USE NEXT AVAILABLE NOTE NO.

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	LCD 3614 CCH 1610

(5)

REASON FOR EO: UPDATE OF DWG FOR LM-2 DROP TEST

DESCRIPTION OF EO: AT 4CB103 & 4CB169, REMOVE "COLLAR CIRCUIT BREAKER" CALLOUT, ADDED "SEE NOTE *" ADDED NOTES * & **

GAEC EO RELEASE: VK 2-19

MODEL	EFFECTIVITY: E.I. PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 107	LM-2 (DROP TEST)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: REWORK NOT REQD | SCRAP

APPROVED BY							
DATE	2-14-69		2-17-69	8-17-69	2-17-69	2/17/69	3-12-69
	CSS	PROP	INST	GROUP LEADER	GROUP LEADER	LIAISON ENGRG	✓ PROJ ENGRG

PRIORITY: E

DRAWING TITLE: LEVEL 3 SCHEMATIC PROPULSION SUB/SYS

DRAWING NO.: LDW270-52000

EO NO.: G7 REV

ISSUED BY KEN CLAPP X86533 SECTION CSS GROUP NO. 267 PL 25

QTY PER ASSEMBLY -1	QTY PER ASSEMBLY -3	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
A/R				E	SHIM	SEE NOTE 6						2A
2			AN960C516L	E	WASHER	STD PART						5C
1			AN960C516		WASHER							5B
3			AN960C416L		WASHER							5B
1			AN919-3C		REDUCER							7D
4			AN815-6C		UNION							7C
2			AN815-4C		UNION	STD PART						7C
1			AN310C5		NUT	STD PART						
1			GS13AJ-505		O-RING	GRUMMAN STD						7D
2			GS13AJ-504		O-RING							7C
2			GS13AJ-502		O-RING							8A
2			GB511J-08-2		BOLT							8B
2			G-C500A-9		CLAMP	GRUMMAN STD						8B
10			LDW280M17472-1	E	SPACER	SEE DWG						9A
2			LDW280M174.9-3	E	PLATE	SEE DWG						9C
1			LSC270-00600-20	S	DESCENT ENG	SEE NOTE 1						4D
2			LDW270M10034-11	E	REDUCER	SEE DWG						8A
2			LDW270M10033-11		BOLT							5C
1			LDW270M10032-12		PLATE							5C
1			LDW270M10032-11		PLATE							2A
1			LDW270M10031-11		FITTING							2A
4			LDW270-51458-21		HOSE ASSY							7C
1			-19									7C
1			-17									6B
1			-7									7D
1			-3									7B
1			LDW270-51458-1		HOSE ASSY							RA
	1		LDW270-23101-1		THERMAL PLUG	SEE DWG						2B
1			LDW270-52100-3		ASSY-DES ENG							
			LDW270-52100-1	E	INSTL DES ENG							

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

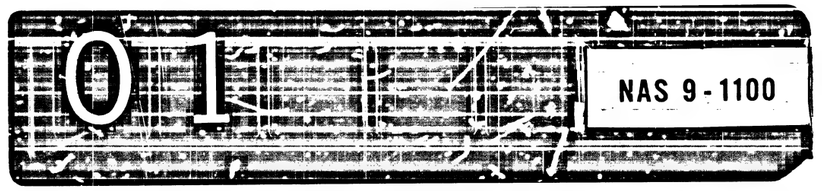
I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : LPC-19-2 (GRUMMAN) LPC-19-3 (VENDOR)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52100	A

SCALE NONE SHEET 2.00

ENG 77.2 7-65



QTY PER ASSEMBLY -1	QTY PER ASSEMBLY -3	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
A/R			PR-240AC	E	LUBRICANT							
4			NAS1272H34		BOLT	STD PART						
4			NAS1272H11									
1			NAS675V12D									
1			NAS675V20									
1			NAS674V4									
10			NAS654V18									
19			NAS654V8		BOLT							
1			MS24665-153		COTTER PIN							
1			MS21043-5		NUT							
24			MS21043-4		NUT							
A/R			MS20995NC32		LOCKWIRE							
8			AN960D516L		WASHER							
8			AN960D416L		WASHER	STD PART						
21			AN960D416	E	WASHER							

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : LCP-19-2 (GRUMMAN) LPC-19-3 (VENDOR)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52100	A

SCALE NONE SHEET 2.01

ENG 77.2 7-65

01 NAS 9-1100

LDW270-52100 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW280-52508	LEM-2(32)	1
PART NO. LDW270-52100-1		GAEC SCH NO. 55	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	2.00	2.01	3.00				
REV	B	B	A	A	B				
SHEET		1.11							
REV		B							
SHEET									
REV									

LAST SECT LTR USED	R
LAST DASH NO. USED	-3

GRUMMAN REL INFO, B
PRIM NO. JK (009)
470 MD-11-3-10/19/66

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES — NOTED —

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS-9-1100 LINE ITEM # 9 DOCUMENTATION TYPE II

DRAWN BY	RIM:AUDO 10/19/66		
LAYOUT BY			
CHECKED BY			
GROUP LEADER	10/19/66		
PROP	10/19/66		
STRUCT	10/19/66	PROJ ENGR	10/19/66
VDI	10/19/66	REL GROUP	10/19/66

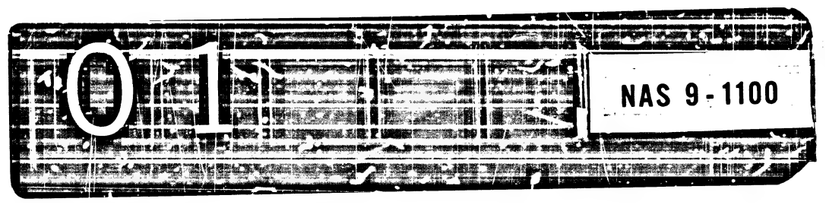
GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

INSTALLATION - DESCENT ENGINE

SIZE	CODE IDENT NO.		
B	26512	LDW270-52100	B

SCALE 1/4 NOTED NONE SHEET 1.00 OF 6

ENG 77.1 12-65



REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET 1.11

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
	1	1.10 2.00 2.01 3.00	5C 7D 2A					EO A1 LCD 672	TO -1 INSTL ADDED: LDW270M10031-11; LDW270M10032-11, -12, (2) LDW270M10033-11; AN310C5; (3) AN960C416L; (2) AN960C516L; AN960C516; (3) MS21043-4; MS21043-5; MS24665-153; NAS674V4; NAS675V12D; NAS675V20; ADDED SHIM NOTE ADDED SH 1.10						
	2	1.10,2.00 2.01 3.00	7C					EO A2 LCD 669	TO -1 INSTL: ADDED (4) LDW270-51458-21 HOSE ASSY; (4) AN815-6C; REMOVED FROM -1 INSTL (4) LDW270-51458-9 HOSE ASSY						
A	3	1.10 2.00 2.01 3.00	5B 7C 7D					EO A3 CCA332	DELETED NOTES 3 & 5; FROM -1 INSTL REMOVED (11) NAS654V9, (19) NAS654V8 WAS (8) NAS654V8, (8) AN960D516L WAS (8) AN960D516, ADDED TO -1 INSTL: (1) LDW270-51458-19, (2) LDW270M10034-11, (2) GS13AJ-502, (2) GS13AJ-504, (1) GS13AJ-505, (2) AN815-4C, (1) AN919-3C. REVISED NOTE 1 WAS: COMMERCIAL PART-SEE SPEC CONTROL DWG NO. LSC270-00600-14 BEFORE ORDERING; REVISED NOTE 4 WAS: PLUG RING MUST BE INSTALLED JUST UPSTREAM OF ABLATIVE-NOZZLE EXTENSION JOINT AND BONDED TO THE ABLATIVE LINER OF THE COMBUSTION CHAMBER USING NARMCO 7343 AHESIVE PER LSP-14-22602	LM-2(32)	✓	RICHARD ROSARIO 10-3-67 S.J.			
	4	1.10 2.00 2.01 3.00						EO A4	IN B/M: REMOVED ALL DETAILS FROM -1 INSTL EXCEPT LDW270-23101-1, CREATED -3 INSTL IN NOTES DELETED REF TO TOOL FOR POSITIONING ENGINE FOR GIMBAL ACTUATOR ADJUST.						

CHG APPROVED	LTR	GROUP LDR	PROP	STRUCT	VDI
	B				

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52100	B

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	5	1.11, 2.00 3.00	8A					EO A5	ON -3: LSC270-00600-20 WAS LSC270-00600-14 ADDED SH 1.11	LM-2(32)	✓		R. ROSARIO 10-3-67		
	6	1.11, 2.00 3.00	7C				✓	EO A6 LCD 669	REF EO A2: REMOVED 1 EA OF LDW270-51458-15, -13, -11 & -9 FROM F/D & -3 ASSY IN B/M		✓				
	7	1.11, 2.01 3.00	6A				✓	EO A7 LCD 1576	ADDED PR-240AC LUBRICANT TO PROPELLANT INTERFACE FLANGE BOLTS & TORQUE PATTERN (DETAIL "N") TO FIELD OF DWG						
	8	1.11, 3.00	2D			✓		LEO 270-53 LCD 1961	ADDED NOTE 9		✓				
	9	1.11 3.00	7C 11D				✓	EO A9	ON -1: CHANGED ROUTING OF LDW270-51458-7 OX LOW POINT DRAIN FLEX LINE & REVISED DETAIL "L" TO AGREE						
	10	1.11, 3.00					✓	EO A10 (1)	REF EO A9: -1 SHOULD BE -3						
B	1	1.11, 3.00	2D				✓	LEO 270-57 LCD-1894	ADDED NOTE 10			✓			
	2						✓	LCD 1576 A-B (2)	REF EO A7: NUT/BOLT TIGHTENING SEQUENCE PROCEDURE ADDED AS NOTE 8		✓		M.W.D. S.J. 10-3-67	M.W. 10-4-67	

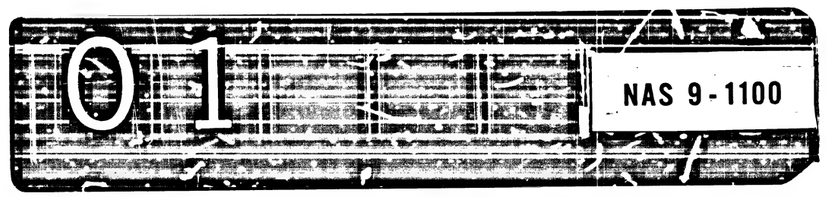
CHG APPROVED	LTR	GROUP LDR	PROP	STRUCT	VDI
	B		R. B. [illegible]		J. Fuerter

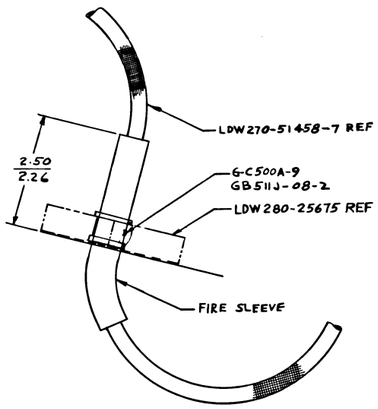
GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52100	B (2)

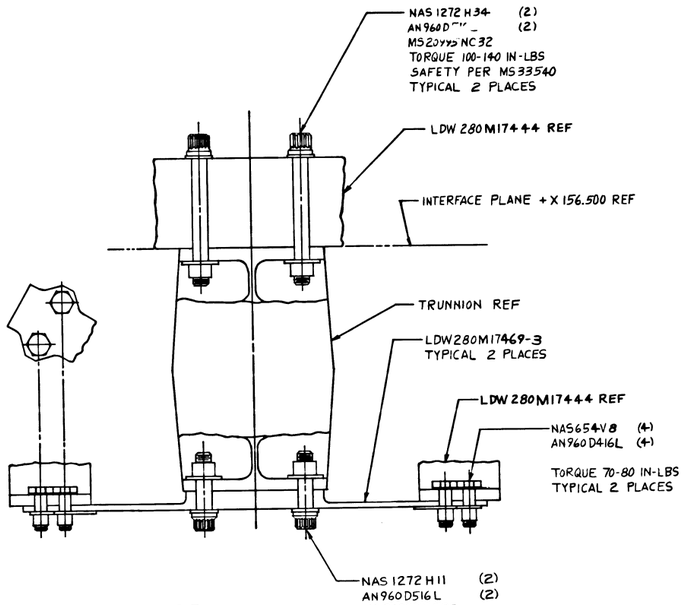
SCALE NONE SHEET 1.11

ENG 77.16 3-66



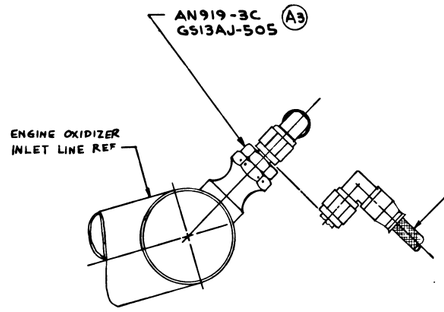


DETAIL L ZONE 7C (A9)
FULL SIZE



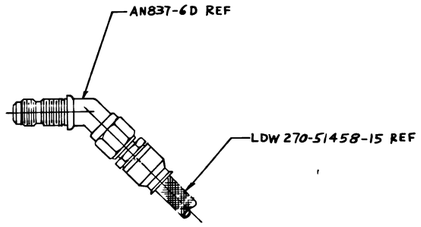
SECTION E-E FULL SIZE ZONE 7B

ENGINE SUPPORT HARDWARE



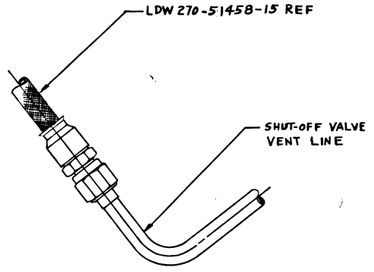
SECTION D-D FULL SIZE ZONE 7C

ENGINE OXIDIZER LOW POINT
DRAIN CONNECTION



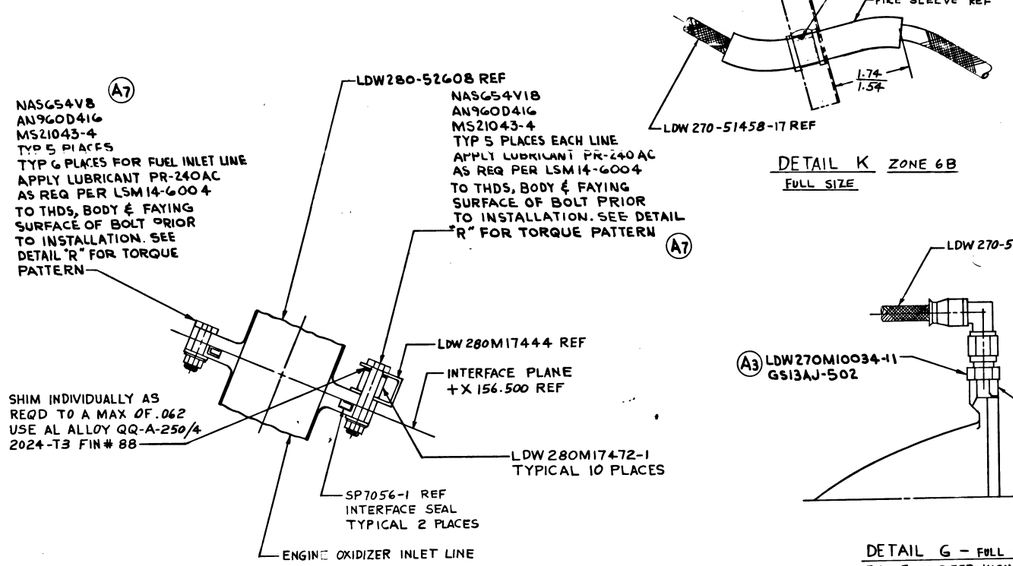
VIEW H-H FULL SIZE ZONE 7C

TYPICAL HOSE CONNECTION
4 PLACES



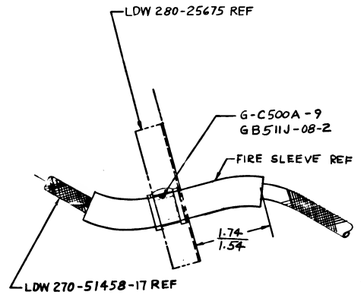
VIEW J-J FULL SIZE ZONE 7C

TYPICAL HOSE CONNECTION
4 PLACES

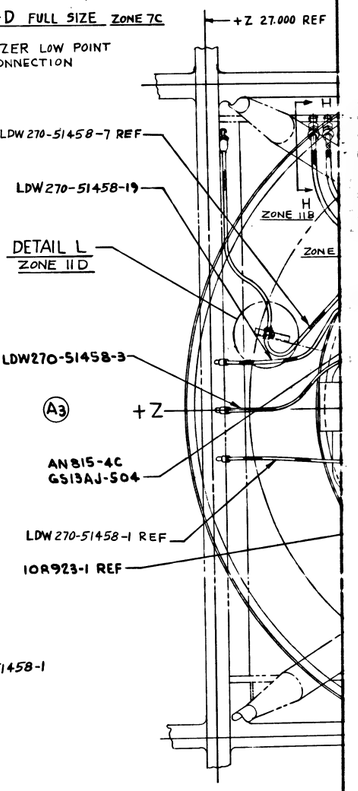


SECTION C-C FULL SIZE ZONE 6C

PROPELLANT LINES INTERFACE CONNECTION
AND SUPPORT HARDWARE

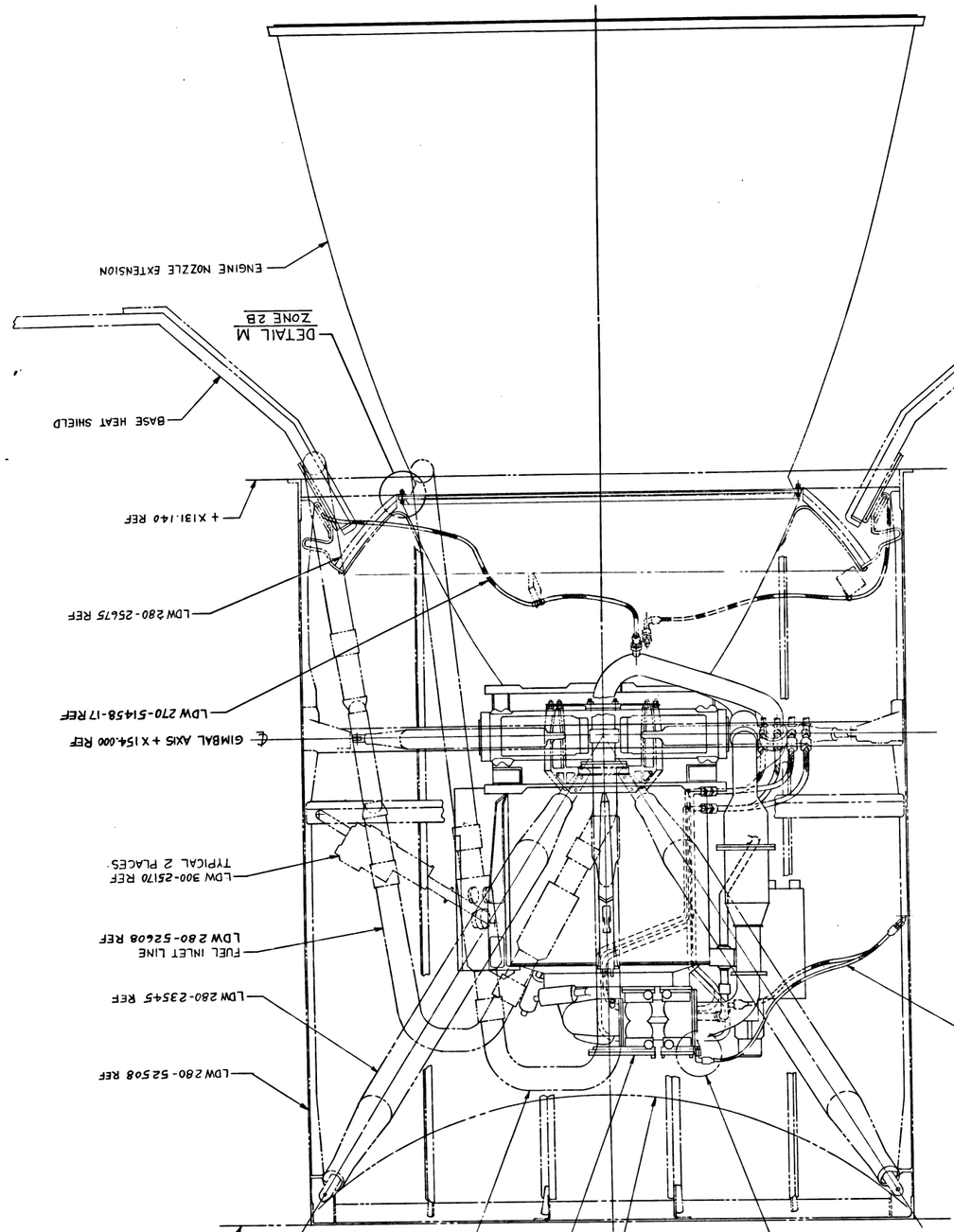


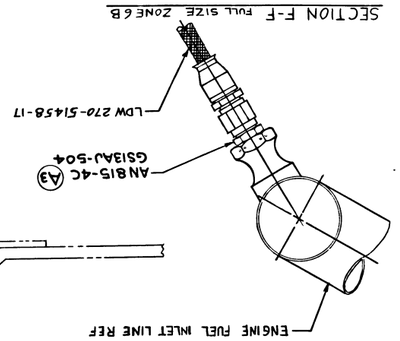
DETAIL K ZONE 6B
FULL SIZE

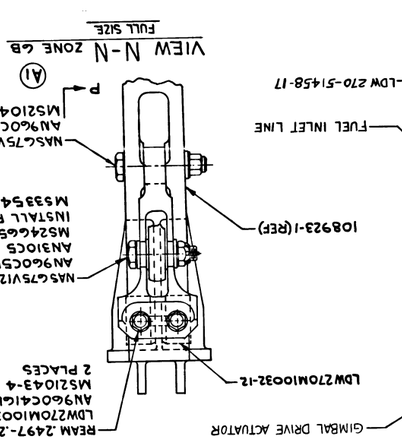


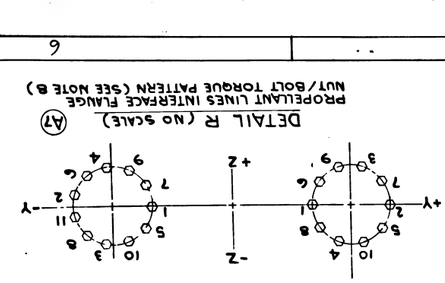
DETAIL G - FULL SIZE ZONE 4B

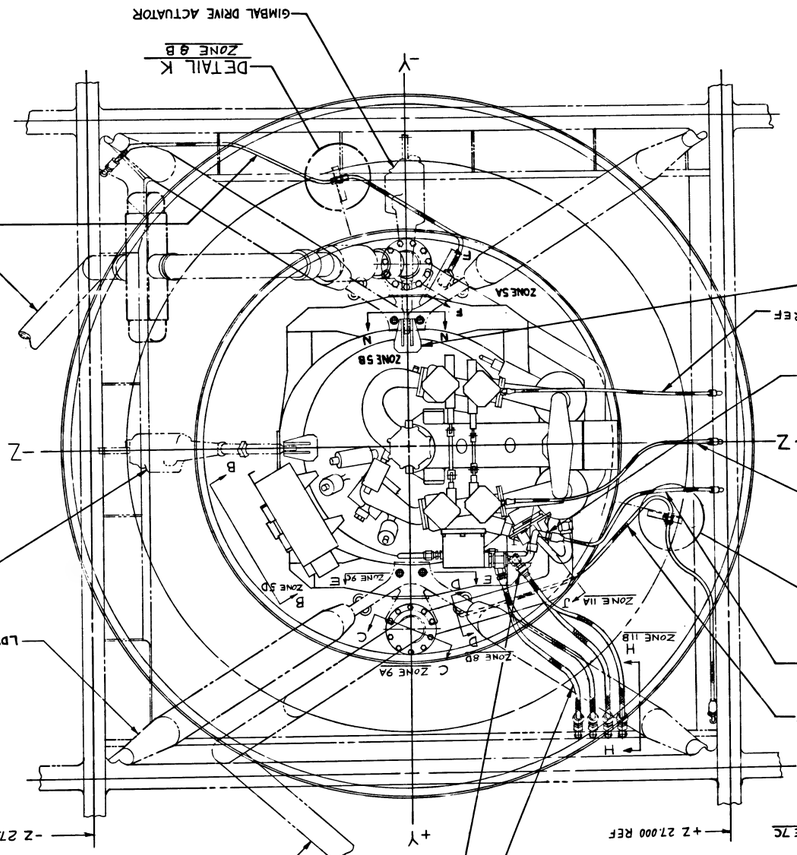
ENGINE OXIDIZER HIGH POINT
BLEED PORT CONNECTION
TYPICAL FOR ENGINE FUEL
HIGH POINT BLEED PORT

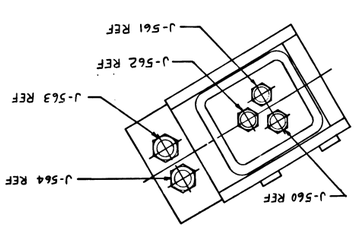






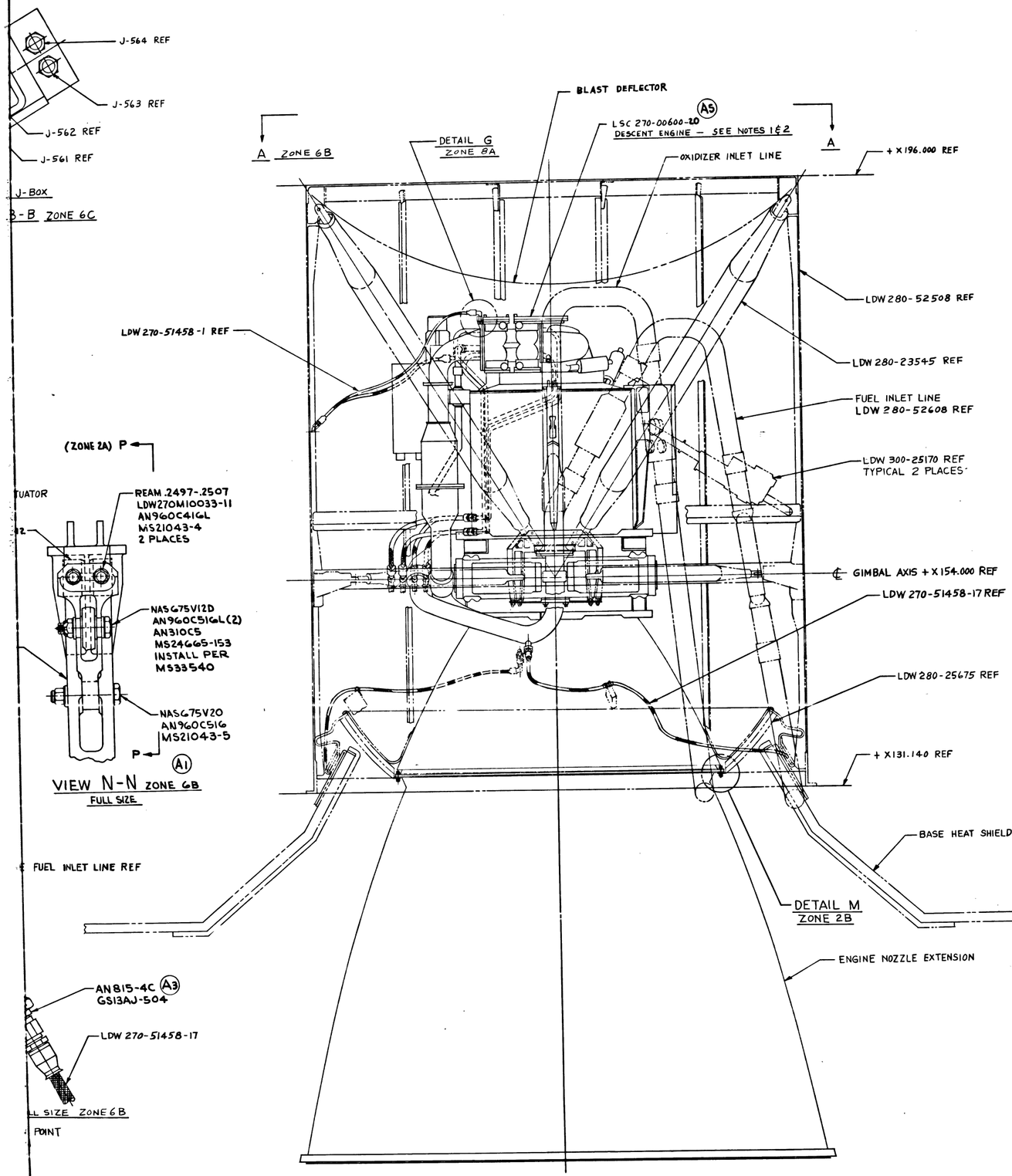






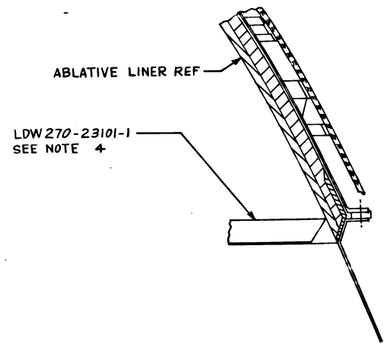
NOTES
1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

02703
NAS 9-1100

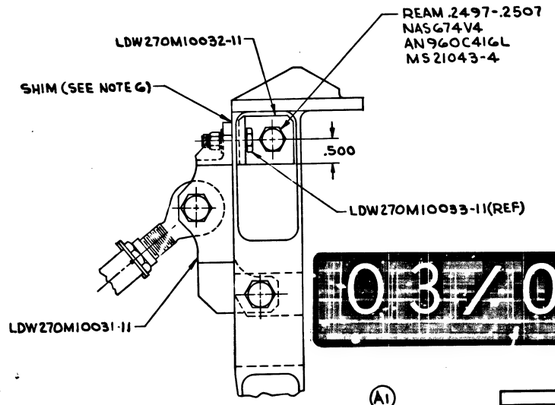


NOTES:

1. COMMERCIAL PART - SEE SPECIFICATION CONTROL DWG BEFORE ORDERING.
2. ENGINE TO BE INSTALLED IN ACCORDANCE WITH LPT 279-27 PARA. 6.12.
3. ~~HOSE ASSY LENGHT TO BE DETERMINED ON INSTALLATION AND ENGINEERING NOTIFIED~~
4. PLUG RING WILL BE INSTALLED AT THE MANNED SPACED OPERATIONS BUILDING (O & C) AT KENNEDY SPACE CENTER. INSTALL PLUG RING JUST UPSTREAM OF THE ABLATIVE-NOZZLE EXTENSION JOINT, AND BOND TO THE ABLATIVE LINER OF THE COMBUSTION CHAMBER PER LSP-14-22602. CARE MUST BE TAKEN ON INSTALLATION TO AVOID GETTING ANY ADHESIVE ON NOZZLE EXTENSION.
5. ~~CARE MUST BE TAKEN ON INSTALLATION TO AVOID GETTING ANY ADHESIVE ON THE NOZZLE EXTENSION~~
6. SHIM AS REQD (.060 MAX) USING ST STL SHEET 301-MIL-S-5059 OR 321-MIL-S-6721 TYPICAL 4 PLACES. TORQUE ALL-4 HOSE ASSY END FITTINGS 70-120 IN-LBS TORQUE ALL-6 HOSE ASSY END FITTINGS 100-250 IN-LBS. CAUTION: DURING TORQUING OPERATION RETAIN STATIONARY FITTING WITH WRENCH.
7. TORQUE NUT COUPLING ON SHUT-OFF VALVE VENT LINE TO UNION 75-125 IN-LBS
8. INSTALL ALL NUTS FINGER TIGHT AND TORQUE IN SEQUENCE AS FOLLOWS: A) PHYSICAL LOCATION FOR START OF SEQUENCE ("1 NUT/BOLT) IS OPTIONAL FOR EACH FLANGE. B) TORQUE ALL NUTS/BOLTS PER SEQUENCE SHOWN IN DETAIL "R" TO 15 IN-LBS. C) REPEAT STEP "B" APPLYING 30 IN-LBS. D) REPEAT STEP "B" APPLYING 45 IN-LBS. E) REPEAT STEP "B" APPLYING 70-80 IN-LBS FOR FINAL TORQUE.
9. BOND IN ACCORDANCE WITH FIGURE 7C OF LSP-14-13334
10. IN THE EVENT THAT EITHER OR BOTH MAIN PROPELLANT LINE INTERFACE FLANGES ARE DISCONNECTED, REMOVE THE EXISTING SEAL, TRW PART NO. SP7056-1 AND REPLACE WITH A NEW SEAL OF THE SAME PART NUMBER. DO NOT REUSE OLD SEAL.



DETAIL M HALF SIZE
ZONE 3B



VIEW P-P (ZONE 5B)
FULL SIZE

MANUFACTURING OPERATIONS — UNLESS OTHERWISE SPECIFIED — NOTES CHECKED √ APPLY TO THIS DWG.
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY.
FILLET AND INSIDE CORNER RADII TOLERANCES .015R TO .062R ± .010; .063R TO .250R ± .015; OVER .250R ± .030
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 MAP THDS. BEYOND PERMISSIBLE.
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
250 FOR ALL DRILLED HOLES
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
SYMBOL ⌀ DENOTES SURFACE TO BE MACHINED
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
TOLERANCE ON LOFTED DELINEATIONS IS

DWG SIZE 24 X

PRINTING INFO ONLY
FULL SIZE SHEET AREA (24 X 36)
1/2" MIN SHEET AREA (1/4 OF FULL)

PRINT TRIM LINE

90 FT.
90 FT.

LDW 270-52100 B

LDW 270-52100 B

03/03

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE J	CODE IDENT NO. 26512	LDW 270-52100	B
LM (MODEL OR END ITEM)	SCALE 1/4 NOTED	SHEET 3.00	

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512 *

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LED 270		EO NO. 62
CONTROL INFO NO. LM 270-1104		

IN EACH OF THE DRAWINGS LISTED, REVISE PROPELLANT LINES INTERFACE FLANGE NUT/BOLT TORQUE NOTE (REF DETAIL "N") AS FOLLOWS:

INSTALL ALL NUTS, AND TORQUE IN SEQUENCE AS FOLLOWS: (ALL TORQUES NOTED ARE IN ADDITION TO THE TORQUE REQUIRED TO OVERCOME THE LOCKING FEATURE OF THE NUT AND ARE TO BE APPLIED AS THE NUT CONTACTS THE WASHER)
(WAS) INSTALL ALL NUTS FINGER TIGHT AND TORQUE IN SEQUENCE AS FOLLOWS:

DRAWING NO	TITLE	EFFECTIVITY	CHANGE NO
LDW 270-25100	SEE DWG	LTA-5 (15)	A 10
-52100		LM-2 (32)	C 1
-53100		LM-3 (33)	A 9
LDW 270-54100	SEE DWG	LM-4(34) THRU LM-15(45)	A 7

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | LCD-1894 | LCRP 270-24

REASON FOR EO: REDUCE PROPELLANT LEAKAGE

DESCRIPTION OF EO: REF DETAIL "N"- REVISED TORQUE NOTE: INSTALL ALL NUTS, AND TORQUE IN SEQUENCE AS FOLLOWS: (ALL TORQUES NOTED ARE IN ADDITION TO THE TORQUE REQD TO OVERCOME THE LOCKING FEATURE OF THE NUT AND ARE TO BE APPLIED AS THE NUT CONTACTS THE WASHER

GAEC EO RELEASE: 10/26/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		NOTED	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO | DISPOSITION OF PARTS: REWORK | SCRAP (Not REQ'D)

PRIORITY: C

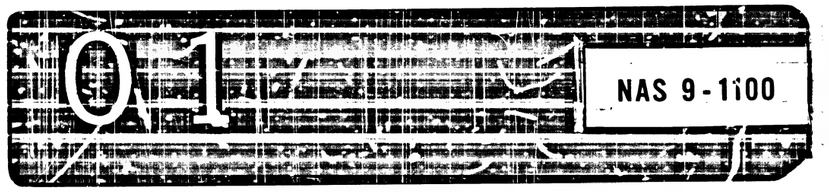
DRAWING TITLE: NOTED ABOVE

DRAWING NO.: LEO 270

EO NO.: 62

APPROVED BY	RD	—	—	96		—	MHD	
DATE	10/24/67	—	—	10/24/67	10/24/67	—	10/24/67	10/25/67
	B	PROP	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG

ISSUED BY E. RIMMAUDO X1471 10-24-67 SECTION PROPULSION GROUP NO. 270 PL 25



GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
FNG 32 1 REV 3-65
ENGINEERING ORDER

DWG NO. LDW270-51201 | EO NO. C4
CONTROL INFO NO. LM 270-754

IN B/M & F/D FOR -1 MODULE ASSY:
REMOVE: LSC270-715-7-1 REGULATOR
ADD: LSC 270-715-7-2 REGULATOR

IN B/M & F/D FOR -3 MODULE ASSY:
REMOVE: LSC 270-715-5-1 REGULATOR
ADD: LSC 270-715-5-2 REGULATOR

PRE CF-2

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG

DRAWING FOR EO: LSC270-715-5-1 & LSC270-715-7-1 FAILED QUAL TEST

DESCRIPTION OF EO: SEE ABOVE

GAEC EO RELEASE: FR 12/6

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-1 (31)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO | DISPOSITION OF PARTS: REWORK ✓ | SCRAP

PRIORITY: C

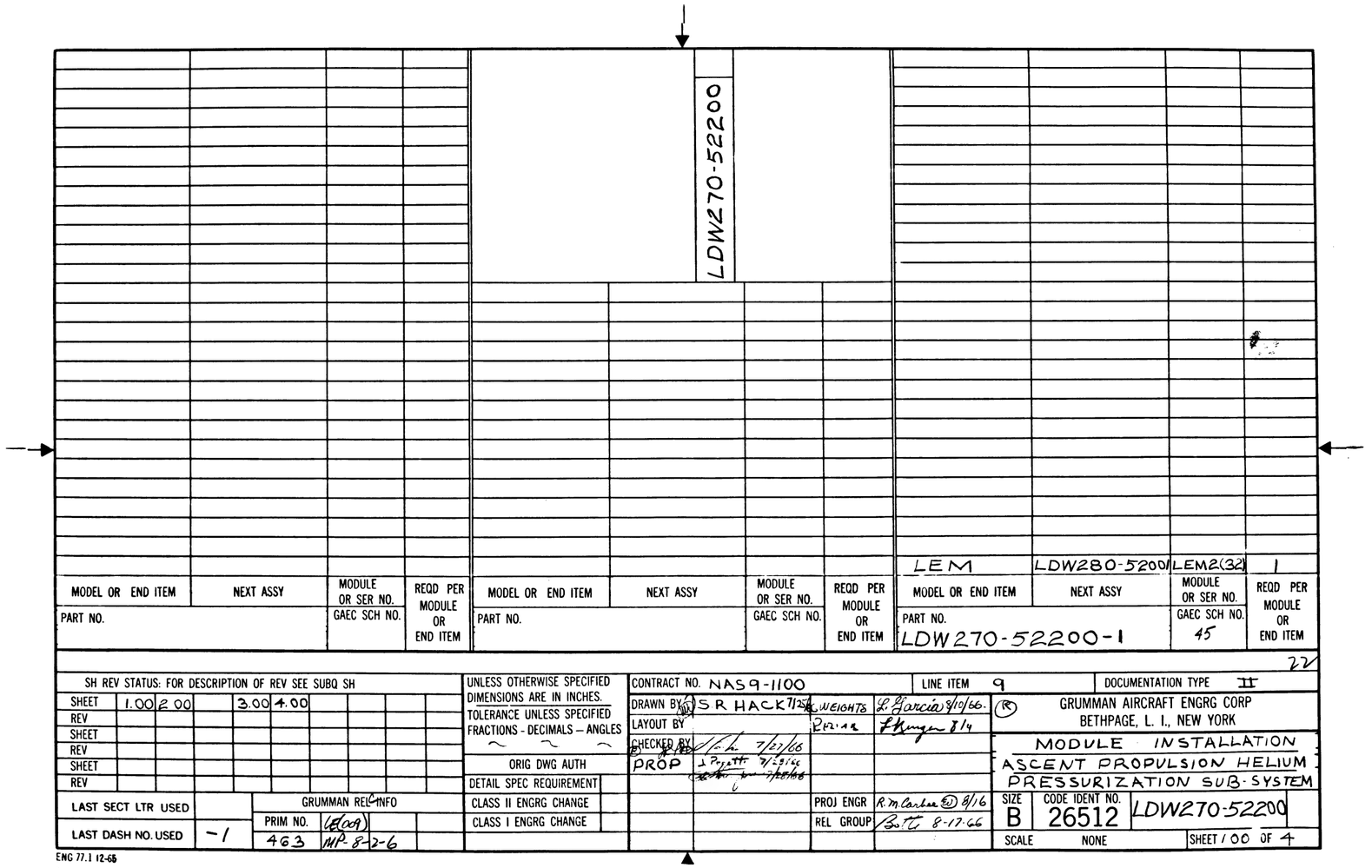
DRAWING TITLE: MODULE ASSY- ASCNT PROPELLANT PRESSURIZATION SUBSYSTEM

DRAWING NO.: LDW270-51201

EO NO.: C4

APPROVED BY / DATE	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GSFP
			12/6/66			12/6/66	12/6/66
			RD			12/6/66	

ISSUED BY J. REBHOLZ 12-6-66 SECTION PROPULSION x1471 GROUP NO. 345 PL 35



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		LEM	LDW280-5200	LEM2(32)	1
								PART NO. LDW270-52200-1		GAEC SCH NO. 45	

22

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00	2.00		3.00	4.00					
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED		GRUMMAN REL INFO	
LAST DASH NO. USED	-1	PRIM NO.	LEC(OA)
		463	MP 8-2-6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS — ANGLES

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100 LINE ITEM 9 DOCUMENTATION TYPE II

DRAWN BY S R HACK 7/25 WEIGHTS L Garcia 8/10/66
LAYOUT BY
CHECKED BY 7/27/66
PROP 7/29/66

PROJ ENGR R M Carlson 8/16
REL GROUP 8-17-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

MODULE INSTALLATION
ASCENT PROPULSION HELIUM
PRESSURIZATION SUB-SYSTEM

SIZE	CODE IDENT NO.	
B	26512	LDW270-52200

SCALE NONE SHEET 1 OF 4

ENG 77.1 12-65

01 NAS 9-1100

LEVEL	QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
C	12		MS21043-3	E	NUT	STANDARD PART						
C	12		AN960C10L	E	WASHER	STANDARD PART						
C	4		GS570W-1	E	SEAL	GRUMMAN STD						
C	12		GB511J-3-8	E	BOLT	GRUMMAN STD						
L	4		LSC269-205-8	E	CAP	SEE DWG						
C	4		LDW270M100271	E	PLUG	SEE DWG						
C	1		LDW270-51202-2	E	HELIUM TANK INST	SEE DWG						
C	1		LDW270-51202-1	E	HELIUM TANK INST	SEE DWG						
C	1		LDW270-52201-3	S	MODULE ASSY(OX)	SEE DWG						
C	1		LDW270-52201-1	S	MODULE ASSY(FUEL)	SEE DWG						
C			LDW270-52200-1	E	MODULE INST							

CLEANLINESS REQUIREMENTS PER LSP14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : LPC-19-2 (CRUMMAN), LPC-19-3 (VENDOR

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW270-52200

SCALE NONE SHEET 200

ENG 77.2 7-65

01

NAS 9-1100

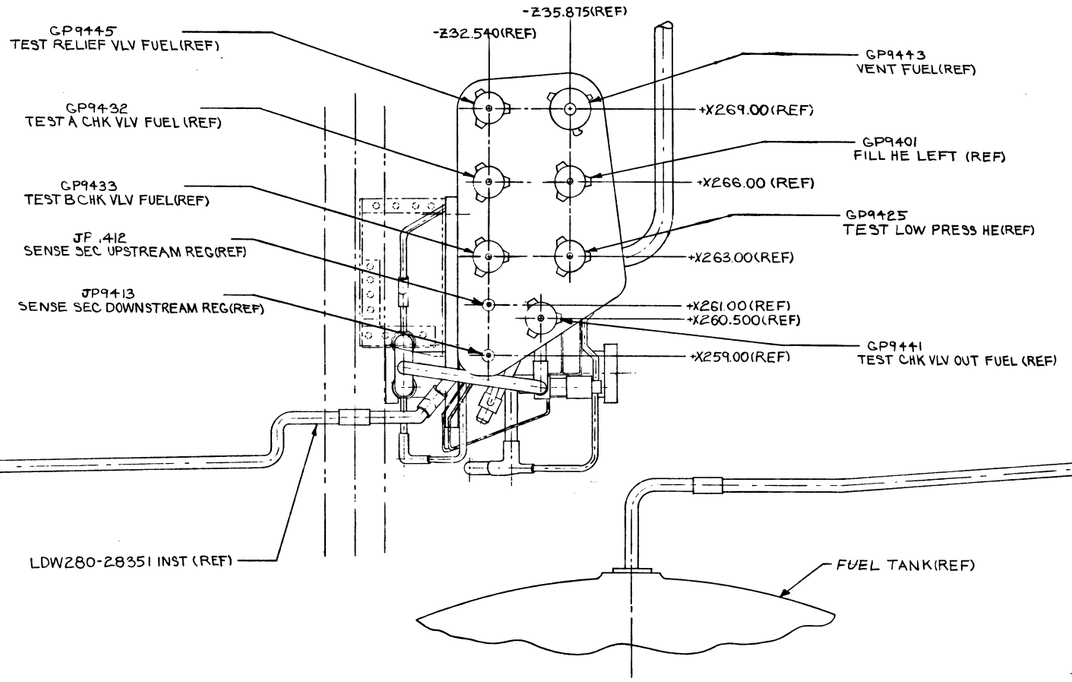
NOTES:

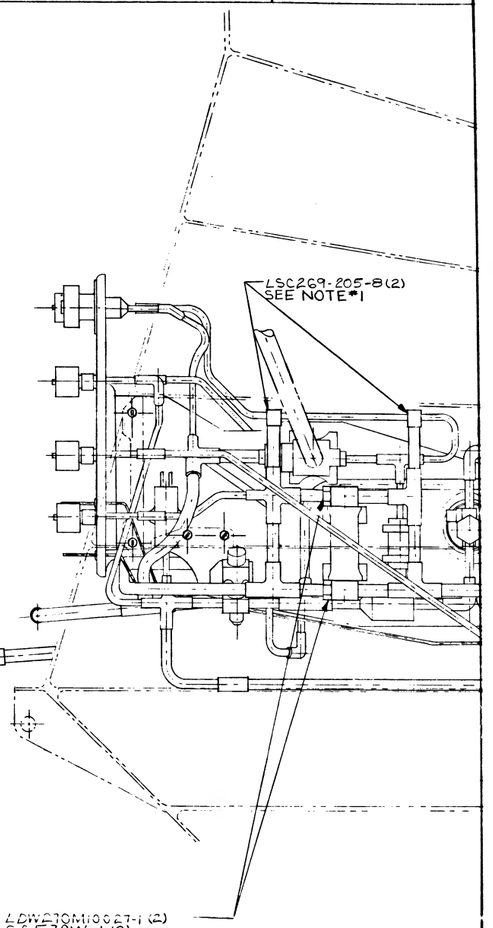
1. AFTER COMPLETION OF ALL COLD FLOW TESTS IN COLD FLOW FACILITIES, BY-PASS LINES LDW280-16000-716 ASH-8¢-721ASH-8 SHALL BE CUT AND CAPPED AS SHOWN. EXTREME CARE SHALL BE TAKEN NOT TO CONTAMINATE THE FLUID LINES AND COMPONENTS DURING THE CUTTING AND BRAZING OPERATIONS. THE CAPS SHALL BE BRAZED IN ACCORDANCE WITH LSP14-6303.
2. TORQUE REQUIREMENT ON PLUG-100 INCH-POUNDS.

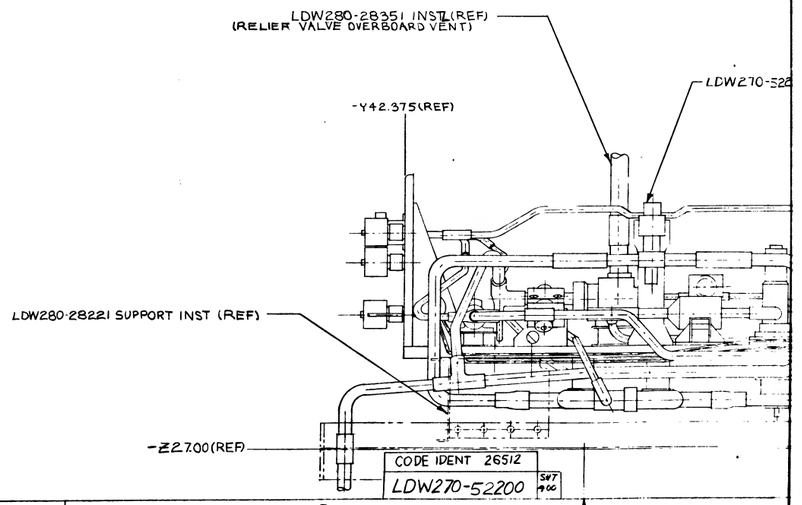
GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-52200	
SCALE NONE		SHEET 300	

ENG 72.1 6-64

NAS 9-1100







Q11403
NAS 9-1100

7 6 5 4

LSC269-205-8(2) SEE NOTE #1

GB511J-3-8 AN960C10L MS21043-3 (6 PLACES)

LDW280-28351 INST(REF)

+X256.563(REF)

-Y22.875(REF)

LDW280-28351 INST(REF)

LDW270-51202-1 HELIUM TANK INST

Y0.00 (REF)

LDW270-51202-2 HELIUM TANK INST.

+X256.563(REF)

+Y22.875(REF)

LDW280-28351 INST(REF)

LSC269-205-8(2) SEE NOTE #1

GB511J-3-8 AN960C10L MS21043-3 (6 PLACES)

-Z35.875(REF)

GP9442 VENT OXID(REF)

+X269.00(REF)

GP9402 FILL HE RIGHT(REF)

+X266.00(REF)

GP9406 TEST HIGH PRESS HE(REF)

+X263.00(REF)

+X261.00(REF)

+X260.50(REF)

+X259.00(REF)

GP9440 TEST CHK VLV OUT OXID(REF)

OXIDIZER TANK(REF)

LDW270M15027-1(2) GS570W-1(2) SEE NOTE #2

LDW270-52200-1 SUBSYSTEM INSTALLATION

#02703 NAS 9-1100

INST(REF) ARD VENT)

$75(REF)

LDW270-52201-1 MODULE ASSY

LDW270-52201-3 MODULE ASSY

LDW280-28351 INST(REF) (RELIEF VALVE OVERBOARD VENT)

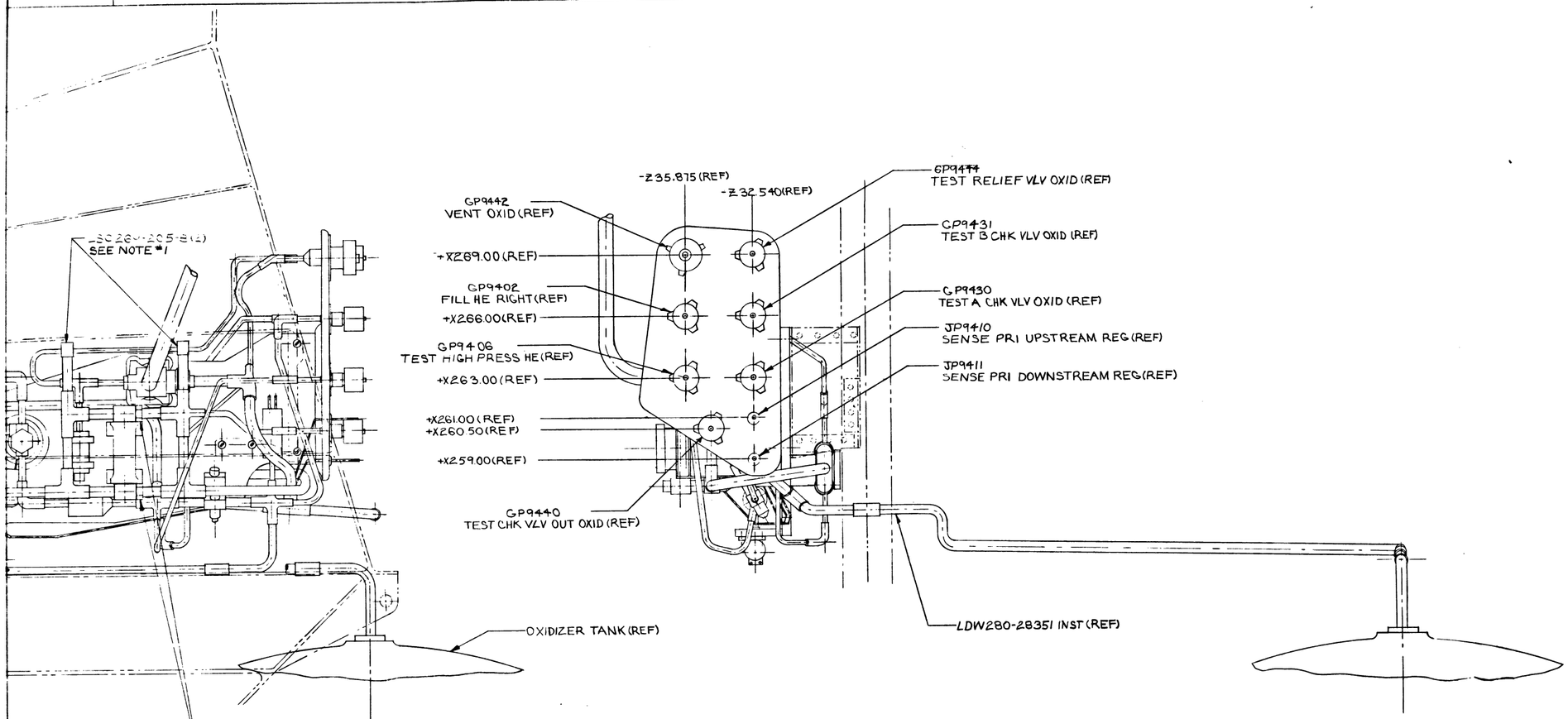
+Y42.375(REF)

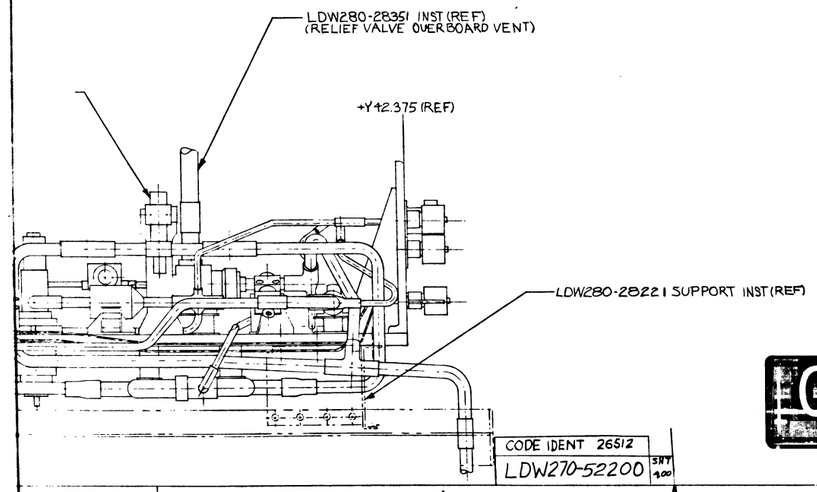
LDW280-28221 SUPPORT INST(REF)

CODE IDENT 26512
LDW270-52200 SHT 100

CODE IDENT 26512
LDW270-52200 SHT 100

7 6 5 4





MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

- PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.
- FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010; .063R TO .250R ± .015; OVER .250R ± .030
- DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.
- EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
- DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
- MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
- DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
- HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
- ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 IN THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
- 125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
- 200 FOR ALL DRILLED HOLES
- REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
- INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
- SYMBOL ✓ DENOTES SURFACE TO BE MACHINED
- UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
- LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
- TOLERANCE ON LOFTED DELINEATIONS IS

DWG SIZE 34 X 121

PRINTING INTO ONLY
FULL SIZE SHEET AREA (34 X 180)= 34 SQ FT.
1/2 SIZE SHEET AREA (1/4 OF FULL)= 8½ SQ FT.
PRINT TRIM LINE

LDW270-52200

CODE IDENT 26512 | LDW270-52200 | SHT 400

03/03
NAS 9-1100

TO BE REDRAWN

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK		
LEM	SIZE J	CODE IDENT NO. 26512	LDW270-52200
MODEL OR END ITEM	SCALE 1/2		SHEET 4.00

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 270 | EO NO. 53
CONTROL INFO NO. LM 270-1004

ENG 32.2 REV 3-65 B

ADD NOTE * "BOND IN ACCORDANCE WITH FIGURE 7C OF LSP-14-13334" TO THE FOLLOWING DWG

DRAWING NUMBER	TITLE	EFFECTIVITY	CHANGE NO
LDW270-52100	SEE DWG	LM-2(32)	A8
-53100		LM-3(33)	A5
-54100		LM-4(34) THRU LM-15(45)	A4
-53010		LM-3(33)	A3
-54010		LM-4(34) THRU LM-15(45)	A2
LDW270-52306	SEE DWG	LM-2(32) THRU LM-15(45)	A4

ADD NOTE ** BOND IN ACCORDANCE WITH FIGURE 7G OF LSP-14-13334" TO THE FOLLOWING DWG.

LDW270-52304	SEE DWG	LM-2(32)	A5
-53304		LM-3(33)	C4
-54304		LM-4(34) THRU LM-15(45)	A8
-52305		LM-2(32)	A1
-53305		LM-3(33)	A1
-54305		LM-4(34) THRU LM-15(45)	A1
LDW270-52309	SEE DWG	LM-2(32) THRU LM-15(45)	B3

ADD NOTE *** BOND IN ACCORDANCE WITH FIGURE 7A & 7G OF LSP-14-13334" TO THE FOLLOWING DWG

LDW270-52200	SEE DWG	LM-2(32)	A1
LDW270-53200	SEE DWG	LM-3(33)	A2
LDW270-54200	SEE DWG	LM-4(34) THRU LM-15(45)	A2

ADD NOTE ⊗ BOND IN ACCORDANCE WITH FIGURE 7C & 7G OF LSP-14-13334" TO THE FOLLOWING DWG

-52201	SEE DWG	LM-2(32)	B3
-53201		LM-3(33)	B3
-54201		LM-4(34) THRU LM-15(45)	B1
-52310		LM-2(32) & LM-3(33)	A6
LDW270-54310	SEE DWG	LM-4(34) THRU LM-15(45)	A1

ADD NOTE ⊕ "BOND IN ACCORDANCE WITH FIGURE 7F OF LSP-14-13334" TO THE FOLLOWING DWG

LDW270-52302	SEE DWG	LM-2(32) THRU LM-15(45)	A3

ADD NOTE ⊡ "BOND IN ACCORDANCE WITH FIGURE 12 OF LSP-14-13334" TO THE FOLLOWING DWG

LDW270-53202	SEE DWG	LM-3(33) THRU LM-15(45	A2

	DWG NO	CHG NO
ADD NOTE △ "BOND IN ACCORDANCE WITH FIGURE 12 OF LSP-14-13334, EFF LM-2".	LDW270-51202	A2
ADD NOTE ▽ "BOND IN ACCORDANCE WITH FIGURE 12 OF LSP-14-13334, EFF LM-2 THRU LM-15".	LDW270-23308	B3
ADD NOTE ▼ "BOND IN ACCORDANCE WITH FIGURE 7C OF LSP-14-13334, EFF LM-2".	LDW270-51010	C9
ADD NOTE ▲ "BOND IN ACCORDANCE WITH FIGURE 7C & 7G OF LSP-14-13334, EFF LM-2 THRU LM-15".	LDW270-51453	E1

(MANUFACTURING NOTE) REWORK OF LM2 WILL NOT BE REQUIRED PROVIDED THE REQUIREMENTS OF PARAGRAPH 4.2 OF LSP-14-13334 ARE COMPLIED WITH.

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCD 1961

REASON FOR EO: UPDATE DRAWINGS TO CURRENT BONDING REQUIREMENTS

DESCRIPTION OF EO: ADDED NOTES *, **, ***, ⊗, ⊕, ⊡, △, ▽, ▼, ▲. (NEXT AVAILABLE NO)

GAEC EO RELEASE: JA 8/2/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		NOTED	

DRAWING CHANGE REQD: ✓ REVISE DWG; RECORD EO
DISPOSITION OF PARTS: ✓ REWORK; SCRAP

APPROVED BY								
DATE			8/3/67			8/3/67		8/4/67
	SUPPORT	RELIAB GROUP	JROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG		

PRIORITY: C
DRAWING TITLE: NOTED ABOVE
DRAWING NO.: LEO 270
EO NO.: 53

ISSUED BY W. KUTNER X1611 8/2/67 SECTION PROPULSION GROUP NO. 345 PL 25

TO

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 10-63

ENGINEERING ORDER

DWG. NO. LDW270-52200 | EO NO. A2

CONTROL INFO NO. LM270-1048

IN FLD & B/M FOR -1 INSTL

LDW270-52201-5 WAS LDW270-52201-1

LDW270-52201-7 WAS LDW270-52201-3

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCD1031	5

REASON FOR EO: TO INSTALL LSC270-721

DESCRIPTION OF EO: IN FLD & B/M LDW270-52201-5 WAS LDW270-52201-1, LDW270-52201-7 WAS LDW270-52201-3

GAEC EO RELEASE (R) (C)

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	DATE							
LM		LM2(32)		✓		✓		M	PROP	PROP	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
				PRIORITY: C	DRAWING TITLE: MODULE INSTALLATION - ASCENT PROP. PRESSURIZATION SUBSYSTEM								DRAWING NO.: LDW270-52200		EO NO.: A2	

ISSUED BY J. PAYLICA X1471

GROUP LM PROPULSION DEPT 357 PLT 25

01

NAS 9-1100

LDW270-52201 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO. LDW270-52201-7		GAEC SCH NO.		PART NO. LDW270-52201-5		GAEC SCH NO. 45	
				LEM	LDW270-52200	LEM-2(32)	1	LEM	LDW270-52200	LEM2(32)	1

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00		1.10	2.00	2.01	2.02	2.03		
REV	B		B	B	B	B	B		
SHEET	3.00		4.00	5.00					
REV	B		B	B					
SHEET									
REV									

LAST SECT LTR USED	
LAST DASH NO. USED	-7

GRUMMAN REL INFO B
PRIM NO. JK(01)
463 MAP-8R-10/23/67

77.1 12-65

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS — ANGLES

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS9-1100 LINE ITEM 9 DOCUMENTATION TYPE II

DRAWN BY	S. HACK 7/7/66	WEIGHTS	L. Garcia 7/20/66
LAYOUT BY	P CAPPELLI		
CHECKED BY	J. Poretti 7/11/66		
GR. LEADER			
PROP.			
WEIGHTS		PROJ ENGR	7 Dec 1966
STRESS		REL GROUP	Batti 7-26-66
RELIABILITY	Flanagan 7/21		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

MODULE ASSEMBLIES -
ASCENT PROPELLANT
PRESSURIZATION SUB-SYSTEM

SIZE	CODE IDENT NO.		
B	26512	LDW270-52201	B

SCALE NONE SHEET 1.00 OF 9

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	4.00,5.00	7C 4C					E.O. A1	IN F/D FOR -1 & -3 ASSEMBLIES GB511J-3-2(3) WAS GB511J-3-3(3) ADDED SH. 1.10.	LM-2(32)	✓		10-2-67 N. NAPPI		
	2	4.00,5.00						EO A2	CANCELLED BY E.O. A4.						
	3	2.01, 4.00 5.00, 3.00	5C 7A					E.O. A3	IN F/D & B/M FOR -1 & -3 ASSY'S ADDED LDW280M11156-1 & -2, GB511J-3-14 . REMOVED GB511J-3-13(4). ADDED NOTE 9.						
	4	2.03,4.00,5.00						E.O. A4	CANCELLED E.O. A2.						
	5	3.00						LEO-15	REVISED NOTE 7, ADDED "A NEW SEAL MUST BE USED EVERYTIME A PORT IS ATTACHED TO THE VALVE."						
	6	5.00	8C				✓	E.O.A6,	ON -3, REMOVED LSC270-717-3. ADDED LSC270-717-5 (-5 MAY BE MADE FROM -3)		NOTED				
	7	4.00,5.00	8A 3A					E.O. A7	ON-1 REMOVED LSC270-715-7-1, ADDED LSC270-715-7-2. ON-3 REMOVED LSC270-715-5-1, ADDED LSC270-715-5-2.		✓				
	8	4.00,5.00	5C 6C				✓	E.O. A8	ON -1 ASSY REMOVED LSC270-717-4 ADDED-6. ON -3 ASSY REMOVED LSC270-717-5 ADDED -7.						
	9	2.02,4.00 5.00	6A 5A					E.O. A9 LCD 892	IN B/M & F/D FOR -1 & -3 ADDED LSC269-110-12 FLANGE.						
	10	2.00,2.01 2.02,2.03 4.00,5.00	5B 5A 6B				✓	E.O. A10	IN B/M & F/D: LDW360-52262-3 WAS LDW360-21262-3, LDW360-52262-1 WAS LDW360-21262-1, LDW360-52264-3 WAS LDW360-21264-3, LDW360-52264-1 WAS LDW360-21264-1 IN B/M LDW230-28205-3 & -4 IF T "S" WAS "E".		NOT	REQD			
B	1	3.00,4.00 5.00	5A				✓	E.O. B1 LCD 1571	ADDED NOTE 10, REMOVED NOTE 4, ADDED TO B/M LDW270M10039 11 & CC570W1, 1 REQD FOR -1 & -3.						
	2	3.00,4.00 5.00	4B 8A				✓	E.O. B2 LCD 1031	FOR-1 LSC270-715-11 WAS LSC270-715-7-2, LDW280-16000-1855 ASH-2 WAS LDW280-16000-454 ASH-2, FOR -3 LSC270-715-9 WAS LSC270-715-2, LDW280-16000-1856 ASH-2 WAS LDW280-16000-457 ASH-2. ADDED NOTE 11.		✓				
	3	3.00				✓		LEO270-53, LCD1961	ADDED NOTE 12.						
	4	4.00,5.00 2.01,2.02					✓	E.O. B4 LCD 1031 A+B	REMOVED LDW270-52201-1 & -3 CREATED LDW270-52201-5 & 7 REMOVED NOTES 7 & 11.						

FOR CONTINUATION OF REVISIONS SEE SHEET _____

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52201	B (B)
SCALE NONE			SHEET 1.10

ENG 77.3 5-65

01 NAS 9-1100

C.L.	QTY PER ASSEMBLY -7	-5	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
L	1			LDW280-16000-713ASH-8	E	TUBE	SEE DWG						
L	1			-712ASH-8									
L		1		-482ASH-8									
L	1			-479ASH-8									
L	1			-477ASH-8									
L	1			-476ASH-4									
L	1			-472ASH-4									
L	1			-471ASH-4									
L	1			-470ASH-8									
L		1		-467ASH-8									
L		1		-466ASH-6									
L		1		-465ASH-6									
L		1		-1788ASH-2									
L		1		-1787ASH-2									
L	1			-1988ASH-8									
L	1			-1789ASH-2									
L	1			-1790ASH-2									
L	1			-456ASH-6									
L	1			-455ASH-6									
L	1			-453ASH-6									
L		1		-451ASH-6									
L		1		-448ASH-4									
L		1		-444ASH-4									
L	1			LDW280-16000-443ASH-8	E	TUBE	SEE DWG						
K	1			LDW270-52201-7	S	MODULE ASSY (OX)					NONE	NONE	
K	1			LDW270-52201-5	S	MODULE ASSY (FUEL)					NONE	NONE	

CLEANLINESS PER LSP 14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : LPC-19-2 (GRUMMAN) LPC-19-3 (VENDOR)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52201	B

SCALE NONE SHEET 2.00

AMG 77.2 7-65

01

NAS 9-1100

C.L.	QTY PER ASSEMBLY						CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
C					2	2		LDW280M11156-1	E	BLOCK	SEE DWG						
C					2	2		LDW280M11156-2	E	BLOCK	↕						
C					1			LDW280-28205-4	S	PLATE ASSY	↕						
C						1		LDW280-28205-3	S	PLATE ASSY	SEE DWG						
C					4	4		LDW270M10039-11	E	PLUG	SEE NOTE 10						
C					2	2		LDW270P10001-1	E	GROMMET	SEE DWG						
C					1	1		LDW270P10000-1		INSERT	↑						
L						1		LDW270-10025-11		WASHER							
L						1		LDW280-16000-1985ASH-8		TUBE							
L					1			-1122ASH-4		↑							
L					1			-1121ASH-4									
L					1			-1120ASH-4									
L						1		-1119ASH-4									
L						1		-1118ASH-4									
L						1		-1117ASH-4									
L						1		-829ASH-8									
L					1			-828ASH-8									
L						1		-1800ASH-8									
L						1		-721ASH-8									
L						1		-720ASH-4									
L						2		-719ASH-8									
L						1		-718ASH-8									
L						1		-717ASH-8									
L					1			-716ASH-8									
L					1			-715ASH-4		↑	↑						
L					2			LDW280-16000-714ASH-8	E	TUBE	SEE DWG						
					-7	-5											

CLEANLINESS PER LSI-14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : LPC-19-2 (GRUMMAN), LPC-19-3 (VENDOR)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52201	B

SCALE NONE SHEET 2 OF 11

ENG 77.2 7-65

01

NAS 9-1100

C.L.	QTY PER ASSEMBLY						CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
C					2			GB511J-3-9	E	BOLT	STD PART						
C																	
L					1			LSC270-721-5	S	REGULATOR	SEE NOTE 1						
L					1	1		LSC270-714-3	S	EXPLOSIVE VALVE	SEE NOTE 1						
L					1	1		LSC270-712-1	S	FILTER	SEE NOTE 1						
L					1	1		LSC269-258-2	E	TEE	SEE NOTE 1						
L					1	1		-255-3		CROSS							
L					1			-255-2		CROSS							
L					2	2		-242-1		REDUCER							
L					2	2		-234-19		TEE							
L					1	1		-231-2		CROSS							
L						1		-228-6		TEE							
L					1	1		-227-4		45° ELBOW							
L					3	3		-226-6		90° ELBOW							
L					3	3		-226-4		90° ELBOW							
L					5	5		-224-4		UNION							
L					4	4		-204-8		TEE							
L					1	1		LSC269-228-4	E	TEE	SEE NOTE 1						
L					1	1		LSC269-110-12	E	FLANGE	SEE NOTE 1						
L					1	1		LDW390-51070-3	S	SOLENOID VALVE	SEE DWG						
L					1			LDW360-52264-3	E	TRANSDUCER INSTL							
L						1		LDW360-52264-1									
L					1			LDW360-52262-3									
L						1		LDW360-52262-1	E	TRANSDUCER INSTL	SEE DWG						
////					-7	-5												

CLEANLINESS PER LPC-14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : LPC-19-2 (GRUMMAN), LPC-19-3 (VENDOR)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52201	B

SCALE NONE SHEET 2 OF

ENG 77.2 7-65

01

NAS 9-1100

					2	2		MS28778-2	E	PACKING	STD PART																		
					2	2		AN924-2C	E	NUT	↕																		
C					2	2		AN833-2C	E	ELBOW	↕																		
C					38	39		MS21043-3	E	NUT	STD PART																		
C					40	41		AN960C10L	↕	WASHER	STD PART																		
C					✓	✓		MS20995NC32		LOCKWIRE	STD PART																		
C					1	1		GC501G-62-231		CLAMP	GRUMMAN STD																		
C					1	1		GC12H-21		↕	↕																		
C					2	2		GC12H-8																					
C					1	1		GC12H-6																					
C						1		GC12H-4																					
C					4	4		GC12H-2		CLAMP																			
C					2	2		GB511J-3-3		BOLT																			
C					2	2		GB511J-3-13		↕																			
C					4	6		GB511J-3-4		↕																			
C					29	30		GB511J-3-2	E	BOLT	GRUMMAN STD																		
C					4	4		GB511J-3-14	E	BOLT	GRUMMAN STD																		
C					4	4		GS570W-1	E	SEAL	SEE NOTE 10																		
L					2	2		LSC270-819-9	S	EXPLOSIVE VALVE	SEE NOTE 1																		
L						1		LSC270-817-4	↕	CHECK VALVE	↕																		
L					1			LSC270-817-3		CHECK VALVE																			
L					4			LSC270-813-25		DISCONNECT COUP																			
L						4		LSC270-813-24		↕																			
L						1		LSC270-813-23																					
L					2	1		LSC270-813-31																					
J					1			LSC270-805-2		↕																			
J						1		LSC270-801-2		DISCONNECT COUP																			
L						1		LSC270-717-6	↕	RELIEF VALVE	↕																		
L					1			LSC270-717-7		RELIEF VALVE																			
L						1		LSC270-721-7	S	REGULATOR	SEE NOTE 1																		
					-7	-5		CODE IDENT		PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE										
					QTY PER ASSEMBLY																									

CLEANLINESS PER LSP 14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : LPC-19-2 (GRUMMAN) LPC-19-3 (VENDOR)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52201	B

SCALE NONE SHEET 2 OF 3

ENG 77.2 7-65

01

NAS 9-1100

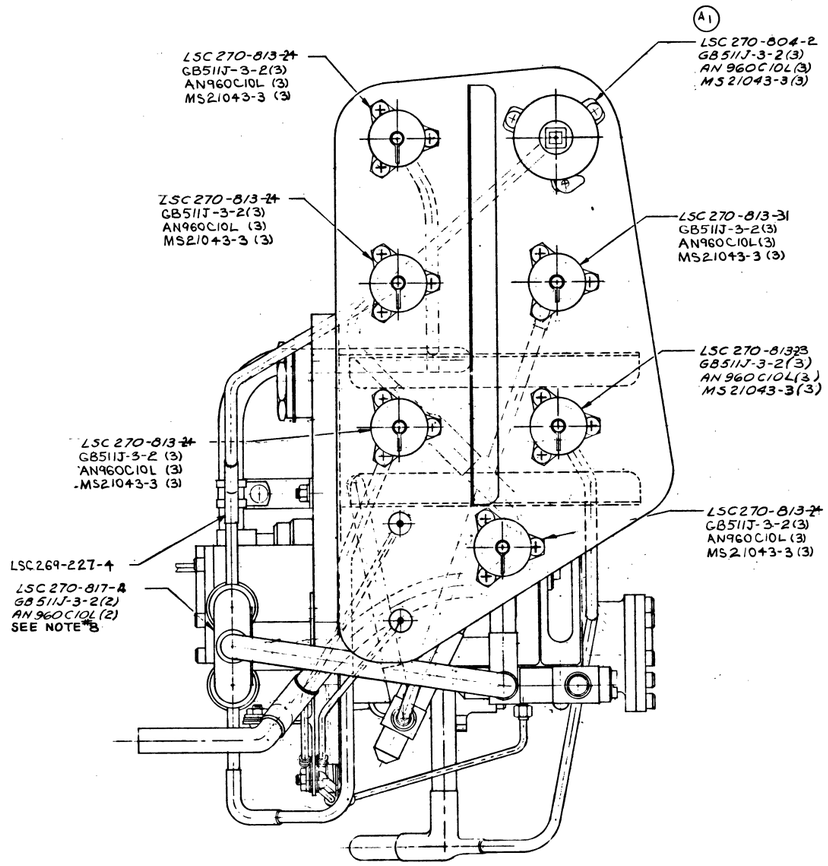
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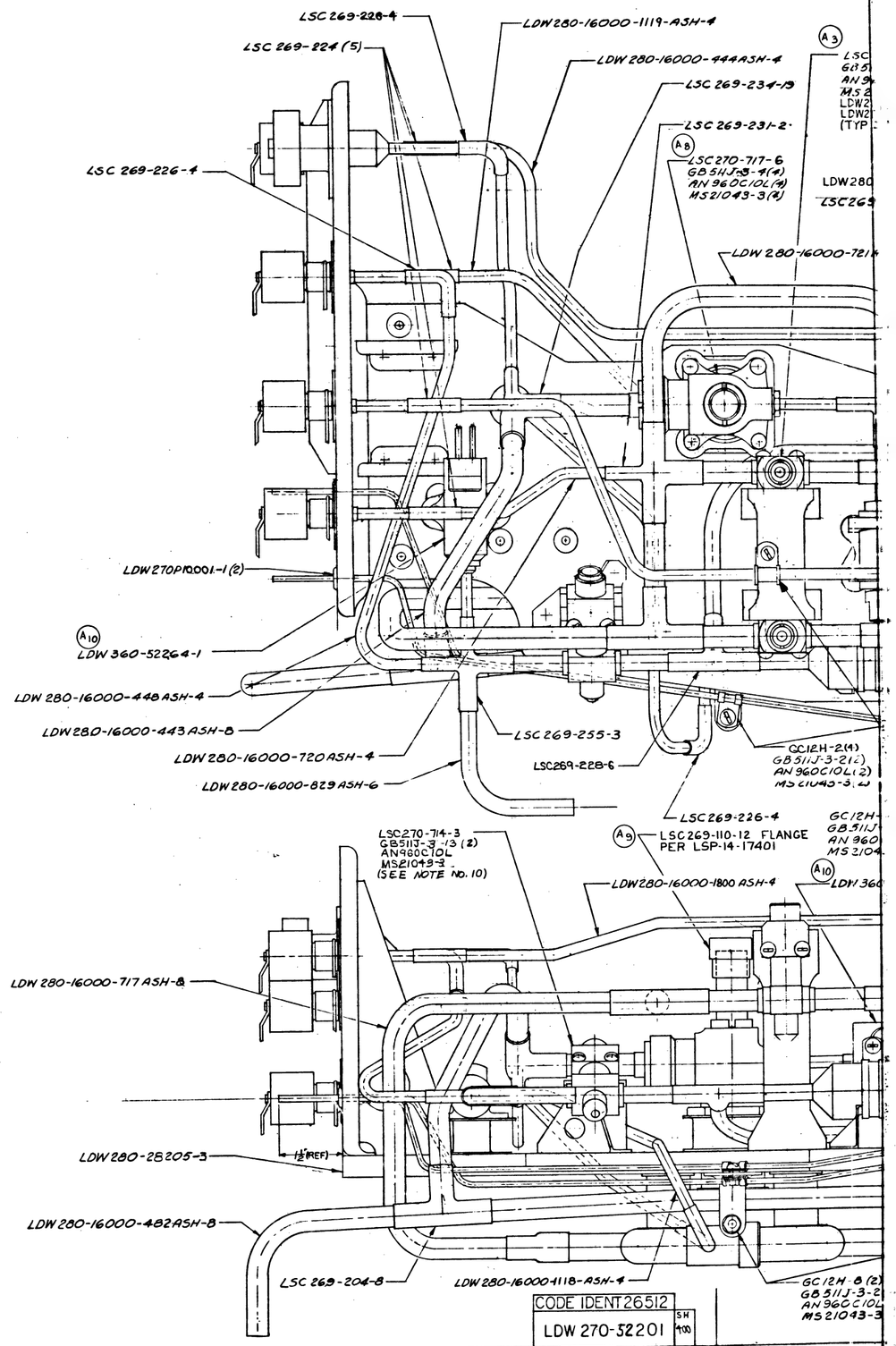
1. COMMERCIAL PART SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING.
2. INDUCTION BRAZING OF FITTINGS SHALL BE IN ACCORDANCE WITH LSP-14-6303.
3. MODULE ASSYS SHALL BE TESTED PER LTP 270-010 "APS HELIUM PRESSURIZATION MODULE PIT."
4. DO NOT REMOVE EXPLOSIVE VALVE INITIATOR PORT PLUGS UNTIL INSTALLATION OF INITIATORS.
5. TUBE STUBS SHALL BE CAPPED PER LSP-14-009 FOR SHIPMENT & STORAGE. REMOVE CAPS PRIOR TO BRAZING INTO SYSTEM.
6. TORQUE MECHANICAL FITTINGS 50-60 INCH LBS.
7. PRIOR TO BRAZING LSC270-715 REDCG VALVES INTO MODULE ASSYS REMOVE INLET & OUTLET PORT ENDS ATTACH PORT ENDS TO LPT270M30214 FIXTURE. INSTALL FIXTURE IN MODULE ASSY FOR BRAZING. AFTER COMPLETION OF ALL BRAZING OPERATIONS REMOVE LPT270M30214 FIXTURE. INSTALL LSC270-715 VALVE BODY ON PANEL ASSY & ATTACH INLET & OUTLET PORT ENDS (CAUTION: SEAL SHALL BE INSTALLED WITH CARE). INSTALL SCREWS & RE-SAFETY WIRE PER MS33540 WITH MS20995NC32 SAFETY WIRE. A NEW SEAL MUST BE USED EVERYTIME A PORT IS ATTACHED TO THE VALVE.
8. TO MINIMIZE CHECK VALVE CHATTER DURING BRAZING OPERATIONS THE LSC270-817 CHECK VALVES SHALL BE THE LAST COMPONENTS BRAZED INTO THE MODULE ASSY.
9. INSTALL RADIUS BLOCK LDW280M11156-1 OR LDW280M11156-2 IN FRONT OF NUT DURING INSTALLATION OF LSC270-819-9 EXPLOSIVE VALVE ON MOUNTING BRACKET.
10. LDW270M10039-11 & GS570W-1 SHALL BE INSTALLED IN LSC270-714-3 & LSC270-819-9 EXPLOSIVE VALVE INITIATOR PORTS HAND TIGHT FOR SHIPMENT & STORAGE.
11. LDW280-16000-1856 ASH-2 VENT TUBE MAY BE FORMED UPON INSTALLATION INTO LDW270-52201-3 MODULE ASSY.
12. BOND IN ACCORDANCE WITH FIGURE 7C & 7G OF LSP-14-13334.

ENG 73.1 6-64

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE	CODE IDENT NO.		
B	26512	LDW270-52201	B (13)
SCALE NONE		SHEET 3.00	

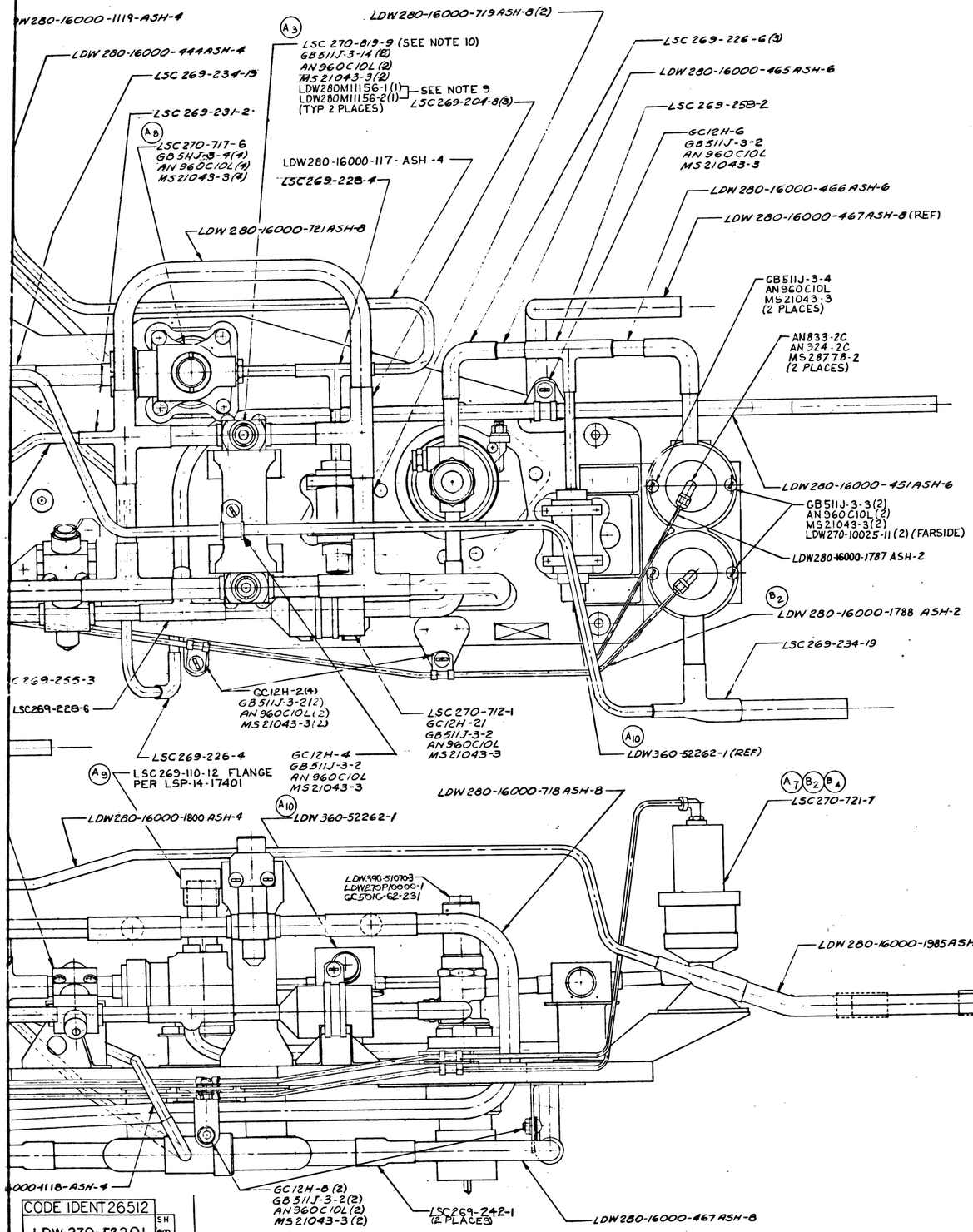
NAS 9-1100





01X02 NAS 9-1100

CODE IDENT 26512
LDW 270-52201 SH 100



LDW270-52201-5 MODULE ASSEMBLY(FUEL)

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY. √
FILLET AND INSIDE CORNER RADII TOLERANCES .015R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 MP THDS. BEYOND PERMISSIBLE.
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
MISMATCH STEP OF ± .05 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0013 MIN. TO .0095 MAX. MIN. THICKNESS TO BE .0002 ON THREADED / REAS. NO ALLOWANCE FOR PLATING IN HOLES
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
250 FOR ALL DRILLED HOLES
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
SYMBOL ∇ DENOTES SURFACE TO BE MACHINED
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
LENGTHS OF AN, MAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
TOLERANCE ON LOFTED DELINEATIONS IS

DWG SIZE 34 X 185

PRINTING INTO ONLY
FULL SIZE SHEET AREA (34 X 30)=
1/2 SIZE SHEET AREA (1/4 OF FULL)=
22 1/2
15

PRINT TRIM LINE

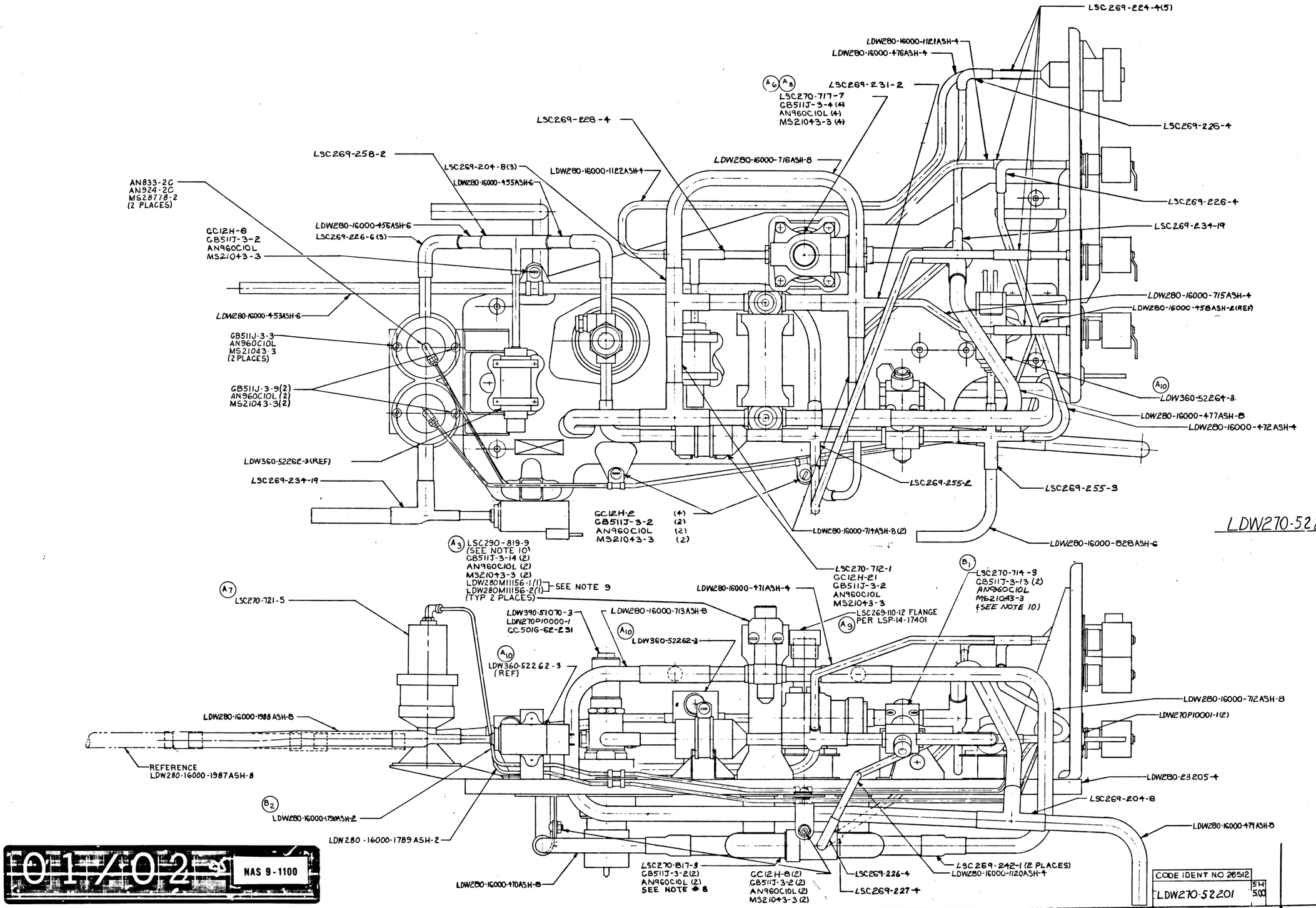
02/02 NAS 9-1100

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L.I., NEW YORK		
LEM	SIZE J	CODE IDENT NO. 26512	LDW270-52201 B
MODEL OR END ITEM	SCALE FULL		SHEET 4.00

CODE IDENT 26512
LDW 270-52201 SH 100

THIS IS AN ORIGINAL DWG.

LDW 270-52201 B
LDW 270-52201 B
A


LSC269-224-4(5)
LDW280-16000-1121ASH-4
LDW280-16000-476ASH-4
LSC269-231-2
LSC270-717-7
GB511J-3-4 (4)
AN960C10L (4)
MS21043-3 (4)
LSC269-228-4
LSC269-226-4
LSC269-258-2
LSC269-204-8(3)
LDW280-16000-455ASH-6
LDW280-16000-1122ASH-4
LDW280-16000-716ASH-8
AN833-2C
AN924-2C
MS28778-2
(2 PLACES)
LDW280-16000-456ASH-6
LSC269-226-6(3)
GC12H-8
GB511J-3-2
AN960C10L
MS21043-3
LSC269-234-19
LDW280-16000-715ASH-4
LDW280-16000-458ASH-2(REF)
LDW280-16000-453ASH-6
GB511J-3-3
AN960C10L
MS21043-3
(2 PLACES)
GB511J-3-9(2)
AN960C10L(2)
MS21043-3(2)
LDW360-52262-3
LDW280-16000-477ASH-8
LDW280-16000-472ASH-4
LDW360-52262-3(REF)
LSC269-234-19
LSC269-255-2
LSC269-255-3
GC12H-2 (4)
GB511J-3-2 (2)
AN960C10L (2)
MS21043-3 (2)
LDW280-16000-719ASH-8(2)
LDW280-16000-828ASH-6
LSC290-819-9
(SEE NOTE 10)
GB511J-3-14 (2)
AN960C10L (2)
MS21043-3 (2)
LDW280M111156-1(1)
LDW280M111156-2(1)
(TYP 2 PLACES)
SEE NOTE 9
LSC270-712-1
GC12H-21
GB511J-3-2
AN960C10L
MS21043-3
LSC270-714-3
GB511J-3-13 (2)
AN960C10L
MS21043-3
(SEE NOTE 10)
LSC270-721-5
LDW280-16000-711ASH-4
LDW390-510T0-3
LDW270P10000-1
GC501G-62-231
LDW280-16000-713ASH-8
LSC269-110-12 FLANGE
PER LSP-14-17401
LDW360-52262-3
LDW360-52262-3
(REF)
LDW280-16000-712ASH-8
LDW270P10001-1(2)
LDW280-16000-1988ASH-8
REFERENCE
LDW280-16000-1987ASH-8
LDW280-23205-4
LSC269-204-8
LDW280-16000-1790ASH-2
LDW280-16000-1789ASH-2
LDW280-16000-479ASH-8
LSC270-817-8
GB511J-3-2(2)
AN960C10L (2)
SEE NOTE # 8
GC12H-8(2)
GB511J-3-2 (2)
AN960C10L (2)
MS21043-3 (2)
LSC269-226-4
LSC269-227-4
LSC269-242-1 (2 PLACES)
LDW280-16000-1120ASH-4
LDW280-16000-470ASH-8
LDW270-52201-7 MOD
01402
NAS 9-1100
CODE IDENT NO 26512
LDW270-52201
SH 5.00

4(5)

LSC269-226-4

LSC269-226-4

LSC269-234-19

DW280-16000-715ASH-4
80-16000-458ASH-E(REF)

A10
LDW360-52264-3
280-16000-477ASH-B
LDW280-16000-472ASH-4

A1
LSC270-805-2
GB511J-3-2(3)
AN960C10L (3)
MS21043-3 (3)

LSC270-813-25
GB511J-3-2(3)
AN960C10L (3)
MS21043-3 (3)

LSC270-813-25
GB511J-3-2(3)
AN960C10L(3)
MS21043-3 (3)

LSC270-813-25
GB511J-3-2 (3)
AN960C10L (3)
MS21043-3(3)

LSC270-813-25
GB511J-3-2(3)
AN960C10L(3)
MS21043-3 (3)

LSC270-813-25
GB511J-3-2(3)
AN960C10L(3)
MS21043-3(3)

LSC270-813-25
GB511J-3-2(3)
AN960C10L(3)
MS21043-3(3)

LDW270-52201-7 MODULE ASSEMBLY(OX)

LDW280-16000-712ASH-B
LDW270P10001-1(2)

W280-23205-4

LDW280-16000-479ASH-B

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.	√
FILLET AND INSIDE CORNER RADII TOLERANCES .010R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 JMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING MS HOLES	
SURFACE ROUGHNESS 125 INCLUDING REAMED HOLES PER MIL-STD-10	
500 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED 1S	
SYMBOL ↓ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

DWG SIZE 34 X 265
PRINTING INFO ONLY
FULL SIZE SHEET AREA ON X
1/2 SIZE SHEET AREA (1/4 OF FULL)
TRIM LINE

02402

NAS 9-1100

CODE IDENT NO 26512	SH 5.00
LDW270-52201	

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L.I., NEW YORK			
SIZE J	CODE IDENT NO. 26512	LDW270-52201	B
LEM MODEL OR END ITEM	SCALE 1:1	SHEET 5.00	

THIS IS AN ORIGINAL DWG.

LDW270-52201 B

LDW270-52201 B

W

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG. NO. LDW 270-52201		EO NO. C1
CONTROL INFO NO. L'.-5-17124		

ADD NOTE *:
AS AN ALTERNATIVE LSC 270-721-5-1 & LSC 270-721-7-2 MAY BE SUBSTITUTED FOR LSC 270-721-5 & LSC 270-721-7 RESPECTIVELY

IN B/M ADD. LSC 270-721-5-1 REGULATOR, SEE NOTE * AND LSC 270-721-7-2 REGULATOR SEE NOTE *

RELEASED BY LIAISON

(REF) E.O. B4 * - NEXT AVAILABLE NUMBER

DETAIL SPEC REQ | | CL II ENGRG CHG | | CL I ENGRG CHG | 1 | | 3

REASON FOR EO: HARDWARE NOT AVAILABLE

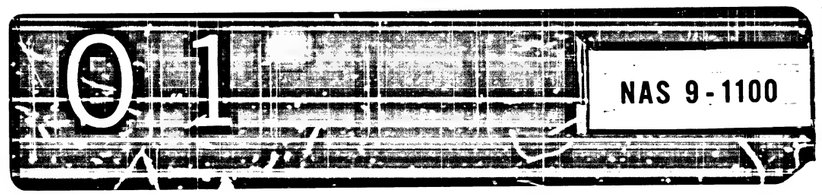
DESCRIPTION OF EO: IN B/M ADDED LSC 270-721-5-1 REGULATOR & LSC 270-721-7-2 REGULATOR & NOTE *

GAEC EO RELEASE: 2 *

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY: DATE			SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
													RBoth 10/16/67	[illegible] 10/16/67	[illegible] 10/16/67	mh 10/16/67	[illegible] 10/17/67
LM		LM-2(32)		✓		✓											

PRIORITY: C
DRAWING TITLE: MODULE ASSY.- ASCENT PROPELLANT PRESSURIZATION SUB-SYSTEM
DRAWING NO.: LDW 270-52201
EO NO.: C1

ISSUED BY F. PARCELLI 22; x 86755 SECTION V-D-1- GROUP NO. 335 PL 25

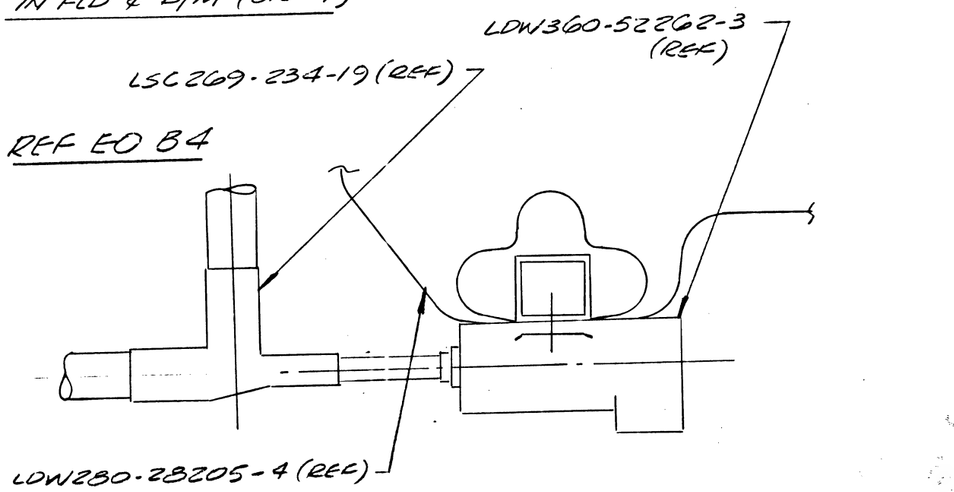


GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER *

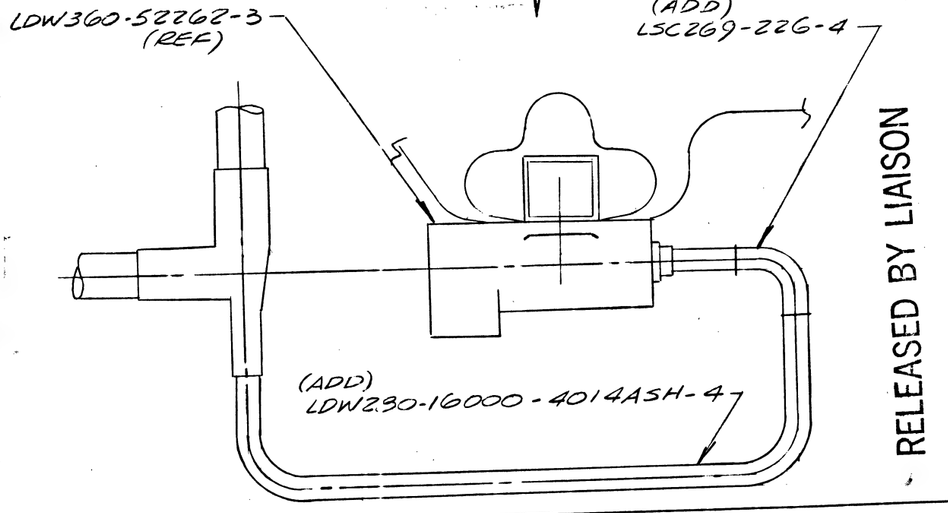
DWG. NO. LDW270-52201		EO NO. C2
CONTROL INFO NO. LM-5-17193		

ENG 32.2 REV 3-65

IN FLD & B/M (ON-7)



(5/8)



RELEASED BY LIAISON

5

DETAIL SPEC REQ	CL II ENGRG CHG	✓	CL I ENGRG CHG	

REASON FOR EO: PROVIDE CLEARANCE BETWEEN X-DUCER & ADJ LINE.

DESCRIPTION OF EO: IN FLD & B/M (ON-7) ADDED LDW280-16000-4014ASH-4, LSC269-226-4;

GAEC EO RELEASE: JK

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM2(32)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY / DATE: 10-24-67	SUPPORT	RELIAB. GROUP	GROUP LEADER: RB 10/30/67	STRESS GROUP: DV 10/27/67	LIAISON ENGRG: 10-26-67	PROJ ENGRG: 10/26/67
✓		✓								

PRIORITY: C

DRAWING TITLE: MODULE ASSY-ASCENT PROPELLANT PRESSURIZATION SUB-SYS

DRAWING NO.: LDW270-52201

EO NO.: C2

ISSUED BY: LIAISON M.D.REYES X.86755 CIEZUNSKI 13.2

SECTION: PROPULSION

GROUP NO. 270 PL 25

NAS 9-1100

LDW270-52204 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LTM270-50000	PA-1(47)	
LM	LDW270-51010	LM-2(32)	1
PART NO. LDW270-52204-3		GAEC SCH NO. 45	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	1.10	2.00	3.00	4.00	4.01			
REV	B	B	B	B		B			
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	D
LAST DASH NO. USED	-13

GRUMMAN REL INFO A
PRIM NO. 459 (UK(603) MP-16 A-9/17/)

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 — ±1/2°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	✓
CLASS I ENGRG CHANGE	
LCD19-1572	

LCD19-2041

CONTRACT NO. NAS9-0011 LINE ITEM 009 DOCUMENTATION TYPE II

DRAWN BY	S.SCIARROTTA	WTS.	
LAYOUT BY			
CHECKED BY			
GRP LDR			
PROP			
V.D.I			
RELIAB			
STRUCT			

PROJ ENGR
REL GROUP

© GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

TUBE ASSY - A/S
VALVE ACTUATOR LINE

SIZE	CODE IDENT NO.		
B	26512	LDW270-52204	A

SCALE NONE SHEET 1.00 6

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	~~QUAL~~ APPD
A	1	1.00 1.10 2.00 3.00 4.00 4.01					✓	LCD19-2041	SHT 1.00 OF 6" WAS: SHT 1.00 OF 4 ADDED SHTS 1.10 & 4.01. IN THE F/D, B/M & M/B REMOVED -1 ADDED -3. IN THE NOTES CHGD NOTES 6 & 7 TO READ -3 TUBE ASSY WAS -1 TUBE ASSY	LM 2(32)		✓	I Saunders 8-9-67		
	2	1.00						LCD19-1572(R)	IN THE M/B ADD PA-1 EFFECT TO -3 QTY 1	PA-1 (47)	NOT	REQD			

FOR CONTINUATION OF REVISIONS SEE SHEET _____

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52204	A
SCALE NONE		SHEET 1-10	

ENG 77.3 5-65

01 NAS 9-1100

QTY PER ASSEMBLY	PART NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
-3											
1	LDW270M10037-11	E		ADAPTER	SEE DWG						
1	LDW270M10037-13	E		ADAPTER	SEE DWG						
2	LDW270M10038-11	E		FLANGE	SEE DWG.						
1	LDW270-52204-13	E		TUBE	ST.STL.TUBE	LSM-14-1001	304L ½HD	.625 O.D. X .049 W			
J	LDW270-52204-3	E		TUBE ASSY					SW		

CLEANLINESS LEVEL PER LSP-14-0011

SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC
SW	FUS. WELD STL.	MIL-W-8611

SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC

SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH NONE

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52204	A

SCALE NONE SHEET 2.00

ENG 77.2 5-64

01 NAS 9-1100

NOTES:

1. OPERATING PRESSURE 600 P.S.I.
2. ELECTRO-ETCH TUBE ASSY LINE FUNCTION "ASF" PER LSP-14-4708
3. 100% RADIO GRAPHIC INSPECTION REQUIRED ON WELDS.
4. WELDS SHALL HAVE 100% PENETRATION & FUSION FOR TOTAL LINEAL LENGTH OF WELD.
5. REMOVE ALL INTERNAL WELD BEADS IN EXCESS OF .010 INCH.
6. THE -3 TUBE ASSY SHALL BE LEAK CHECKED AT 1200±50 PSIG AT ROOM TEMPERATURE FOR 3 TO 5 MINUTES, ANY EVIDENCE OF LEAKAGE OR MALFUNCTION WILL BE CAUSE FOR REJECTION.
7. A PRE-PRODUCTION MOCK-UP OF THE -3 TUBE ASSY IS TO BE FABRICATED, (AL. ALY. MATL. ACCEPTABLE) & CHECK FITTED INTO ITS PROSPECTIVE LOCATION ON THE VEHICLE (LM-2).

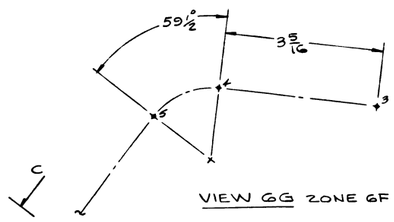
GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52204	A
SCALE ——		SHEET 3.00	

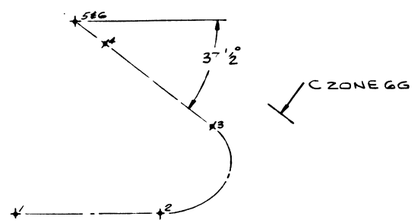
ENG 73.1 6-64

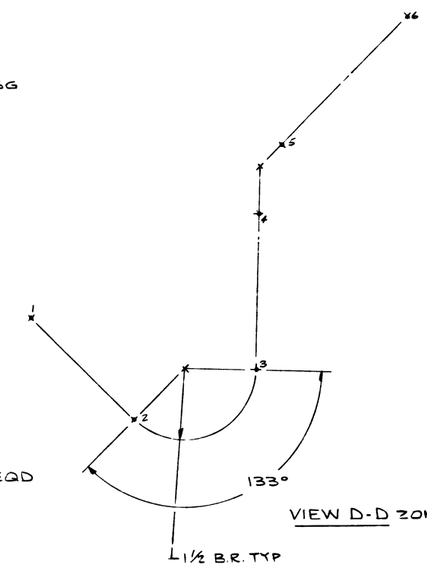
NAS 9-1100

SUPPLEMENTARY DATA UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG.	
MARK PART NUMBER IN ACCORDANCE WITH MIL-STD-130.	
ELECTRO ETCH PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY	✓
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
INSTALL RIVETS IN ACCORDANCE WITH	

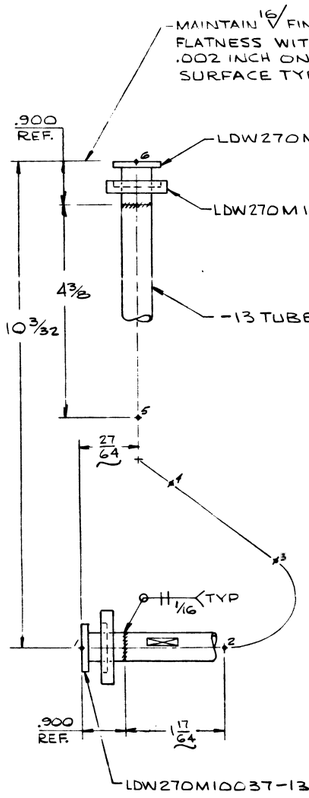


VIEW GG ZONE 6F

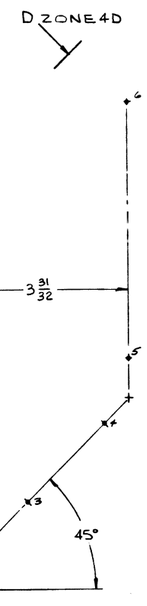




VIEW D-D ZONE 3E



-3 TUBE ASSY

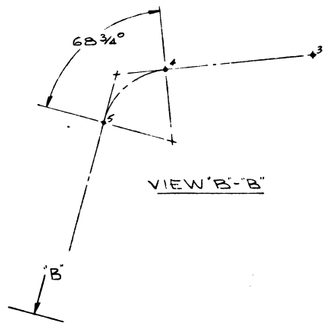


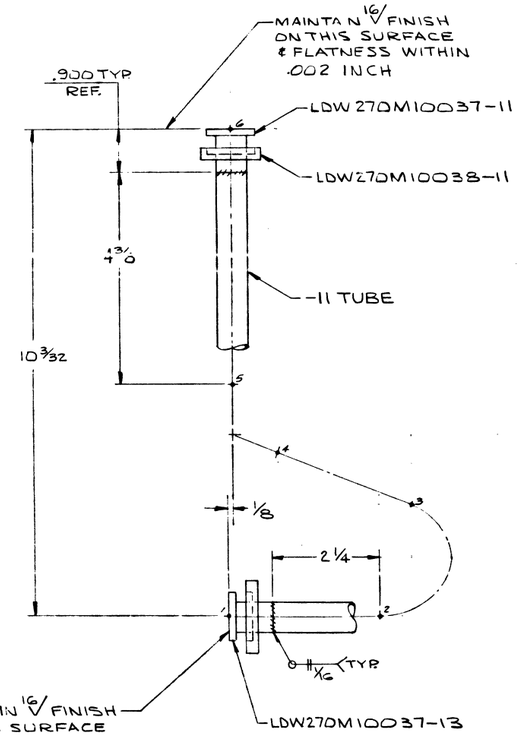
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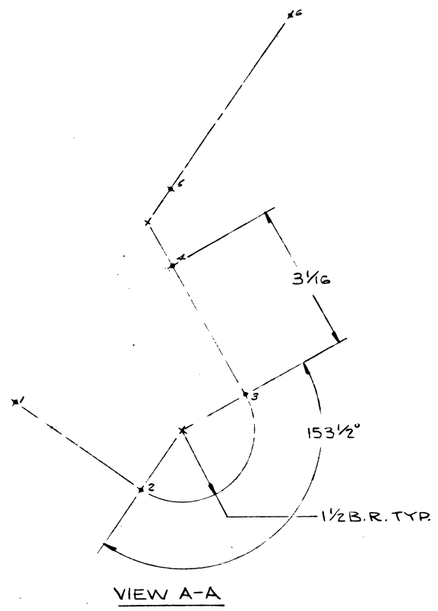
NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORPORATION BETHPAGE, NEW YORK 11714			
SIZE E	CODE IDENT NO. 26512	LDW270-52.204	A
SCALE 1/1		SHEET 4.5	

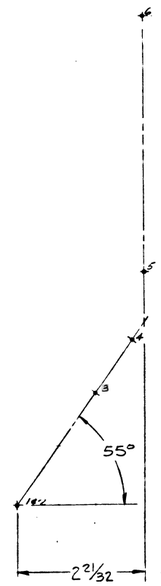
DRG 73.4 REV. 5-67







~~-1 TUBE ASSY~~



MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG

- PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.
- FILLET AND RADIUS CORNER BOTH TOLERANCES .062R TO .062R ± .010; .063R TO .250R ± .015; OVER .250R ± .030
- DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS 2.3 MIN. THDS. BEYOND PERMISSIBLE
- EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
- DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK
- MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO LAPPAGE OF CUTTERS AT INSIDE INTERSECTING SURFACES
- DIAMETERS MARKED MUST BE CONCENTRIC WITHIN .005 FULL INDICATOR READING
- HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION
- ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING THICKNESS OF PLATE .0003 MIN TO .0005 MAX MIN THICKNESS TO BE .0002 ON THREADED AREAS NO ALLOWANCES FOR PLATING IN HOLES
- 125 SURFACE ROUGHNESS INCLUDING MARKED HOLES PER MIL STD 10
- 200 FOR ALL DRILLED HOLES
- REMOVE ALL BURRS BREAK ALL EDGES .015/.031
- INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
- SYMBOL X DENOTES SURFACE TO BE MACHINED
- UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
- LENGTHS OF AN NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED
- TOLERANCE ON LOFTED DELINEATIONS IS

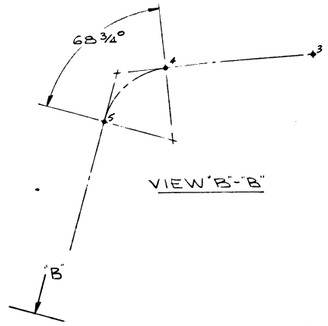
NAS 9-1100

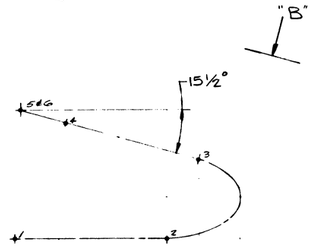
GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I. NEW YORK

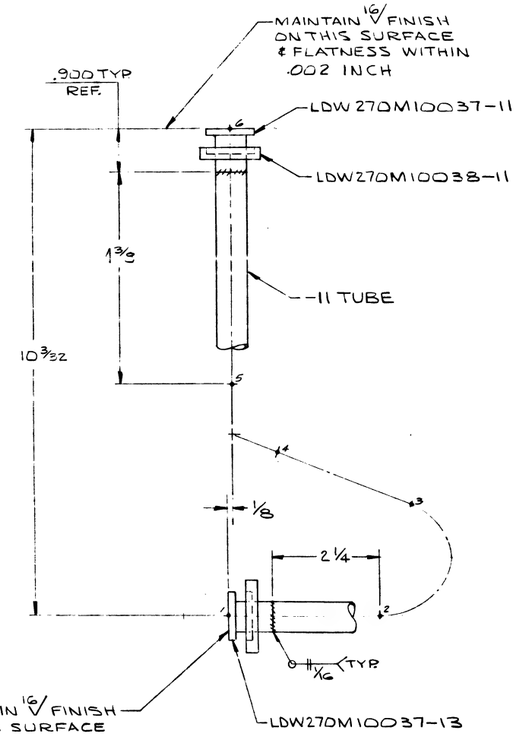
SIZE	CODE IDENT NO.	LDW270-5220-4
E	26512	

MODEL OR END ITEM | SCALE 1/1 | SHEET 1

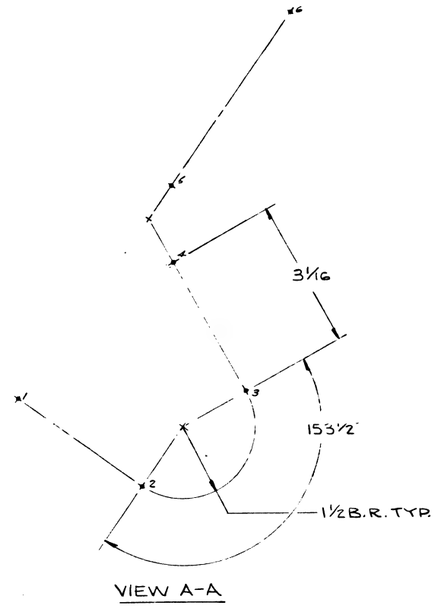
LDW270-5220-4 B

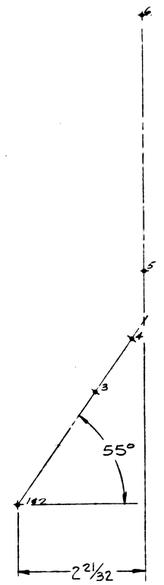






-1 TUBE ASSY





MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG

- ELECTRO ETCH PART NUMBER AND ALL OTHER MARKINGS IN AREAS MARKED USE BOTH SIDES IF NECESSARY. ✓
- FILLET AND INSIDE CORNER RADII TOLERANCES
  .016R TO .062R ± .008
  .063R TO .250R ± .015
  OVER .250R ± .030
- DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS 2.3 IMP. THDS BEYOND PERMISSIBLE
- EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX
- DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK
- MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
- DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
- HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION
- ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING THICKNESS OF PLATE .0003 MIN TO .0005 MAX MIN THICKNESS TO BE .0002 ON THREADED AREAS NO ALLOWANCES FOR PLATING IN HOLES
- 125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL STD 10
- 200 FOR ALL DRILLED HOLES
- REMOVE ALL BURRS BREAK ALL EDGES .015 .031
- INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
- SYMBOL X DENOTES SURFACE TO BE MACHINED
- UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
- LENGTHS OF AN NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED
- TOLERANCE ON LOFTED DELINEATIONS IS

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK		
SIZE E	CODE IDENT NO. 26512	LDW270-522D-4
MODEL OR END ITEM	SCALE	SHEET

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65 B7

ENGINEERING ORDER

DWG. NO. LDW270-52204 | EO NO. B1
CONTROL INFO NO. LM270-1097

IN THE NOTES CHG NOTE 6 TO READ "PROOF CHECKED etc", WAS "LEAK CHECKED etc".

IN THE NOTES ADD NOTE * (* USE NEXT AVAILABLE NOTE NUMBER)

* HELIUM LEAK CHECK -3 ASSY WITH 100% HELIUM CONCENTRATION AT ONE ATMOSPHERE DIFFERENTIAL. HELIUM TO BE CONTAINED WITHIN A POLYETHYLENE BAG SURROUNDING THE WELDED JOINTS. LEAK CHECK PER LPC-270-1.

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD1572		LCRP1572-270-07 (E) (5)

REASON FOR EO: ADDED INFO FOR PRODUCTION LEAK CHECK

DESCRIPTION OF EO: IN THE NOTES CHGD NOTE 6 TO READ "PROOF CHECKED etc", WAS: "LEAK CHECKED etc". & ADDED NOTE *.

GAEC EO RELEASE: C

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM2 (32) & PA-1 (47)	

DRAWING CHANGE REQD: ✓ REVISE DWG | RECORD EO | DISPOSITION OF PARTS: ✓ REWORK | RAP

APPROVED BY: K.B | CW

DATE: 10/17/67 | 10/18/67 | 10-18-67

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	TUBE ASSY-A/S VALVE ACTUATOR LINE	LDW270-52204	B1

M	PROP	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	MGMT

ISSUED BY S. SCIARROTTA X1471 SECTION PROPULSION GROUP NO. 345 PL 25



GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO.	LDW270-52204		EO NO.	B2
CONTROL INFO NO.	LM270-1110			

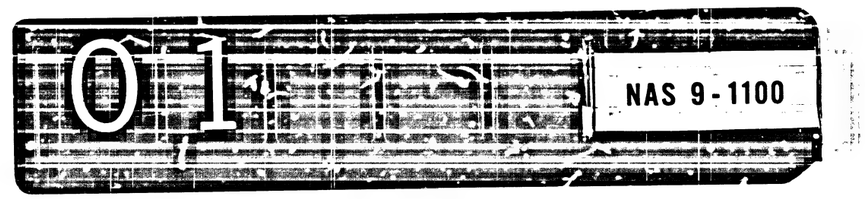
IN THE M/B SHT 1.00 DELETE PA-1(47) EFFECT.

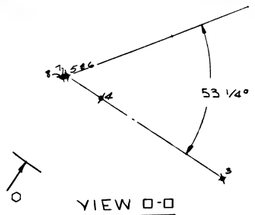
DETAIL SPEC REQ		CL II ENGRG CHG	✓1	CL I ENGRG CHG		LCD1572	LCRP 1572-270-03 (5)

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
NOT REQD ON PA-1	IN THE M/B DELETED PA-1(47) EFFECT	JK 11/2/67

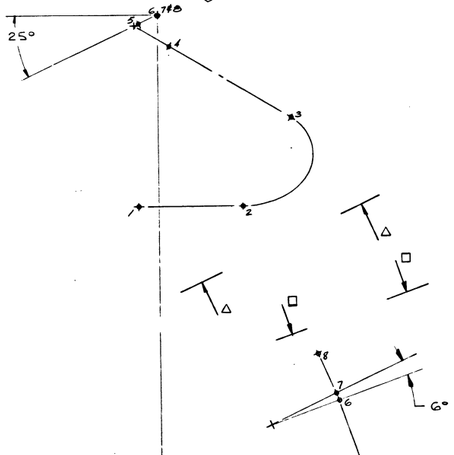
MODEL	EFFECTIVITY			DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY	RG			RB			MHO	
	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	REVISE DWG	RECORD EO	REWORK	SCRAP	DATE	11/3/67			11/3/67			11/3/67	11/7/67
									PROP	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ. ENGRG	QMP
LM		PA-1(47)														
				PRIORITY	DRAWING TITLE							DRAWING NO.				EO NO.
				C	TUBE ASSY-A/S VALVE ACTUATOR LINE							LDW270-52204				B2

ISSUED BY S. SCIARROTTA X1471 SECTION PROPULSION GROUP NO. 345 PL 25



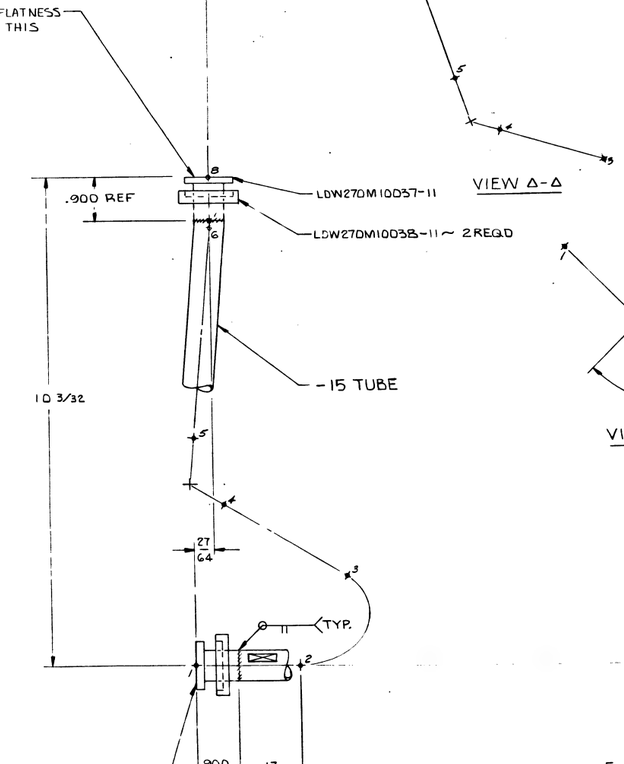


VIEW O-O

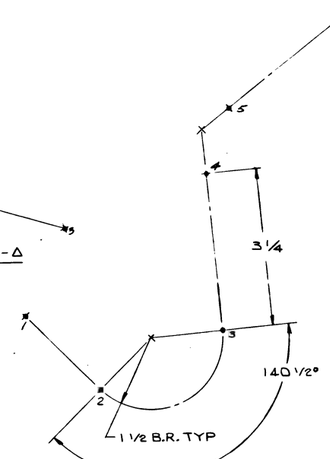


VIEW O-O

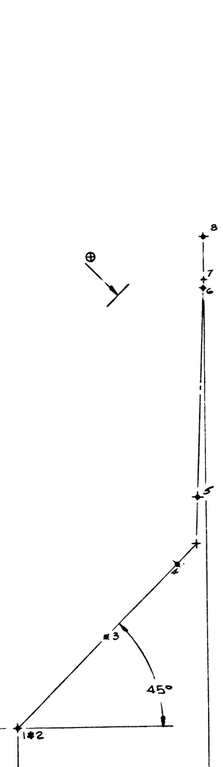
MAINTAIN 16 FINISH & FLATNESS WITHIN .002 INCH ON THIS SURFACE TYP



VIEW Δ-Δ



VIEW ⊕-⊕



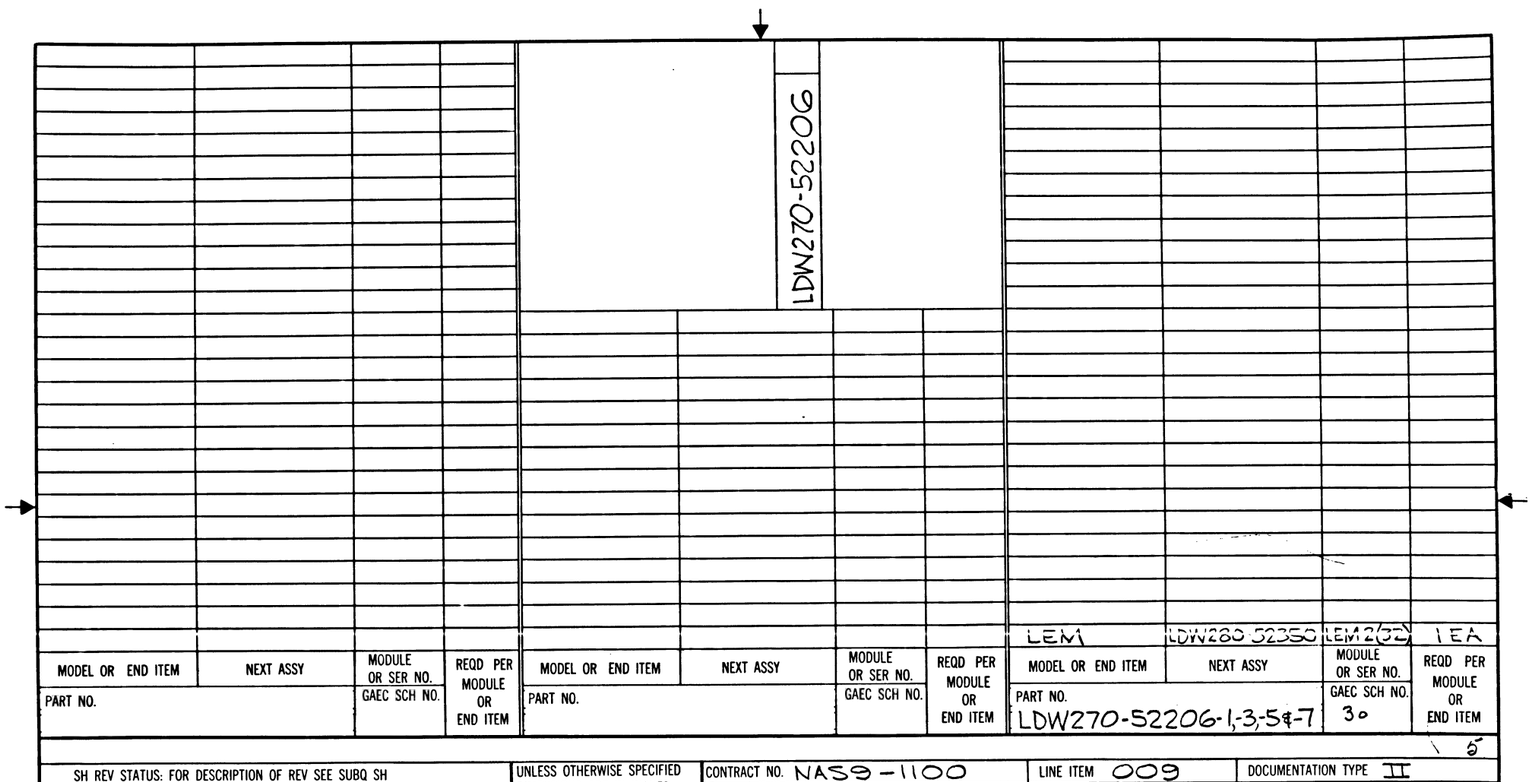
-5 TUBE ASSY
SAME AS -3 EXCEPT AS SHOWN

IN THE F/D & B/M CREATE -5 ASSY
IN THE M/B DELETE -3 ASSY REPLACE WITH -5 ASSY ON LM-2 ONLY
-15 TUBE MAT'L ST. STL. TUBE, SPEC LSM-14-1001, COM'L SPEC 304L 1/8HD
STOCK SIZE .625 O.D. x .049W.

(⊕, Δ, □ ETC USE NEXT AVAILABLE SECTION LETTERS)

01 NAS 9-1100

DETAIL SPEC REQD		CLASS II ENGRG CHG	/	CLASS I ENGRG CHG		LCD 1394						CONTROL INFO NO. LM270-1142		
REASON FOR ED: -3 INTERFERS WITH ASCENT ENGINE BRACKETRY						DESCRIPTION OF ED: REMOVED -3 ADDED -5						S GRUMMAN ED RELEASE		
MODEL	PROCURING ACT. NO.	EFFECTIVITY GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING REVISION REQD	DISPOSITION OF PARTS			Sent By						
LM		LMC (32)		REVISE DWG	RECORD ED	REWORK	-3 SCRAP	U PROP	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGR
				PRIORITY C	DRAWING TITLE: TUBE ASSY - A/S VALVE ACTUATOR LINE								ENGINEERING ORDER	
													DRAWING NO. LDW270-52204	ED NO. 83
X1471 ISSUED BY S. SCIARROTTA SECTION PROPULSION GROUP NO. 345 PL 25								CODE IDENT NO. 26512					GRUMMAN AIRCRAFT ENGINEERING CORP BETHPAGE, L. I., N. Y.	



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		LEM	LDW280 52350	LEM 2(J2)	1 EA
								PART NO. LDW270-52206-1,-3,-5&-7		GAEC SCH NO. 30	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH											
SHEET	1.00		2.00	3.00	4.00						
REV											
SHEET											
REV											
SHEET											
REV											

		GRUMMAN REV INFO	
LAST SECT LTR USED	A	PRIM NO.	
LAST DASH NO. USED	-7	450	MP-8-4-6

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/8 — —

ORIG DWG AUTH				
DETAIL SPEC REQUIREMENT				
CLASS II ENGRG CHANGE				
CLASS I ENGRG CHANGE				
CONTRACT NO. NAS9-1100			LINE ITEM 009	DOCUMENTATION TYPE II
DRAWN BY	S.SCIARROTTA	STRUCT		GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE, L. I., NEW YORK
LAYOUT BY		WTS.	L. Garcia 8/13/66.	
CHECKED BY				HOSE ASSY - A/S HI-POINT BLEED & AP LINES
GRP DR	M. Liebman 8-1-66			
PROP				
V.D.I.		PROJ ENGR		SIZE B / CODE IDENT NO. 26512 / LDW270-52206
RELIAB.		REL GROUP		SCALE NONE / SHEET 1.00 OF 4
STRUCT				

ENG 77.1 12-65

NAS 9-1100

QTY PER ASSEMBLY				CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
1	1	1	1		GF503B-4	E	SOCKET	GRUM. STD.						
1	1				GE510F-4-45	E	HOSE FITTING	↕						
		1	1		GE510F-4-90	E	HOSE FITTING							
1					GH510L-4-0128	E	HOSE, TEFLON							
	1				GH510L-4-0134	E	HOSE, TEFLON	↕						
		1	1		GH510L-4-0093	E	HOSE, TEFLON	GRUM. STD.						
1	1	1	1		LDW270M10030-11	E	ADAPTER	SEE DWG.						
J					LDW270-52206-7	E	HOSE ASSY (OX)							
J					-5	↕	HOSE ASSY (FUEL)							
J					-3	↕	HOSE ASSY (OX)							
J					LDW270-52206-1	E	HOSE ASSY (FUEL)							
-7	-5	-3	-1											

CLEANLINESS LEVEL PER LSP-14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW270-52206

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTES:

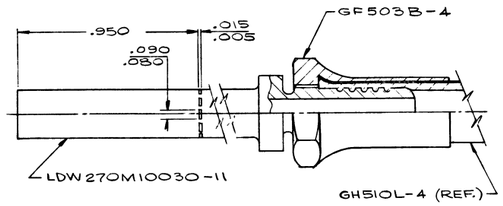
1. FABRICATION OF -1, -3, -5 & -7 HOSE ASSY'S SHALL BE IN ACCORDANCE WITH LSP-14-17102.
2. OPERATING PRESSURE 260 PSI
3. PREPARE END FOR BRAZING (BRAZE SPEC LSP-14-63063) MINIMUM LENGTH 3/4 INCH.
4. LENGTHS ARE APPROXIMATE, TRUE LENGTHS TO BE ESTABLISHED AT FABRICATION & ENGINEERING INFORMED.
5. -1, -3, -5 & -7 HOSE ASSYS ARE TO BE VIBRATION QUALIFIED BY SIMILARITY TO LDW270-51206 HOSE ASSYS. LDW270-51206 HOSE ASSYS ARE TESTED TO LEM VEHICLE VIBRATION LEVELS.

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-52206	
SCALE —		SHEET 3.00	

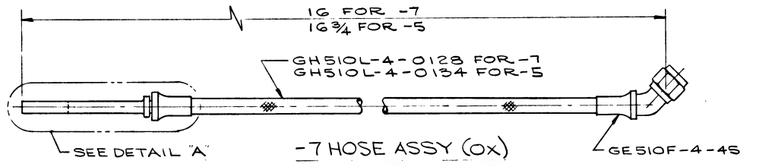
ENG 72.1 6-64

01

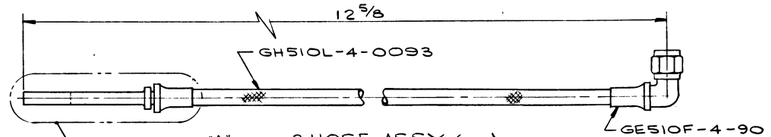
NAS 9-1100



DETAIL "A" (SEE NOTE*3)
SCALE : NONE



-7 HOSE ASSY (OX)
-5 HOSE ASSY (FUEL)



-3 HOSE ASSY (OX)
-1 HOSE ASSY (FUEL)

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

- PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.
- FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010; .063R TO .250R ± .015; OVER .250R ± .030
- DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.
- EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
- DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
- MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
- DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
- HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
- ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS NO ALLOWANCE FOR PLATING IN HOLES
- 125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
- 250 FOR ALL DRILLED HOLES
- REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
- INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
- SYMBOL ⌐ DENOTES SURFACE TO BE MACHINED
- UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
- LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
- TOLERANCE ON LOFTED DELINEATIONS IS

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
LEM	SIZE C	CODE IDENT NO. 26512	LDW270-52206
MODEL OR END ITEM	SCALE 1/1		SHEET 4.00

DWG 52206 REV

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

NG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW270-52206 | EO NO. A1

CONTROL INFO NO. LEM 270-620

IN THE F/D & B/M ON -1,-3,-5,-7 HOSE ASSYS DELETE "GF503B-4" REPLACE WITH "GS506B-4". IN THE NOTES SHT. 3.00 DELETE NOTE #3 & ADD NOTE *. IN THE F/D, DETAIL "A" CALLOUT CHANGED TO READ "SEE NOTE *" WAS: "SEE NOTE #3".

* PREPARE END FOR BRAZING PER LSP-14-7062 MINIMUM LENGTH 3/4 INCH.

USE NEXT NOTE NUMBER

DESCRIPTION OF E.O.

IN THE F/D & BM ON -1,-3,-5,-7 HOSE ASSYS DELETE. "GF503B-4" REPLACE WITH "GS506B-4". IN THE NOTES SHT. 3.00 DELETE NOTE #3 & ADD NOTE *. IN THE F/D, DETAIL "A" CALLOUT CHANGED TO READ "SEE NOTE *" WAS: SEE NOTE # 3".

(5)

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG

REASON FOR EO	DESCRIPTION OF EO	GAEC C EO RELEASE
WRONG INFORMATION	SEE ABOVE	18 8-24

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP	APPROVED BY: DATE	PROP	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
LM		LEM 2 (32)				✓			PROP							8-22-66

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	HOSE ASSY-A/S HI-POINT BLEED & AP LINES	LDW270-52206	A1

ISSUED BY S. SCIARROTTA 8-12-66 X1471 SECTION PROPULSION GROUP NO. 345 PL 35

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG. NO. LDW270-52206		EO NO. A2
CONTROL INFO NO. LM270-782		

** DESCRIPTION OF E.O.

IN THE NOTES SHT 3.00 CHG. NOTE #5 & ADD NOTE *
(* USE NEXT AVAILABLE NOTE NUMBER)

5. -1,-3,-5 & -7 HOSE ASSYS ARE VIBRATION QAULIFIED BY SIMILARITY TO LDW270-51458 HOSE ASSYS. LDW270-51458 HOSE ASSYS ARE TESTED TO LM VEHICLE VIBRATION LEVELS.

WAS:

5. -1,-3,-5 & -7 HOSE ASSYS ARE TO BE VIBRATION QAULIFIED BY SIMILARITY TO LDW270-5120G HOSE ASSYS. LDW270-5120G HOSE ASSYS ARE TESTED TO LEM VEHICLE VIBRATION LEVELS.

* ALL HOSE ASSYS SHALL BE LEAK CHECKED AT 500 ± 5 PSIG AT ROOM TEMPERATURE FOR 3 TO 5 MINUTES, ANY EVIDENCE OF LEAKAGE OR MALFUNCTION WILL BE CAUSE FOR REJECTION (HYDROSTATIC TEST).

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG

REASON FOR EO: UPDATE & ADDED INFORMTION

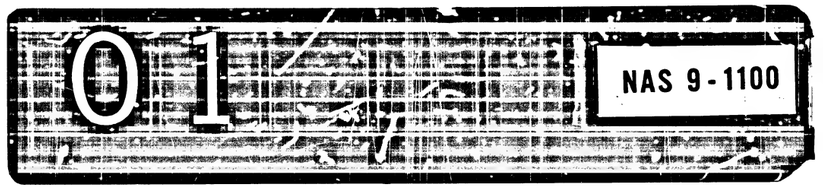
DESCRIPTION OF EO: SEE ABOVE * *

GAEC EO RELEASE: 16 1/17/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	DATE	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT
LM		LM-2(32)		✓		NONE		G	1/9/67			1-9-67	1/12/67		1/17/67	1-12-67
								PROP								

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	HOSE ASSY-A/S HI-POINT BLEED & AP LINES	LDW270-52206	A2

ISSUED BY S. SCIARROTTA X1471 SECTION PROPULSION GROUP NO. 345 PL 35



GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 20512
ENGINEERING ORDER

ENG 32.1 REV 3-66

C

DWG. NO. LDW270-52206 | EO NO. A3
CONTROL INFO NO. LM270-876

* IN THE M/B, SHT 1.00 ADD EFFECT OF -1,-3,-5,&-7 TO LM-1 — MODEL "LM", N/A "LDW280-51350" MODULE "LM-1(31) # REQD PER MODULE "1 EA"

22

DETAIL SPEC REQ | CL II ENGRG CHG ✓ | CL I ENGRG CHG | LCD-19-1375

REASON FOR EO: LM-2 FLEX HOSE REQD FOR LM-1

DESCRIPTION OF EO: SEE ABOVE *

GAEC EO RELEASE: C — JK 4/27/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-1(31)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: NOT REQD REWORK | SCRAP

APPROVED BY: DATE 4/26/67 C PROP | SUPPORT | RELIAB GROUP | GROUP LEADER 4/25/67 | STRESS GROUP 4/24/67 | LIAISON ENGRG | PROJ ENGRG 4/26/67

PRIORITY: C

DRAWING TITLE: HOSE ASSY - A/S HI-POINT BLEED & A P LINES

DRAWING NO.: LDW270-52206

EO NO.: A3

4-25-67 ISSUED BY S. SCIARROTTA X1471 SECTION PROPULSION GROUP NO. 345 PL 25

01 NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 270 | EO NO. 47
CONTROL INFO NO. LM 270-984

ADD PA-1 EFFECTIVITY

DWG NO	CHG NO	NEXT ASSY	TITLE
✓LDW 270M10030-1	A4	LDW270-52206	ADAPTER
✓LDW 270-52206-1#-3	A4	LTM280-25562	HOSE ASSY- HIGH PT BLEED
LDW 270-28012-3	B3	LTM280-25562	VALVE- INSTL

DETAIL SPEC REQ | CL II ENGRG CHG ✓ | CL I ENGRG CHG | LCD1124

REASON FOR EO: UPDATE OF PA-1 PROPELLANT LINES TO LM-1 CONFIGURATION

DESCRIPTION OF EO: ADDED PA-1 REQ

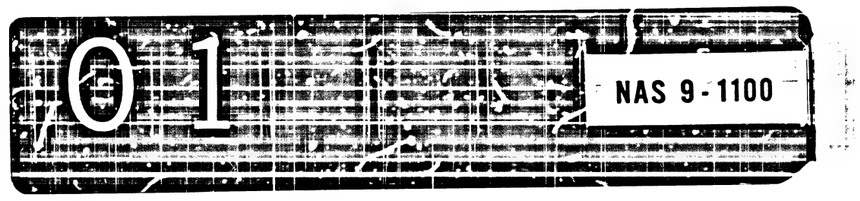
GAEC EO RELEASE: JL 7-10-7

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		PA-1 (47)	

DRAWING CHANGE REQD: ✓ REVISE DWG | RECORD EO
DISPOSITION OF PARTS: NOT REQD REWORK | SCRAP
APPROVED BY / DATE: RB 7/7/67 | SUPPORT | RELIAB GROUP | GROUP LEADER | STRESS GROUP | LIAISON ENGRG | PROJ ENGRG | GOVT
Sam Scott 7/10/67 | J-10-67

PRIORITY: C
DRAWING TITLE: NOTED
DRAWING NO.: LEO 270
EO NO.: 47

ISSUED BY W. KUTNER X1611 7/6/67 SECTION PROPULSION GROUP NO. 345 PL 25



C

ENG 22.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ECO NO. LDW270-52206 | EO NO A5
CONTROL INFO NO. LM 270 - 983

* { IN THE M/B, SHT 1.00, DELETED LM-2 EFFECT.
FROM -1, -3, -5 & -7

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD19-1572	5

REASON FOR EO: CHG FLEX HOSE TO ST. STL. LINE

DESCRIPTION OF EO: SEE ABOVE *

(R) GAEC EO RELEASE: JK 7/6/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM 2 (32)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: REWORK | SCRAP ✓

	APPROVED BY	DATE	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
	J.A.	7/1/67			7/1/67	7/24/67		7/27/67	
	C.W.	7/1/67			7/1/67	7/24/67		7/27/67	
	M. Dan	7/11/67							
	PROP	PROP							

PRIORITY: C

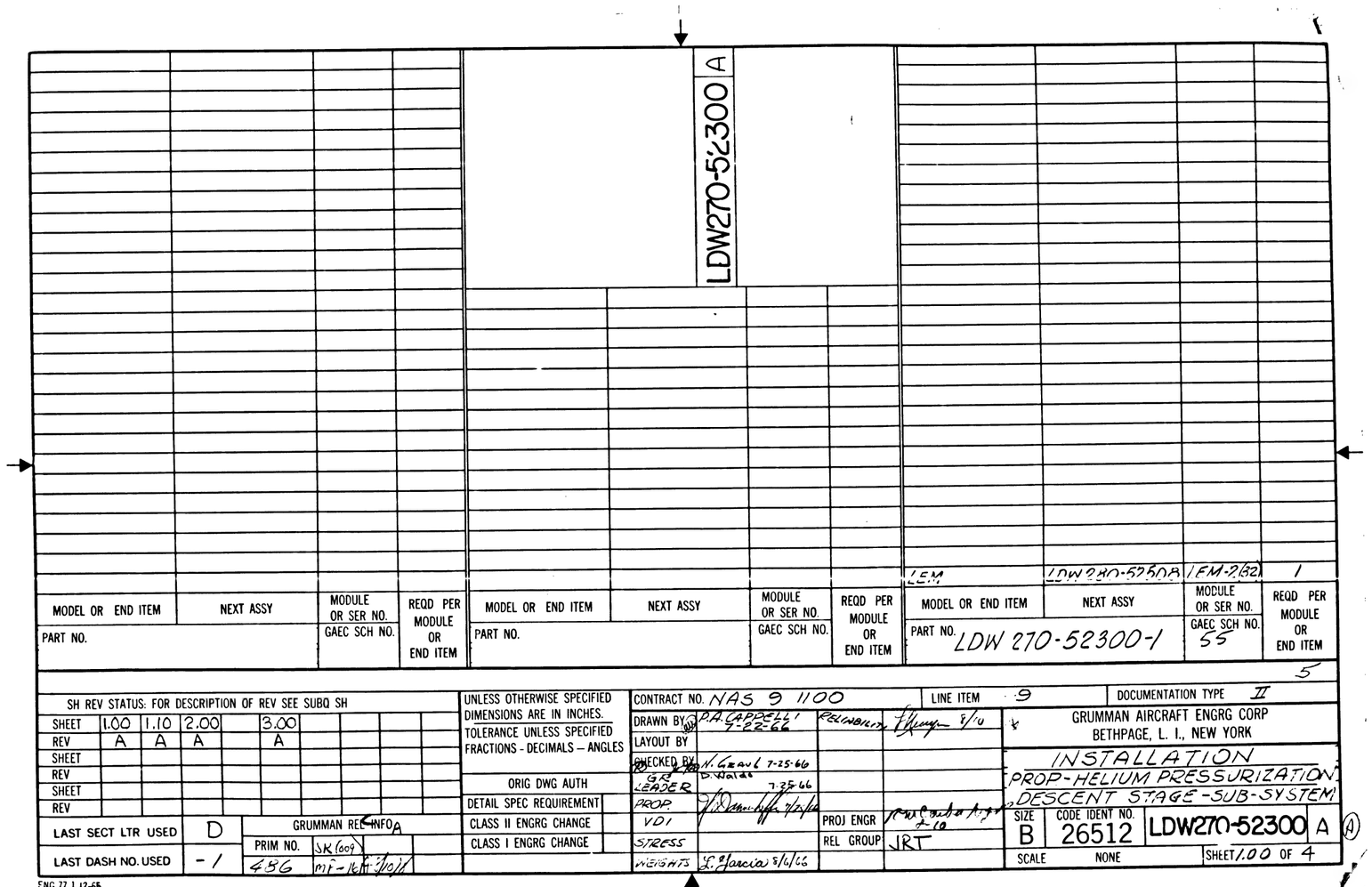
DRAWING TITLE: HOSE ASSY - A/S HI-POINT BLEED & A P LINES

DRAWING NO.: LDW270-52206

EO NO.: A5

ISSUED BY S. SCIARROTTA X1471 SECTION PROPULSION GROUP NO. 345 PL 25

01 NAS 9-1100



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW270-52500B	LEM-2(62)	1
PART NO. LDW 270-52300-1		GAEC SCH NO. 55	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	1.10	2.00		3.00				
REV	A	A	A		A				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	D	GRUMMAN REL INFO A	
LAST DASH NO. USED	-1	PRIM NO.	JK (609)
		436	MF-1 KM 3/10/66

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS 9 1100 LINE ITEM 9 DOCUMENTATION TYPE II

DRAWN BY	P.A. CAPPELLI 7-22-66	RELIABILITY		8/10
LAYOUT BY				
CHECKED BY	N. Graul 7-25-66			
GR LEADER	D. Waldes 7-25-66			
PROP				
VDI		PROJ ENGR		8/10
STRESS		REL GROUP	JRT	
WEIGHTS	F. Garcia 8/1/66			

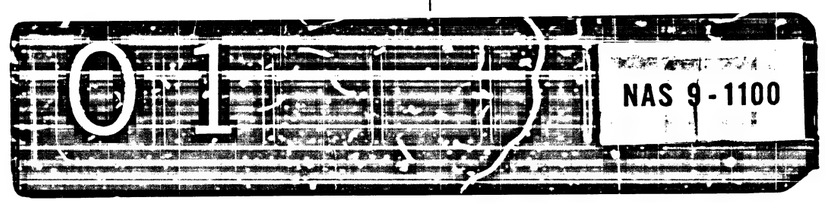
GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

INSTALLATION
PROP-HELIUM PRESSURIZATION
DESCENT STAGE-SUB-SYSTEM

SIZE	CODE IDENT NO.		
B	26512	LDW270-52300	A (A)

SCALE NONE SHEET 1.00 OF 4

ENG 77.1 12-65



REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	2.00						E.O. A1	IN B/M ON -1, REMOVED "LDW270-51451-3 ADDED SH. 1.10	NOT REQD	NOT	REQD	A. HENDRICKS 8-5-68		
	2	2.00 3.00	2A,6A 7A,2B 6C				✓	LEO 270-11	IN B/M FOR -1 REMOVED -LDW270-51451-1, -5, -7 & -13 INSTL'S IN F/D - ADDED - "REF" TO LDW270-51451-1, -5, -7 & -13 INSTL'S	LM-2 (32)					
	3	2.00 3.00	3B				✓	E.O. A3	ON -1, DELETED LDW270-52303-1. ADDED LDW280-17388 (REF).	LM-2 (32)	✓				
	4	2.00 3.00	10A				✓	E.O. A4 LCD-1032	ON -1, ADDED LDW270-52310-1 AS ALTERNATE FOR LDW270-52301-1. ADDED NOTE 1						
	5	2.00 300	7B				✓	E.O. A5 LCD 1514	ADDED TO -1 INSTALLATION, LDW270-51309-1 & ASSOCIATED HARDWARE.						
	6	2.00 3.00	10A				✓	E.O. A6 LCD 1032	REF EO A4 IN FIELD & B/M FOR -1 INSTL, LDW270-52310-1 WAS LDW270-52301-1.						
	7	3.00					✓	E.O. A7 LCD 1570	ADDED NOTE #2.						
	8	3.00		(4)			✓	LCD 1032	REF EOAG1. REMOVED NOTE 1 rcm				8-5-68		

CHG APPROVED	LTR	GROUP LDR	PROP.	WEIGHTS	RELIABILITY
	A				

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52300	A (4)

SCALE NONE SHEET 1.10

ENG 77.16 3-66

(01)

NAS 9-1100

C.L.	QTY PER ASSEMBLY	PART NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
C	AS REQD	SEE NOTE 2	E		SHIM							
J	3	AN960D10L	E		WASHER	STD PART						
C	3	GB511J3-2			BOLT	GRUMMAN STD						
C	4	GB511J-3-1			BOLT	GRUMMAN STD						
	1	LDW270-52302-1			TANK INSTL	SEE DWG						
K	1	LDW270-52309-1			EXP. VALVE, FILTER & DISC INSTL	SEE DWG						
K	1	-23308-1			AMB. TANK INSTL							
K	1	-52306-1			EXPL VALVE INSTL							
K	1	-52305-3			DISC CPL INSTL							
K	1	-52305-1			DISC CPL INSTL							
K	1	-52304-3			CHECK & RELIEF VALVE INSTL							
K	1	-52304-1			CHECK & RELIEF VALVE INSTL							
L	1	-52310-1			MODULE ASSY							
L	1	LDW270-51309-1			QUAD CHECK VALVE ASSY	SEE DWG						
K		LDW270-52300-1	E		INSTALLATION	~	~	~	~	—	—	
	-1											

REMARKS LEVEL PER LSP 14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52300	A

SCALE NONE SHEET 2.00

ENG 77.2 5-64

NAS 9-1100

CODE IDENT 26512
SHT a00
LDW 270-52300

VIEW A A

VIEW B-B

LDW 270-52305-1 ASSY

LDW 270-52310-1 ASSY

LDW 270-52304-1 INSTL

LDW 270-52304-3 INSTL

LDW 270-51309-1 (A5)
GB511J-3-1 (4)

GQ 9431 (REF)
GQ 9430 (REF)
GQ 9440 (REF)
GQ 9444 (REF)
GQ 94445 (REF)
GQ 94441 (REF)
GQ 94432 (REF)
GQ 94433 (REF)
GQ 94425 (REF)

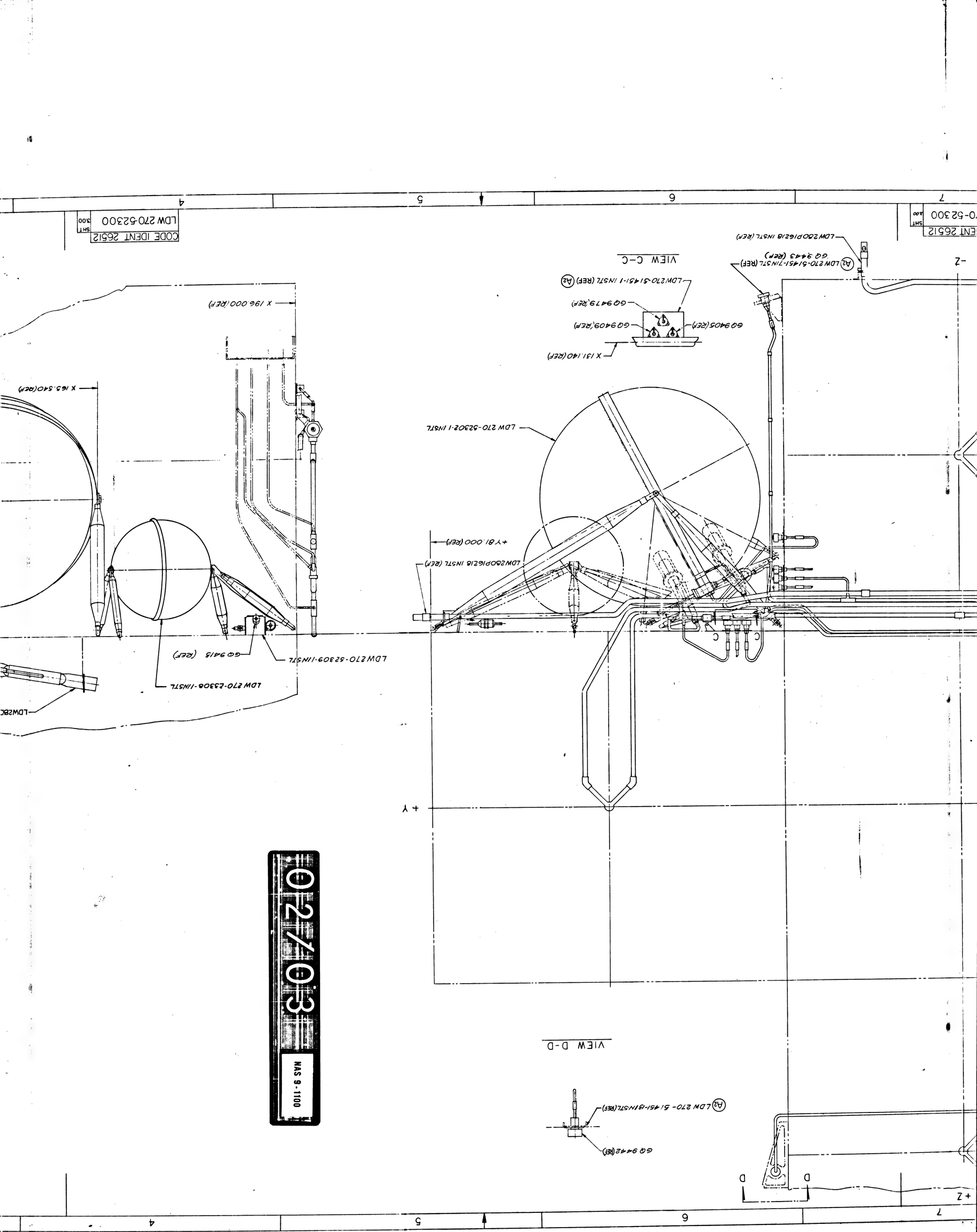
GB511J 3-2
AN 960D10L
(3 PLACES)

-Z 27000 (REF)
+X 175.000 (REF)
-Z 59.369 (REF)
X 196.000 (REF)
-Y 27.000 (REF)
-Z 81.000 (REF)
-Y 81.000 (REF)
+Z 27.000 (REF)

NAS 9-1100

8301210

+Z
-Z
+Y
-Y


LDW 270-52300
CODE IDENT 26512
SHT 300
4
5
6
7
-Z
LDW270-5145I-7/INSTL (REF)
GQ 9443 (REF)
LDW270P1628 INSTL (REF)
VIEW C-C
LDW270-5145I-I INSTL (REF)
GQ 9479,REF)
GQ 9409,(REF)
GQ 9405 (REF)
X 131.140 (REF)
LDW 270-52302-I INSTL
+Y 81.000 (REF)
LDW28OP1628 INSTL (REF)
X 196.000 (REF)
X 163.540(REF)
LDW270-52309-1/INSTL
GQ 9415 (REF)
LDW 270-23308-1/INSTL
LDW28C
+Y
+Z
D
VIEW D-D
GQ 9442(REF)
LDW 270- 5145-1/INSTL(REF)
02/03
NAS 9-1100

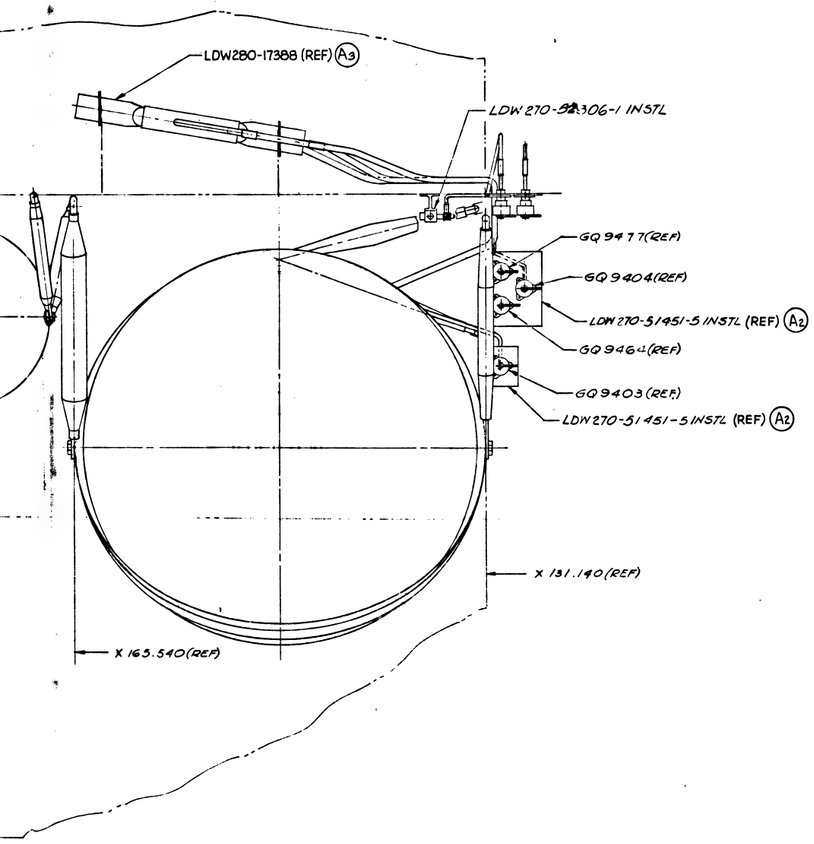
MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.	
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTER SK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
250 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ⌐ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

DWG SIZE 48 x 96

PRINTING INFO. ONLY
FULL SIZE SHEET AREA (48" x 96") 23.500 SQ. FT.
1/2 SIZE SHEET AREA 1/4 OF FULL = 7.125 SQ. FT.
PRINT TRIM LINE

NAS 9-1100

Q3/Q3

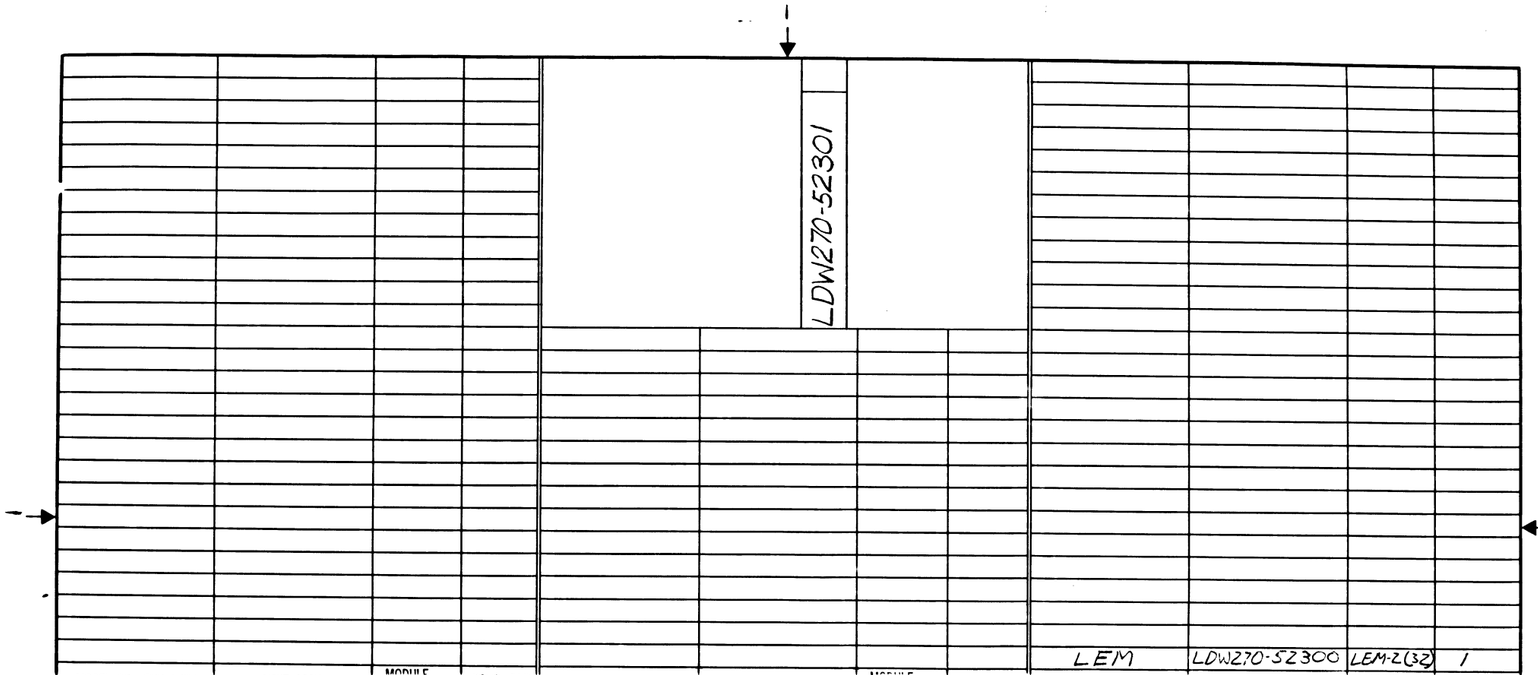


NOTES:
~~1. DW270-52310 MAY BE USED AS ALTERNATE FOR DW270-52301-1.~~
2. SHIM AS REQUIRED, USING ALUMINUM ALLOY LAMINATED SHIM, 5052H39 MIL-S-22499, COMP I (5052), CLASS I, TO MAINTAIN ALIGNMENT OF VALVES AND PIPING, MAXIMUM ALLOWABLE SHIMMING -.06, AREA OF SHIM SHALL EQUAL MOUNTING AREA.

NT 26512
-52300 SHT 3.00

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE K	CODE IDENT NO. 26512	LDW 270-52300	A
L.E.M. MODEL OR END ITEM	SCALE 1/4	SHEET 3.00	

LDW 270-52300 A
LDW 270-52300 A
3
A



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LEM	LDW270-52300	LEM-2(32)	1
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW270-52301-1		55	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH								
SHEET	1.00		2.00	2.01		3.00		4.00
REV								
SHEET								
REV								
SHEET								
REV								

LAST SECT LTR USED	
LAST DASH NO. USED	-1

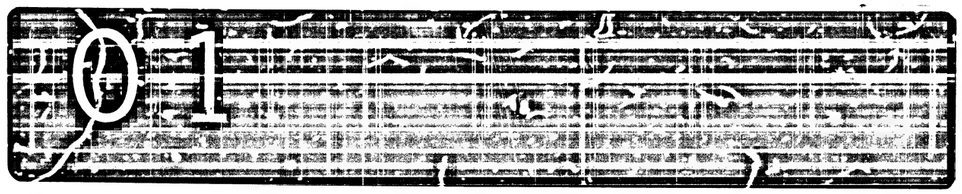
GRUMMAN REL INFO
PRIM NO. (4009) 486 MP 6-7-66K

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES ±1/16 ~ ~

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100		LINE ITEM 9	DOCUMENTATION TYPE II
DRAWN BY J. PAVLICH 11 Jun 66	RELIABILITY F.S. Stagle for L.K. 7/7	(B)	GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE, L. I., NEW YORK
LAYOUT BY			MODULE ASSEMBLY -- DESCENT PROPELLANT PRESSURIZATION SUBSYSTEM
CHECKED BY W. Gear 6-28-66 D. Waldo			
GR LEADER K. Dawn 6-29-66			
PROP			
VDI	PROJ ENGR Plunkett 11 Jul 66	SIZE B	CODE IDENT NO. 26512 LDW270-52301
STRESS	REL GROUP Scott 7-13-66	SCALE NONE	SHEET 1.00 OF 5
WEIGHTS L. Garcia 7/6/66			

ENG 77.1 12-65



NAS 9-1100

C.L.	QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
L	1		LSC270-816-11	S	REDUCING VALVE	SEE NOTE 1						
L	1		LSC270-814-1	S	FILTER							
L	2		LSC269-382-1	E	UNION							
L	1		LSC269-381-1	E	TEE							
L	1		LSC269-380-1	E	TEE							
L	1		LSC269-218-8	E	UNION							
L	1		LSC269-255-4	E	CROSS	SEE NOTE 1						
L	1		LDW390-25070-13	S	SOLE LATCH VALVE	SEE DWG						
L	1		LDW390-25070-11	S	SOLE LATCH VALVE							
C	1		LDW290-23681-1	E	PLATE ASSEMBLY							
C	1		LDW280-17834-21		TEE							
C	1		-17		HAT							
C	1		-15		HAT							
C	1		LDW280-17834-13		TEE							
L	1		LDW280-17388-262DSH4		TUBE							
L	1		-173DSH8		TUBE							
L	1		-172V-2		TUBE ASSEMBLY							
L	1		-171V-2		TUBE ASSEMBLY							
L	1		-170DSH3		TUBE							
L	1		LDW280-17388-160DSH3		TUBE							
C	1		LDW290-17176-7		BRACKET ASSY							
C	1		-5									
C	1		-3									
C	1		LDW280-17176-1	F	BRACKET ASSY	SEE DWG						
L			LDW270-52301-1	S	MODULE ASSEMBLY							
C.L.	-1											

CLEANLINESS PER LSP19-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : LPC19-2 (GRUMMAN); LPC19-3 (VENDOR)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW270-52301

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

(1)						2		510700-203	E	TRANSDUCER	G.F.E.								
C						2		MS28775-002		PACKING	STD PART								
C						1		MS21043-4		NUT									
C						9		MS21043-3		NUT									
C						8		MS21043-06		NUT									
C								MS20470AD3		RIVET									
C						4		AN960C10L		WASHER									
C						1		AN960D8		WASHER									
C						2		AN815-2C		UNION									
C						2		AN735D31		CLAMP	STD PART								
C						7		GR500A-4C		RIVET-BLIND	GRUMMAN STD								
C						1		GC12H-16		CLAMP	GRUMMAN STD.								
C						4		GC12H-8		CLAMP									
C						1		GC12H-4		CLAMP									
C						1		GB511J-4-5		BOLT									
C						2		GB511J-3-5		BOLT									
C						6		GB511J-3-3		BOLT									
C						1		GB511J-08-3		BOLT									
C						8		GB511J-06-16		BOLT									
C						1		GB511J-3-2	E	BOLT	GRUMMAN STD								
C.L.	QTY PER ASSEMBLY					-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE		

CLEANLINESS PER LSP14-CC11

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : LPC19-2(GRUMMAN); LPC19-3(VENDOR)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW270-52301

SCALE NONE SHEET 2.01

ENG 77.2 7-65

01

NAS 9-1100

NOTES:

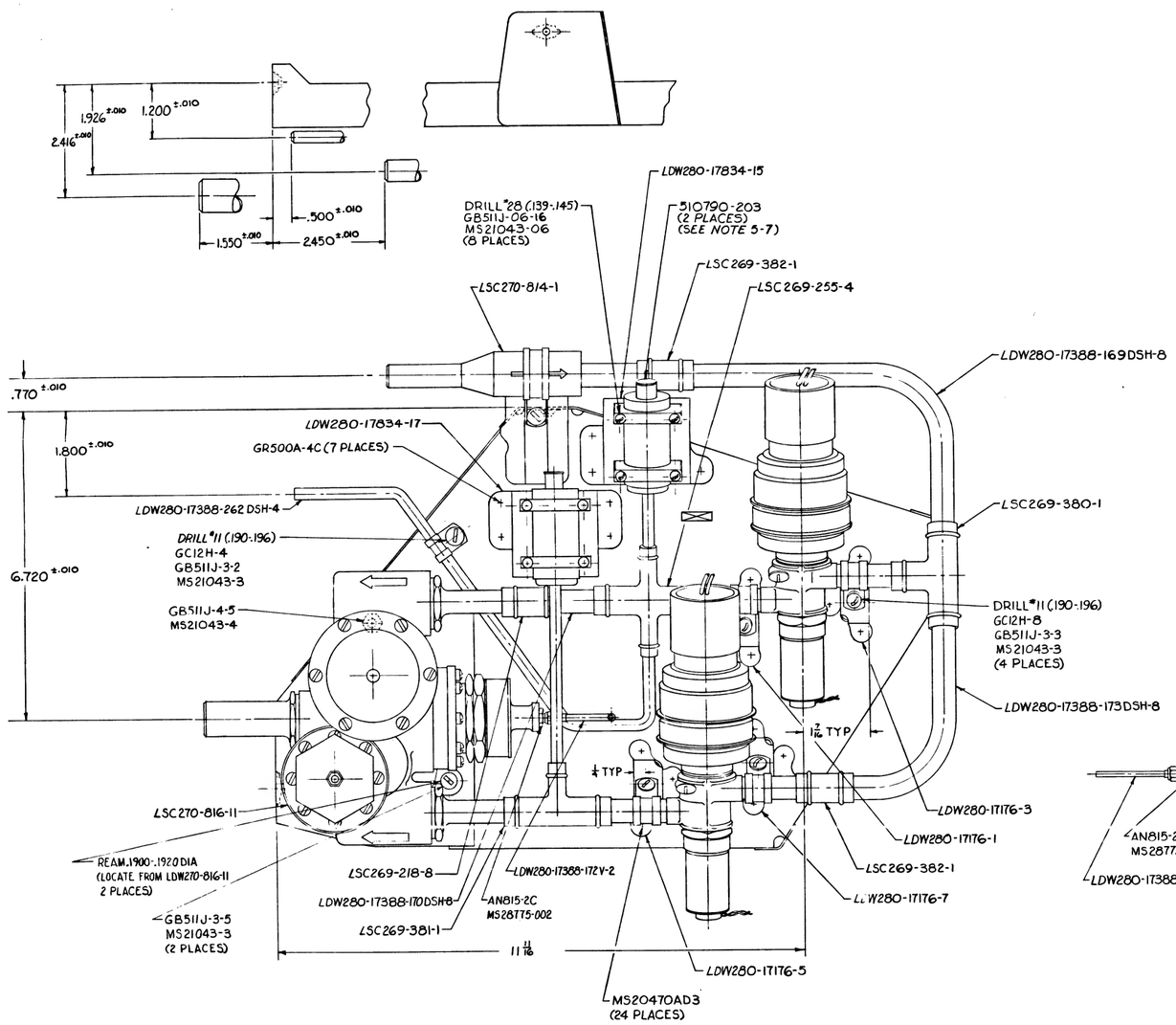
1. COMMERCIAL PART SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING.
2. TORQUE MECHANICAL FITTING 50-60 INCH-LBS.
3. INDUCTION BRAZING OF FITTINGS SHALL BE IN ACCORDANCE WITH SPEC. LSP-14-6303.
4. LDW270-52301-1 MODULE ASSEMBLY SHALL BE TESTED IN ACCORDANCE WITH LPT270-301 PRE-INSTALLATION TEST PLAN FOR MODULE ASSEMBLY - DESCENT HELIUM PROPELLANT PRESSURIZATION SUBSYSTEM.
5. 510790-203 TRANSDUCER SHALL BE PREPARED IN ACCORDANCE WITH SPEC. LSP-14-17450 PRIOR TO BRAZING INTO SYSTEM.
6. ELECTRICALLY BOND 510790-203 TRANSDUCER IN ACCORDANCE WITH LSP390-001.
7. FOR ELECTRICAL INTERFACE REFER TO INTERFACE CONTROL DOCUMENT LID360-20001. FOR MECHANICAL INTERFACE REFER TO LID360-20210, (FOR ENGR. REF ONLY.)
8. TUBE STUBS SHALL BE CAPPED PER LSP-14-009 FOR SHIPMENT AND STORAGE. REMOVE CAPS PRIOR TO BRAZING INTO SYSTEM.
9. INSTALL AN960C10L WASHER ON BOTH SIDES OF TEE BRACKET BETWEEN BRACKET AND AN735D31 CLAMP.
10. INSTALL MS20470AD3 RIVETS PER LSP-14-15302.

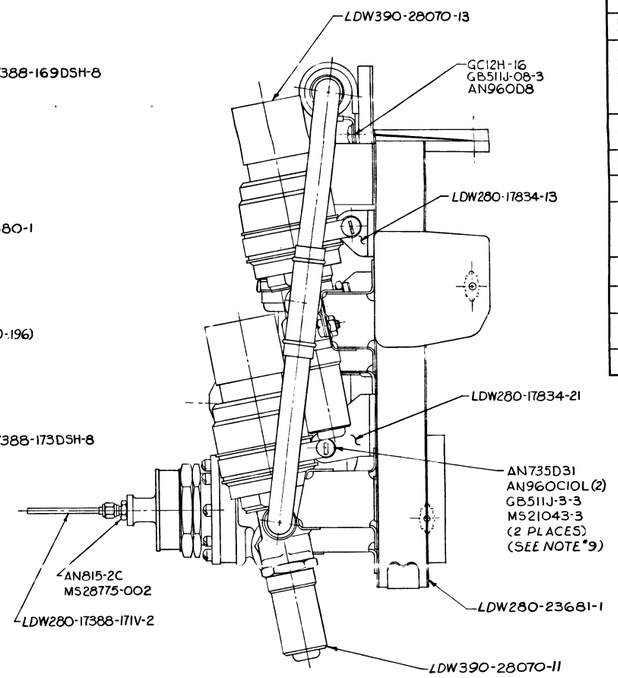
GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-52301	
SCALE NONE		SHEET 3.00	

ENG 73.1 6-64

01

NAS 9-1100





MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.

RUBBER STAMP PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY.	√
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010; .063R TO .250R ± .015; OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	√
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ✓ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS 0" AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	√
TOLERANCE ON LOFTED DELINEATIONS IS	

LDW270-52301-1 HELIUM MODULE ASSEMBLY

NAS 9-1100

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK		
LEM	SIZE E	CODE IDENT NO. 26512	LDW270-52301
MODEL OR END ITEM	SCALE FULL		SHEET 4.00

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-52301 | EO NO. A3
CONTROL INFO NO. LM-2-2840

ON-1: IN FIELD & B/M:

REMOVE LDW280-17176-1,-3,-5 & -7 ASSY.

AND REPLACE WITH:

LDW280-17176-1-1,-3-1,-5-1 & -7-1 ASSY.

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG

REASON FOR EO: EXISTING BRKTS TOO HIGH FOR PROPULSION FEED LINES.

DESCRIPTION OF EO: ON-1 IN FLD & B/M: LDW280-17176-1-1,-3-1,-5 & -7-1 ASSY. REPLACED LDW280-17176-1,-3,-5 & -7 ASSY.

GAEC EO RELEASE: 12

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-2(32)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		✓	

APPROVED BY							
DATE	10/7/66						
9-28-66	WTG.	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	GOVT

PRIORITY: C

DRAWING TITLE: MODULE ASSEMBLY DESCENT PROPELLANT PRESS. SUB. SYS.

DRAWING NO.: LDW270-52301

EO NO.: A3

ISSUED BY LIAISON/E.NEFF X3604 SECTION V.D.I. GROUP NO. 335 PL 35

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG. NO. LEO 2.0 | EO NO. 19
CONTROL INFO NO. LM 270-671

IN B/M & F/D ON -1 INSTL REMOVE LSC270-814-1 FILTER
ADD LSC270-814-3 FILTER

THIS CHANGE TO BE INCORPORATED ON THE FOLLOWING DWG

DWG NO	CHG NO	MODULE	DWG TITLE
LDW270-52301	A4	LM 2 (32)	NOTED
LDW270-53301	B2	LM 3 (33)	BELOW
LDW270-54301	B2	LM4(34) THRU LM6(36)	
LDW270-23301	B1	LTA-3(13)	

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG

REASON FOR EO: LSC270-814-1 FAILED QUAL

DESCRIPTION OF EO: ON -1 REMOVED LSC270-814-1, ADDED LSC270-814-3

GAEC EO RELEASE: B FS | C

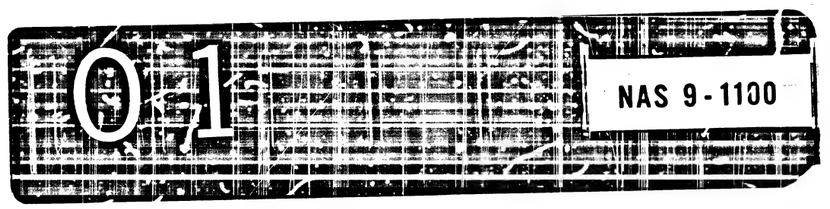
MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LTA-3(13)	
		LM 2(32) THRU	
		LM6(36)	

DRAWING CHANGE REQD: ✓ REVISE DWG | RECORD EO
DISPOSITION OF PARTS: ✓ REWORK | SCRAP

APPROVED BY	—	—			—	
DATE	9-24-6	—		9/28	—	10-4-66
	PROJ	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG

PRIORITY: C
DRAWING TITLE: MODULE ASSY - DESCENT PROP PRESS SUBSYSTEM
DRAWING NO.: LEO-270
EO NO.: 19

ISSUED BY W. KUTNER X7427 N. GRAUL SECTION PROPULSION GROUP NO. 270 PL 35



ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LDW270-52301 | EO NO. A5
CONTROL INFO NO. LM 270-682

IN F/D & B/M ON-1

REMOVE LDW390-28070-11. ADD LDW390-28070-15.

REMOVE LDW390-28070-13. ADD LDW390-28070-17.

DETAIL SPEC REQ		CL II ENGRG CHG	X	CL I ENGRG CHG		

REASON FOR EO: DETAIL PART NO CHANGED (REF EO LDW 390-28070 B2)

DESCRIPTION OF EO: ON-1 REMOVED LDW390-28070-11 & -13. ADDED LDW390-28070-15 & -17.

GAEC EO RELEASE: F.S. 10-24

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM 2 (32)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO | DISPOSITION OF PARTS: REWORK ✓ | SCRAP

APPROVED BY: PROP / DATE 10/4/66 | SUPPORT | RELIAB. GROUP | GROUP LEADER 10/4/66 | STRESS GROUP 10/4 | LIAISON ENGRG | PROJ ENGRG 10/6/66

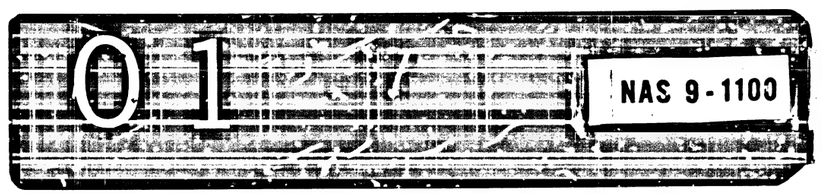
PRIORITY: C

DRAWING TITLE: MODULE ASSY-DESCENT PROPELLANT PRESSURIZATION SUBSYSTEM

DRAWING NO.: LDW270-52301

EO NO.: A5

ISSUED BY W. KUTNER X7427 N. GRAUL SECTION PROPULSION GROUP NO. 345 PL 35



ENG 32.1 REV 3-66

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LDW270-52301 | EO NO. A6
CONTROL INFO NO. LM 270-716

IN B/M & F/D ON-1 ASSY REMOVE LSC270-816-11
ADD LSC270-816-11-2

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	

REASON FOR EO
LSC270-816-11 FAILED DVT.
(REF LM0270-493)

DESCRIPTION OF EO
ON-1 REMOVED LSC270-816-11. ADDED LSC270-816-11-2

(R) GAEC EO RELEASE: 10/28

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-2(32)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		✓	

APPROVED BY							
✓ DATE	10-26-66			10-25-66	—	—	10-25-66
	PROP	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG

10/27/66 — GGMC

PRIORITY: C

DRAWING TITLE: MODULE ASSY- DESCENT PROP PRESS. SUBSYSTEM

DRAWING NO.: LDW270-52301

EO NO.: A6

ISSUED BY W.KUTNER X7427 SECTION PROPULSION GROUP NO. 345 PL 35

01

NAS 9-1100

LDW270-52302 A

LM	LDW270-54300	LM-14(44)	1	LM	LDW270-54300	LM-9(39)	1	LM	LDW270-54300	LM-4 (34)	1
		LM-13(43)	1			LM-8(38)	1	LM	LDW270-53300	LM-3 (33)	1
		LM-12(42)	1			LM-7(37)	1	LM	LDW270-52300	LM-2(32)	1
		LM-11(41)	1			LM-6(36)	1				
LM	LDW270-54300	LM-10(40)	1	LM	LDW270-54300	LM-5(35)	1				
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW270-52302-1-3		GAEC SCH NO.		PART NO. LDW270-52302-1-1		GAEC SCH NO.		PART NO. LDW270-52302-1		GAEC SCH NO. 55	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	2.00	3.00	1.10	1.11				
REV	A	A	A	A	A				
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	A	GRUMMAN REL INFO X	
LAST DASH NO. USED	-1-3	PRIM NO.	(E/LOOP) 675-6
		486	MP X

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES
~ ~ ~

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS 9 1100 | LINE ITEM 9 | DOCUMENTATION TYPE II

DRAWN BY	N. GRAUL 6-15-66		
LAYOUT BY	N. GRAUL		
CHECKED BY			
GR. LEADER	J. Perfitt 6/16/66		
PROPULSION		PROJ ENGR	
STRESS	W/M 6/20/66		
WEIGHTS	J. Garcia 6/20/66	REL GROUP	
RELIABILITY	F. Singer 6/22/66		

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

HELIUM TANK INSTALLATION
DESCENT PROPELLANT
PRESSURIZATION SUBSYSTEM

SIZE	CODE IDENT NO.	
B	26512	LDW270-52302 A

SCALE NONE | SHEET 1.00 OF 5

ENG 77.1 12-65

01

NAS 9-1100

REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET 1.11

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.00, 1.10						EO A1	IN M/B FOR -1 ADDED N/A LDW270-54300 FOR LM-7 THRU LM-15 FOR LM5 & LM6 N/A LDW270-54300 WAS LDW270-55300 AND LDW270-56300 RESPECTIVELY. (ADDED SH. 1.10)	LM5 (35) THRU LM 15(45)	NOT	REQD	L. BUCCOS 6-16-70		
	2	1.10, 3.00	2B					EO A2	IN F/D ADDED - MIN. CLEARANCE - KNURLED SECTION OF CAP TO STRUT = .50	LM-2 (32) THRU LM-15(45)	✓				
	3	1.10, 3.00				✓		LEO 270-53 LCD 1961	IN F/D ADDED NOTE NO. 2 "BOND IN ACCORDANCE WITH FIGURE 7F OF LSP-14-13334"	LM-2 (32) THRU LM-15(45)	✓				
	4	1.10, 3.00					✓	LEO 270-59	IN F/D ADDED NOTE NO. 3 BONDING REQUIREMENTS FOR LM-2 & LM-3 ARE ACCEPTABLE PROVIDED THE REQUIREMENTS OF PARAGRAPH 4.2 OF LSP-14-13334 ARE COMPLIED WITH.	LM-3 (33)	✓				
	5	1.00, 1.10 2.00, 3.00	5A				✓	EO A5 LCD 3196A	ADDED -1-1, ON -1 REMOVED LM-5 THRU LM-15 REQUIREMENTS	LM-5 (35) THRU LM-15(45)	✓				
	6	1.00, 1.10				✓		LEO 270-80 LCD 3587	IN M/B FOR -1-1 INSTL REMOVED LM-15 EFFECTIVITY	LM-15(45)		-1-1			
	7	1.00, 1.10 2.00, 3.00	5A			✓		EO A7 LCD 3732 E ECPH 104	ADDED -1-3 ON -1-1 REMOVED LM-10 THRU LM-14 REQUIREMENTS A.D.	LM-10(40) THRU LM-14 (44)	✓				
	8	1.00				✓		EO A8 LCD 3732	FOR -1-1, REMOVED LM-9 EFF. FOR -1-3 ADDED LM-9 EFF	LM-9	✓				
	9	1.00				✓		EO A9 LCD 3732	REPLACE -1-3 INSTL WITH -1-1 INSTL FOR LM-9 F.Z.						

CHG APPROVED

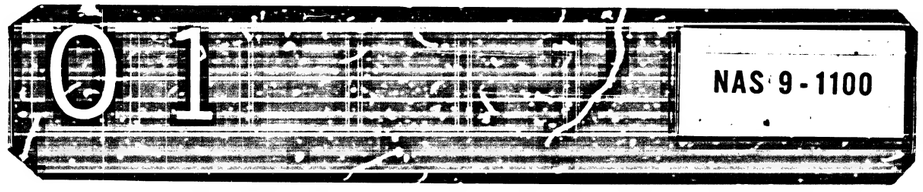
LTR	GROUP LDR	PROP.	STRESS	WEIGHTS	RELIAB
A					

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52302	A

SCALE NONE SHEET 1.10

ENG 77.16 3-68



REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	10	2.00 3.00	3C				✓	E0 A10	ADD GS830CF-19-9T0-1-3 INSTL. ADDED SH. 1.11 ADDED NOTE 4	LM-1 0THRU LM-14	✓		[illegible] 6-16-70	[illegible]	

CHG APPROVED	LTR	GROUP LDR	PROP	STRESS	WEIGHTS	RELIAB.
	A					

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52302	A

SCALE NONE SHEET 1.11

ENG 77.16 3-66

01

NAS 9-1100

C.L.			QTY PER ASSEMBLY			CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
			1				GS830CF-19-9	E	SLEEVE	GRUMMAN STD						
L			1				LDW270-52307-1-3	E	He TANK ASSY	SEE DWG						
L				1			LDW270-52307-1-1	E	He TANK ASSY	SEE DWG						
C			✓	✓	✓		MS20995NC40	E	SAFETY WIRE	STD PART						
C			1	1	1		LDW280M17360-7	E	BOLT	SEE DWG						
C			2	2	2		LDW280M17360-5	E	BOLT	SEE DWG						
L					1		LDW270-52307-1	S	He TANK ASSY	SEE DWG						
							LDW270-52302-1-3	E	He TANK INSTL					NONE	NONE	
							LDW270-52302-1	E	He TANK INSTL					NONE	NONE	
A							LDW270-52302-1	E	He TANK INSTL					NONE	NONE	
			-1-3	-1-1	-1											

CLEANLINESS LEVEL PER LSP-14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

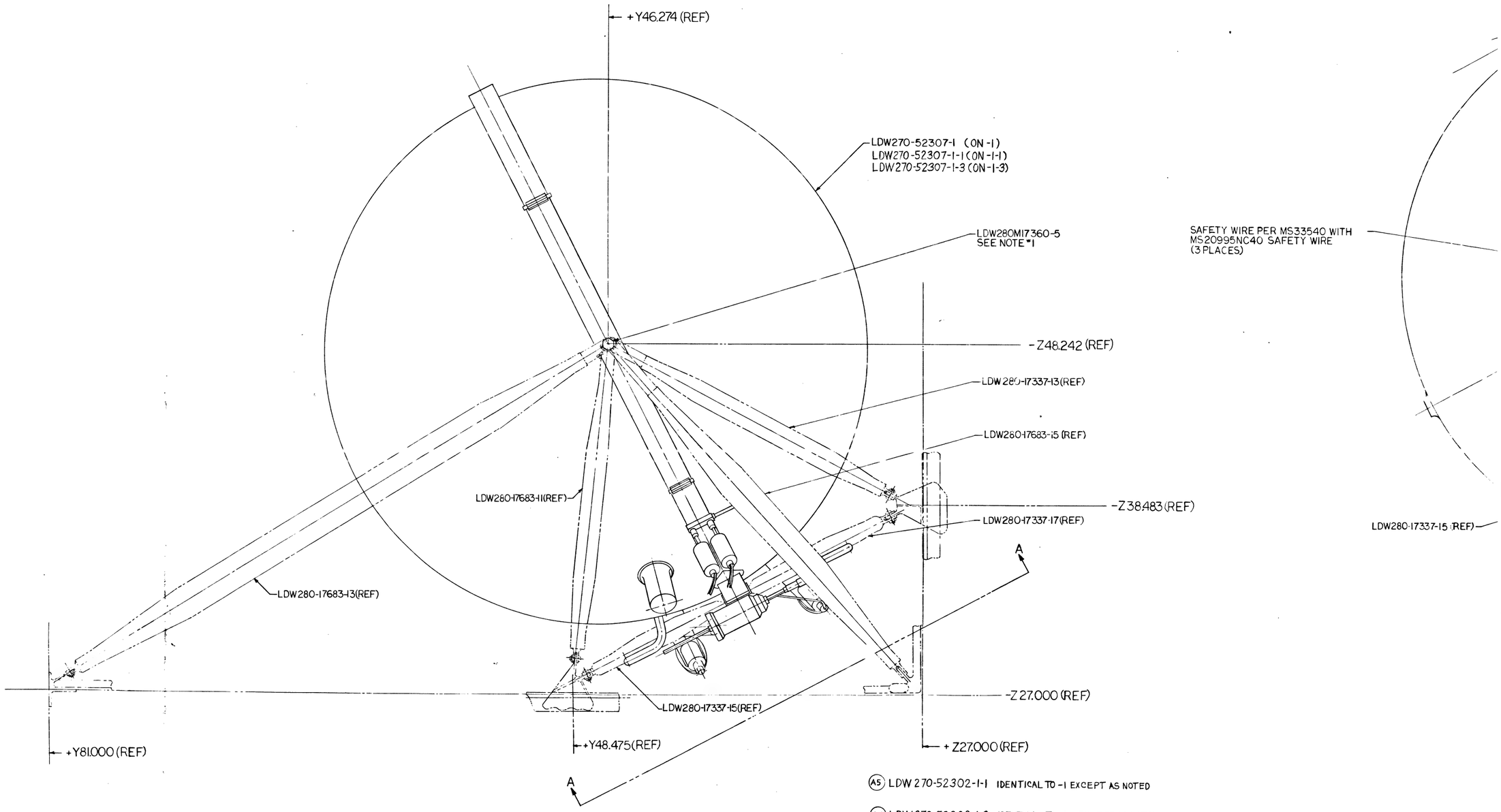
I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52302	A

SCALE NONE SHEET 2.00

ENG 77.2 7-65



(A5) LDW270-52302-1-1 IDENTICAL TO -1 EXCEPT AS NOTED

(A7) LDW270-52302-1-3 IDENTICAL TO -1-1 EXCEPT AS NOTED

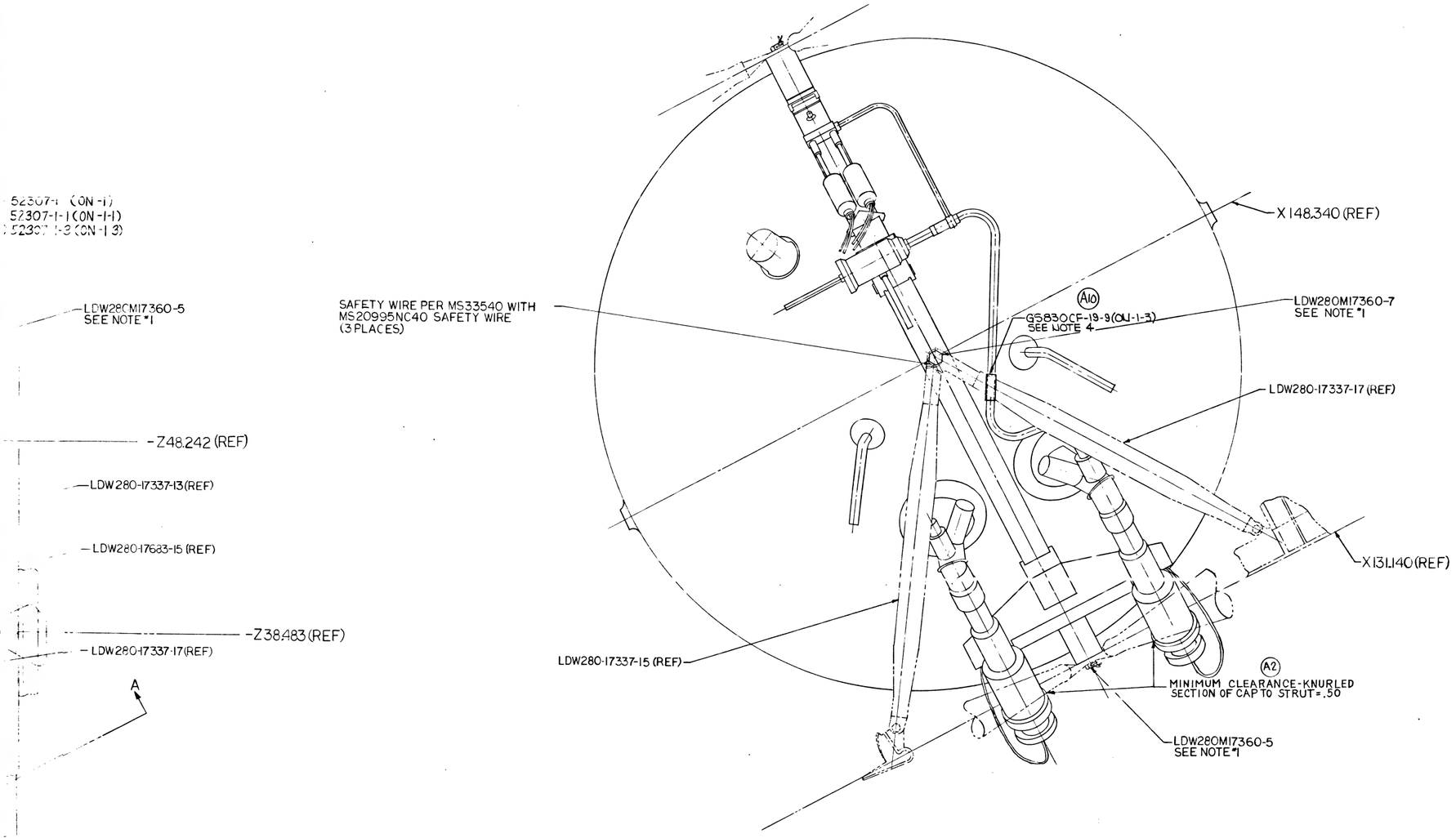
0L202 NAS 9-1100

LDW270 52302 1 SUPERCRITICAL HELIUM TANK INSTALLATION

CODE IDENT NO. 26512

LDW270-52302 SHEET 3

52307-1 (ON -1)
52307-1-1 (ON -1-1)
52307-1-3 (ON -1-3)



VIEW "A-A"

270-52302-1-1 IDENTICAL TO -1 EXCEPT AS NOTED

270-52302-1-3 IDENTICAL TO-1-1 EXCEPT AS NOTED

02/402 NAS 9-1100

MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NF
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2.3 IMP THDS. BEYOND PERMISSIBLE.
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
250 FOR ALL DRILLED HOLES
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
SYMBOL ∿ DENOTES SURFACE TO BE MACHINED
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
TOLERANCE ON LOFTED DELINEATIONS IS

DWG SIZE 34 X

PRINTING INFO ONLY

FOR 1 KPP SHEET AREA (36 X)
1/2 SIZE SHEET AREA (1/4 OF FULL)

TRUST THIS LINE

+Z
-Y
+Y
-Z27000(REF)
LDW270-52302-1(REF)
-Z
+Y27000(REF)
-1-1 (REF)
-1-3 (REF)

NOTES

1. TORQUE VALUE ON BOLT TO BE 30 TO 40 INCH LBS.
2. BOND IN ACCORDANCE WITH FIGURE 7F OF LSP-14-13334.
3. BONDING REQUIREMENTS FOR LM-2 & LM-3 ARE ACCEPTABLE PROVIDED THE REQUIREMENTS OF PARAGRAPH 4.2 OF LSP-14-13334 ARE COMPLIED WITH.
4. SLIT GS830CF-19-9 LENGTHWISE & PREPARE PER PARA 3.3.2.4 OF LSP14-2250) FOR BOUDING TO (BLACK) TUBE ASSY. CENTER SLEEVE OVER MIN.CLEARANCE AREA BETWEEN (BLACK) TUBE ASSY & STRUT ASSY, WITH SLIT FACING AWAY FROM STRUCT.

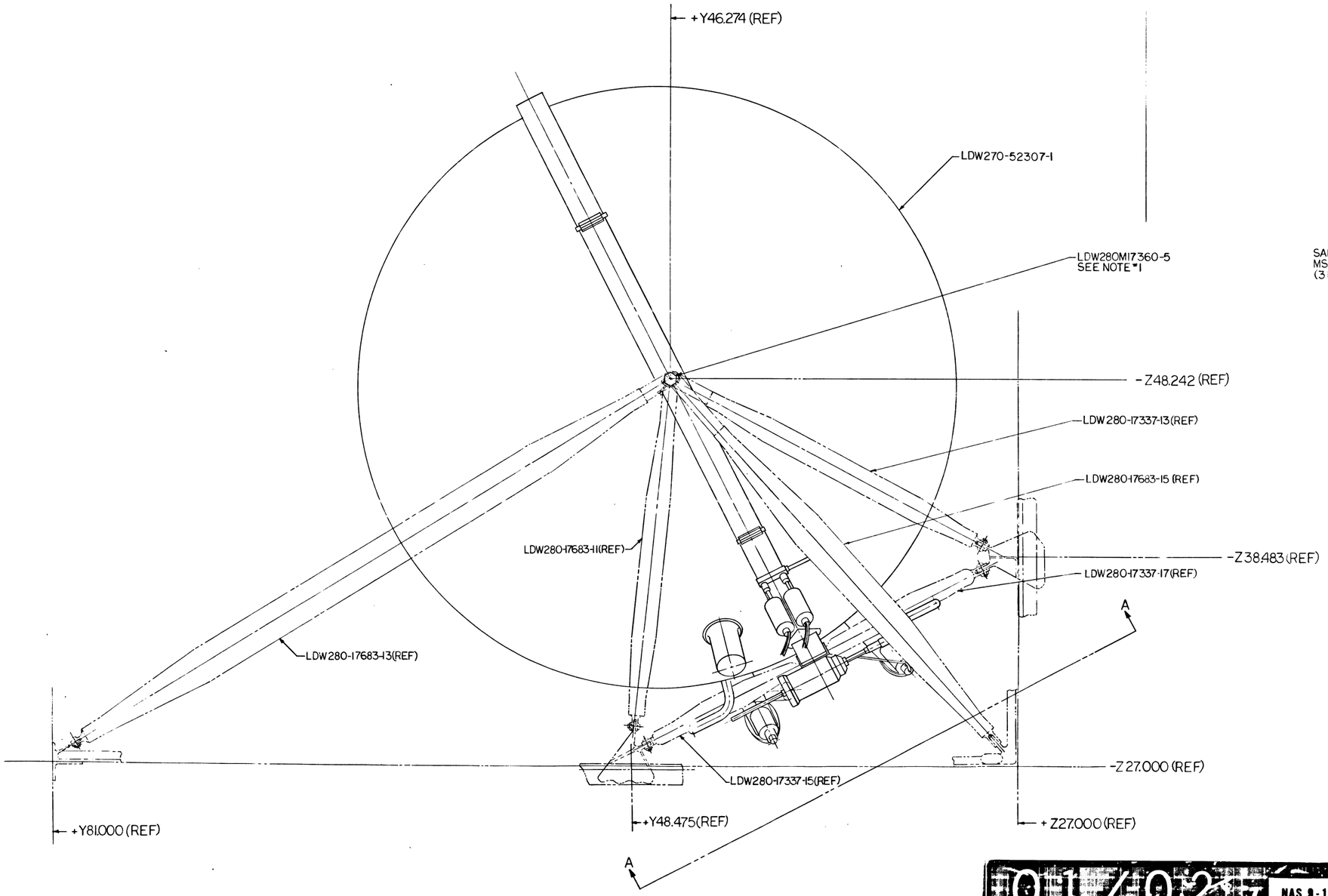
LDW270-52302A (U)

LDW270-52302A

A

CODE IDENT NO. 26512	SHEET
LDW270-52302	3

LM	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L I, NEW YORK		
	SIZE	CODE IDENT NO.	
	J	26512	LDW270-52302 A
MODEL OR END ITEM	SCALE HALF	SHEET 3.00	



011/012

NAS 9-1100

LDW270 52302 1 SUPERCRITICAL HELIUM TANK INSTALLATION

CODE IDENT NO. 26512	SHEET
LDW270-52302	4

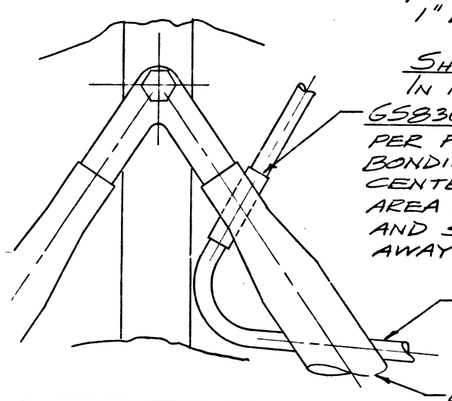
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW270-52302		EO NO. A10
CONTROL INFO NO. LM270-1444		

VIEW A-A



SHEET 2.00
IN B/M, ADD GS830CF SLEEVE 1" LONG, 3/8 I.D TO -1-3 INSTL.

SHEET 3.00
IN F/D, ADD THE FOLLOWING TO -1-3 INSTL:
GS830CF SLIT LENGTHWISE AND PREPARE PER PARA 3.3.2.4 OF LSP 14-22500 FOR BONDING TO (BLACK) TUBE ASS'Y. CENTER SLEEVE OVER MIN. CLEARANCE AREA BETWEEN (BLACK) TUBE ASS'Y AND STRUT ASS'Y WITH SLIT FACING AWAY FROM STRUT.

DETAIL SPEC REQ		CL II ENGRG CHG	✓	CL I ENGRG CHG	

REASON FOR EO: TO AVOID HARD CONTACT BETWEEN LINE AND STRUT ON SHE TANK INSTL. PER MRR L05-4152 (REF. PIR#L4806)

DESCRIPTION OF EO: ADD GS830CF TO -1-3 INSTL.

GAEC EO RELEASE: 6/11/70

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REV'SE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY								
LM		LM10(40) THRU LM13(43)		✓		✓		DATE	6/11/70			6/11/70			6/11/70	6/11/70
								PROP.	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG		
				PRIORITY: C	DRAWING TITLE: HELIUM TANK INSTL. DESCENT PRESS. SUBSYSTEM			DRAWING NO.: LDW270-52302							EO NO.: A10	

ISSUED BY G. CUDONE X1611 SECTION PROPULSION GROUP NO. 270 PL 39

01

NAS 9-1100

LDW270-52303 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW270-56300	LEM-6(36)	1
LEM	LDW270-55300	LEM-5(35)	1
LEM	LDW270-54300	LEM-4(34)	1
LEM	LDW270-53300	LEM-3(33)	1
LEM	LDW270-52300	LEM-2(32)	1
PART NO. LDW270-52303-1		GAEC SCH NO. 55	5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00	1.10	2.00	3.00						
REV	A	A	A	A						
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED	B
LAST DASH NO. USED	-1

GRUMMAN REL INFO A
PRIM NO. 486 (6(60.9) MP 1Y BJ. 2

ENG 77.1 12-65

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
±1/32 .XXX ±.010 ±1/2°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS9-1100 LINE ITEM 9 DOCUMENTATION TYPE II

DRAWN BY	J. PAVLICA 5/26/66	RELIABILITY	6/9
LAYOUT BY	~		
CHECKED BY	D. GRAUL 5-26-66		
GR LEADER	J. BRETT 5/27/66		
PROP			
STRESS		PROJ ENGR	6-13-66
WEIGHTS	S. Garcia 6/9/66	REL GROUP	6-13-66
VDI			

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

HEAT EXCHANGER INSTALLATION-
DESCENT PROPELLANT
PRESSURIZATION SUBSYSTEM

SIZE	CODE IDENT NO.	
B	26512	LDW270-52303 A

SCALE NONE SHEET 1.00 OF 4

01

NAS 9-1100

C						4		MS21043-3	E	NUT	STD PART							
								SEE NOTE		SHIM								
C																		
C						4		GB511J-3-2	E	BOLT	GRUMMAN STD							
C						2		GB511K-08-3	E	BOLT	GRUMMAN STD							
C						2		GB511K-08-2	E	BOLT	GRUMMAN STD							
C						4		GN512H-08	E	NUT-COLLAR	GRUMMAN STD							
L						1		LSC270-820-11	S	HEAT EXCHANGER	SEE NOTE 1							
A								LDW280-17890-11	E	STRAP	SEE DWG							
A								LDW270-52303-1	E	HEAT EXCHANGER	INSTL							
C.L.	QTY PER ASSEMBLY					-1		CODE IDENT		PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE

CLEANLINESS PER LSP140011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

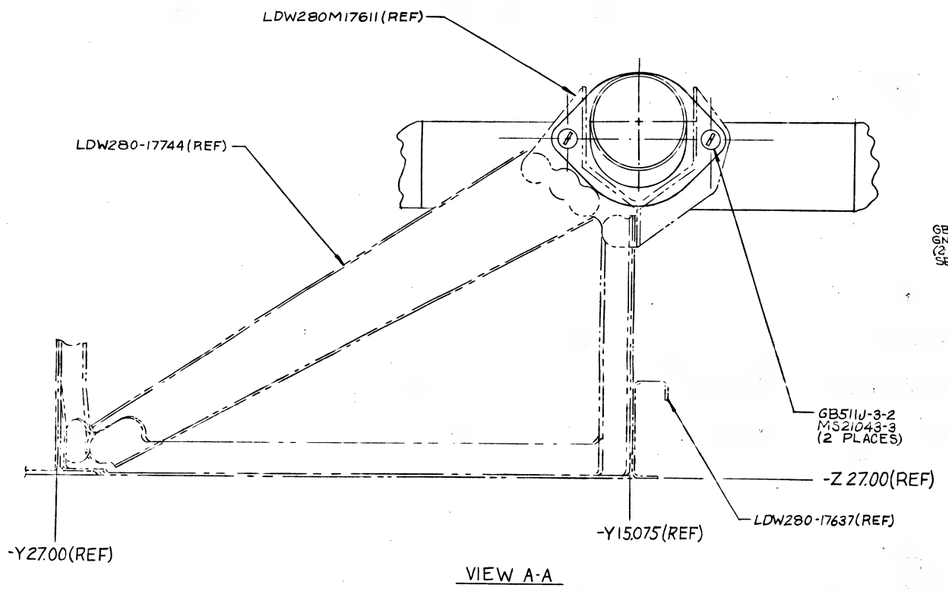
SIZE	CODE IDENT NO.		
B	26512	LDW270-52303	A

SCALE NONE SHEET 2 OF

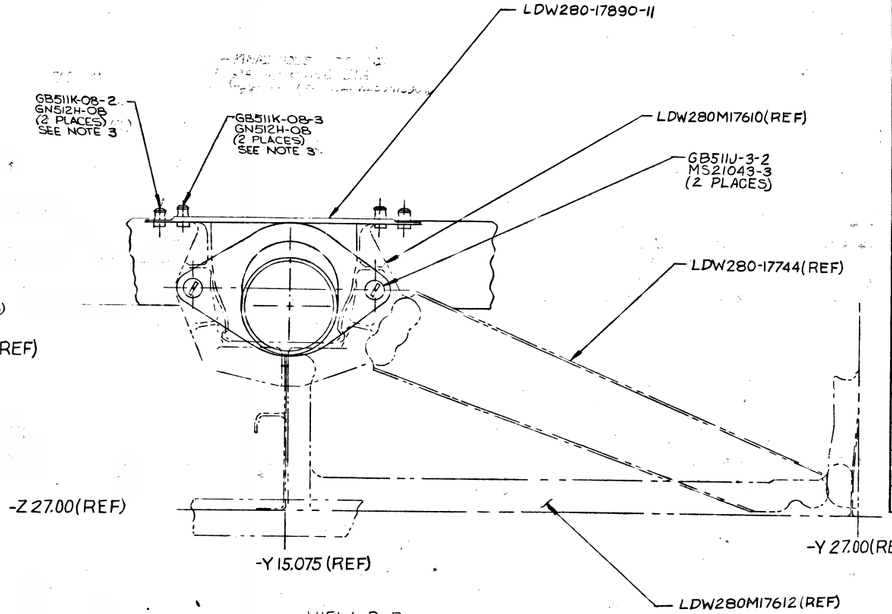
ENG 77.2 7-65

01

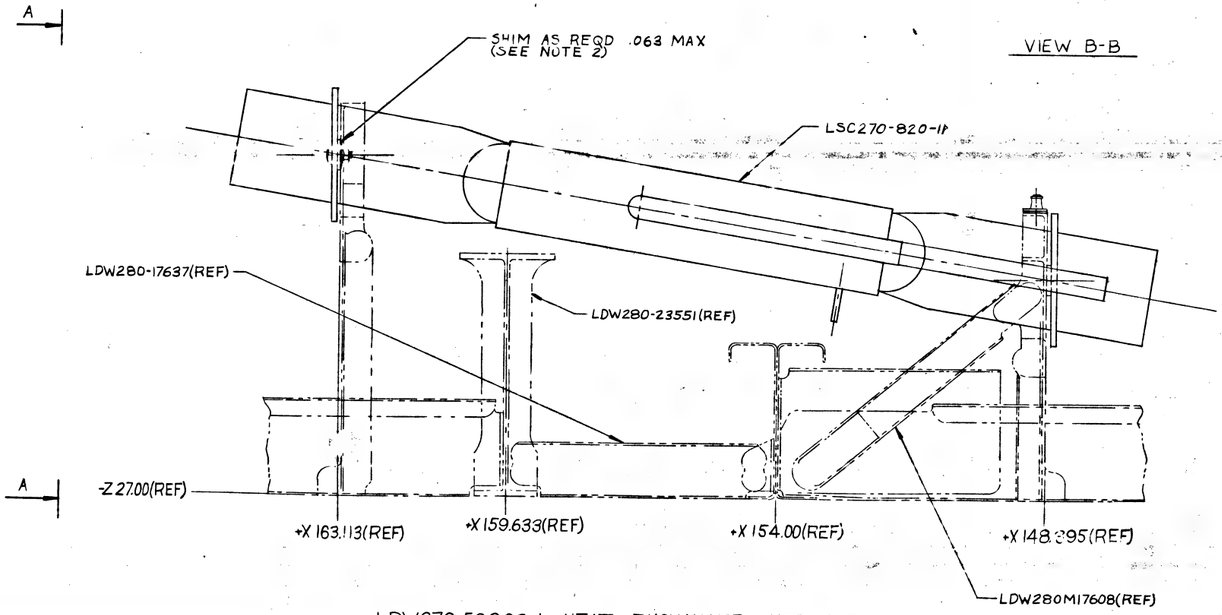
NAS 9-1100



VIEW A-A



VIEW B-B



LDW270-52303-1 HEAT EXCHANGER INSTALLATION

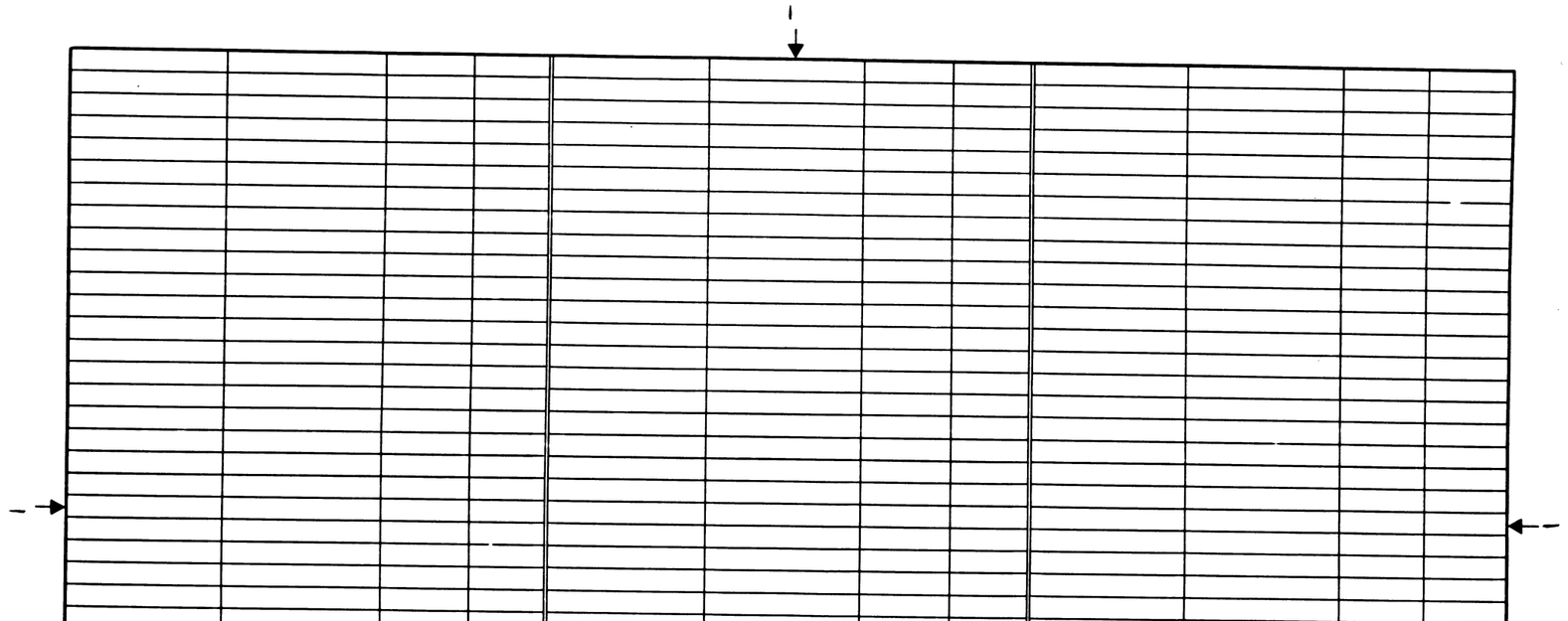
MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .XXXU ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
250 FOR ALL DRILLED HOLES ✓
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031 ✓
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
SYMBOL ∠ DENOTES SURFACE TO BE MACHINED
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
LENGTHS OF AN, MAS & MS AL ALY RIVETS LARGER THAN 1 INCH ARE NOT SPECIFIED.
TOLERANCE ON LOFTED DELINEATIONS IS

NOTES:

1. COMMERCIAL PART. SEE SPECIFICATION CONTROL DRAWING LSC270-820 BEFORE ORDERING.
2. SHIM AS REQD USING MIL-S-22499 COMPOSITION 1, TYPE I, CLASS 2
3. INSTALL FASTNERS PER LSP14-15304

NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L.I., NEW YORK			
LEM	SIZE E	CODE IDENT NO. 26512	LDW270-52303 A
MODEL OR END ITEM	SCALE FULL		SHEET 7.00



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW270-52300	LEM-2(32)	1
PART NO.	GAEC SCH NO.		

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW270-52300	LEM-2(32)	1
PART NO. LDW270-52304-3	GAEC SCH NO.		

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LEM	LDW270-52300	LEM-2(32)	1
PART NO. LDW270-52304-1	GAEC SCH NO. 55		

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00	2.00	3.00							
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED		GRUMMAN REL INFO			
		PRIM NO.	FS(004)		
LAST DASH NO. USED	-3	486	MP12		DJW67

ENG 77.1 9-64

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS — DECIMALS — ANGLES

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100 | LINE ITEM 9 | DOCUMENTATION TYPE II

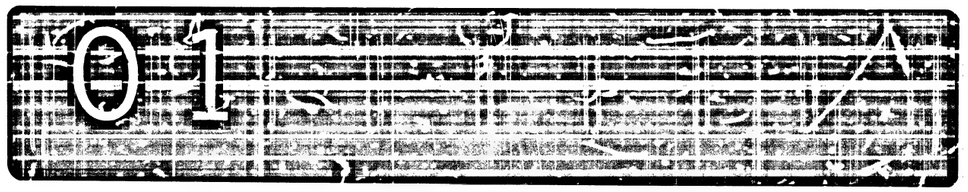
DRAWN BY	D.A. CAPPELLI 5-31-66	RELIABILITY	6/14
LAYOUT BY		WEIGHTS	S. Garcia 6/14/66
CHECKED BY GR LEADER	J. Grau 6-2-66 J. Perotti 6-2-66		
PROPULSION			
VDI			
STRESS	6/6/66	PROJ ENGR	6-15-66
STRESS	6/7	RELEASE	6-15-66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

CHECK, RELIEF & EXPL VALVE INSTL
DESCENT STAGE-PROPELLANT
PRESSURIZATION-SUB-SYSTEM

SIZE	CODE IDENT NO.	
B	26512	LDW270-52304

SCALE NONE | SHEET 1.00 OF 3



NAS 9-1100

ZL	QTY PER ASSEMBLY	PART NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
	-3 -1											
A		LDW270-52304-3	E		CHECK, RELIEF & EXPL. VALVE IN	STL (OX)						
A		LDW270-52304-1	E		CHECK, RELIEF & EXPL. VALVE IN	STL (FUEL)						
L	1 1	LSC270-819-11	S		EXPLOSIVE VALVE	SEE NOTE #1						
L	1	-818-4	S		RELIEF	"						
L	1	-818-3	S		RELIEF	"						
L	1	-817-4	S		CHECK	"						
L	1	LSC270-817-3	S		CHECK VALVE	SEE NOTE #1						
C	3 3	GB511J-3-23	E		BOLT	GRUMMAN STD						
C	2 2	GB511J-3-13	E		BOLT	GRUMMAN STD						
C	2 2	GB511J-3-1	E		BOLT	GRUMMAN STD						

CLEANLINESS LEVEL PER LSP 14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

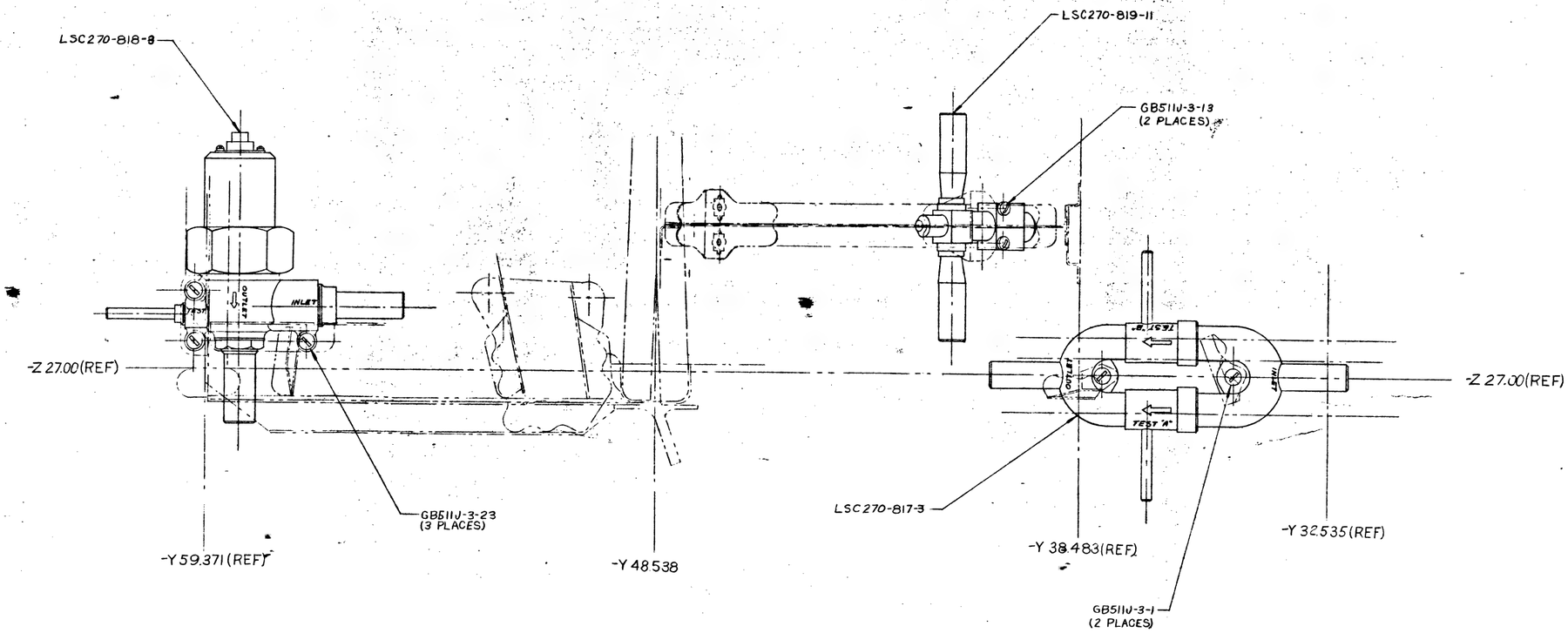
SIZE	CODE IDENT NO.	
B	26512	LDW 270-52304

SCALE NONE SHEET 2.00

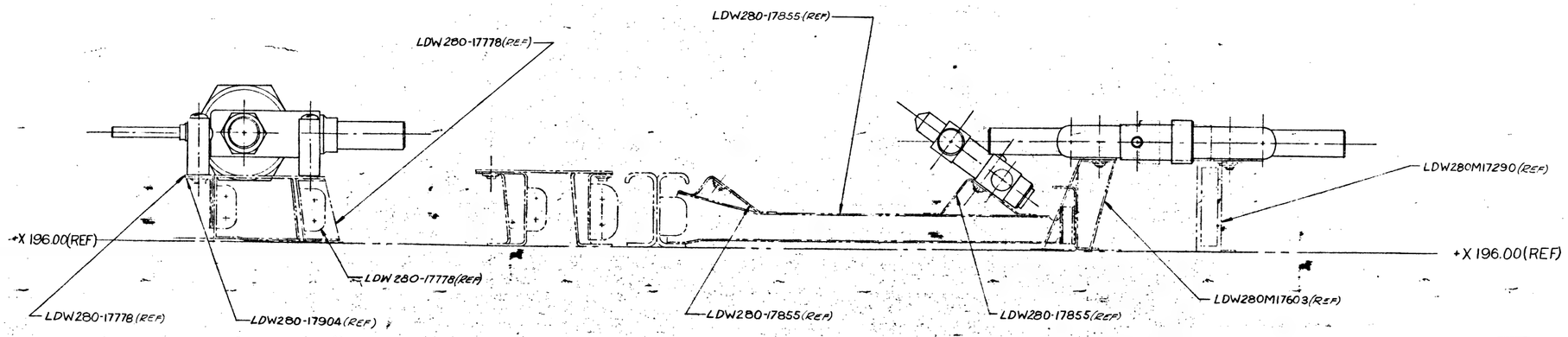
ENG 77.2 5-64

01 A

NAS 9-1100



LDW270-52304-3 CHECK, RELIEF & EXPLOSIVE VALVE INSTALLATION (OX)



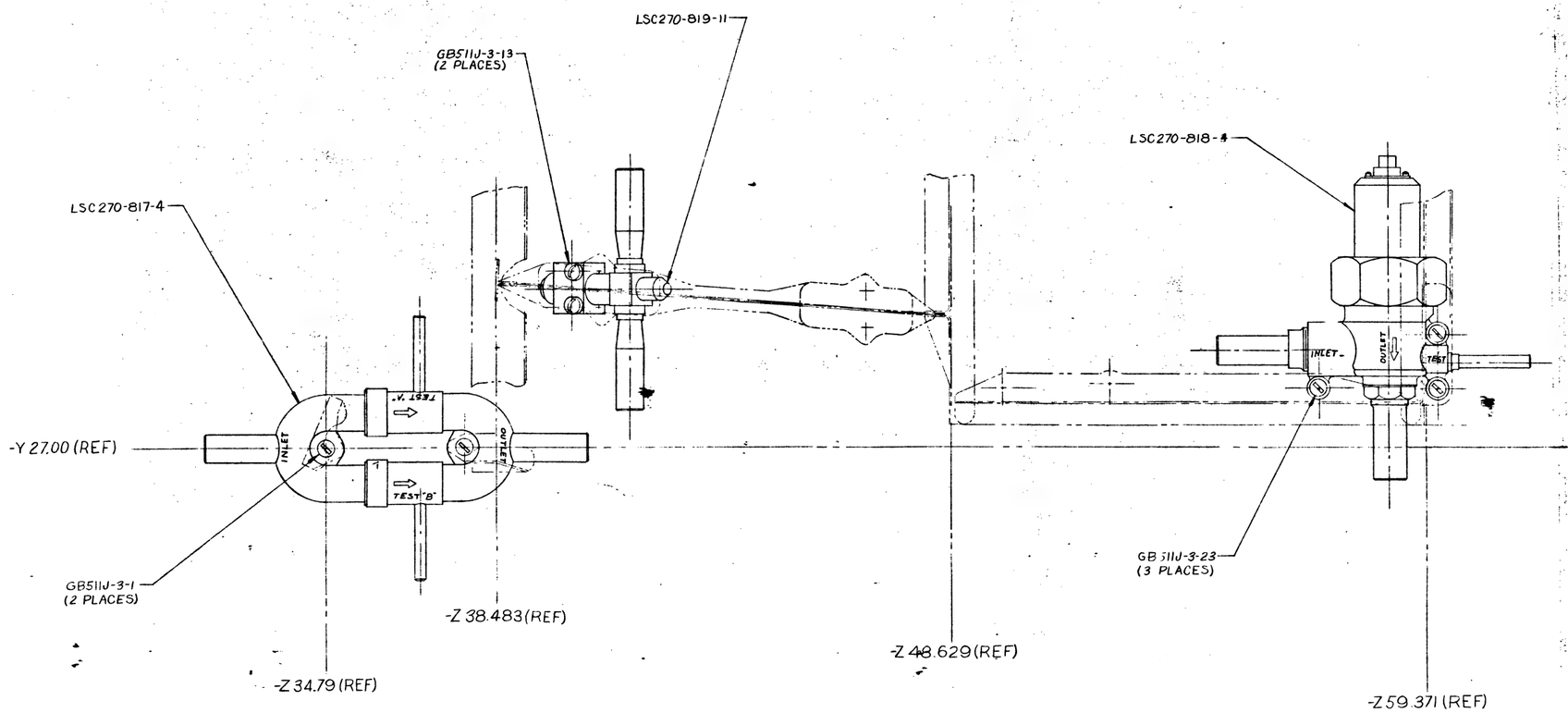
01702

NAS 9-1100

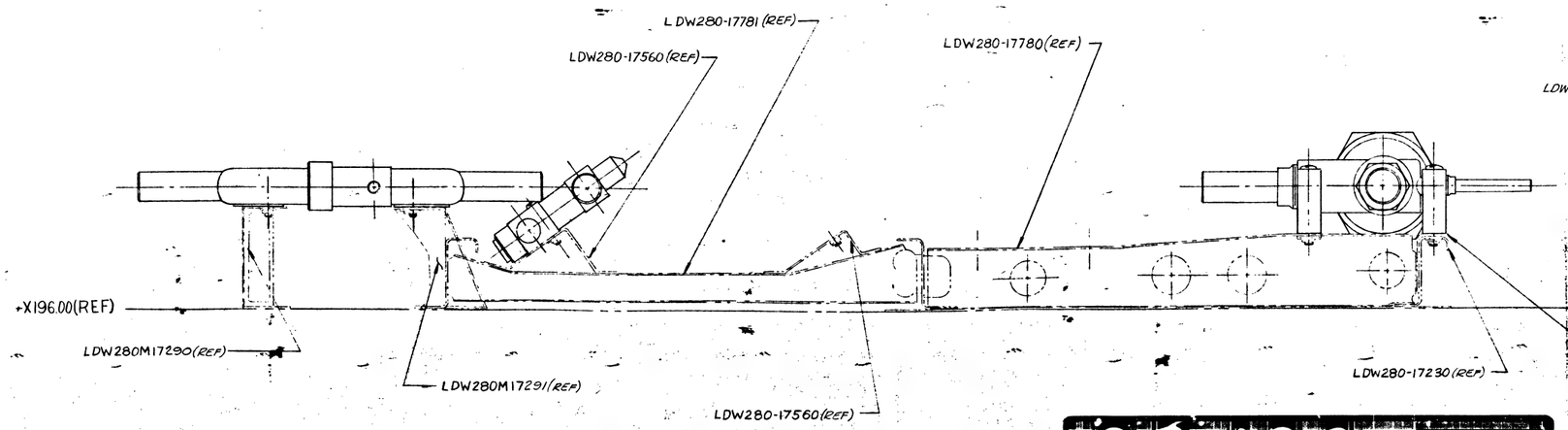
CODE IDENT 26512

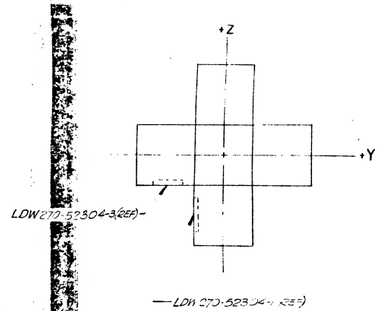
LDW 270-52304

SH 3 OF 3



LDW270-52304-1 CHECK, RELIEF & EXPLOSIVE VALVE INSTALLATION (FUEL)





MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
250 FOR ALL DRILLED HOLES
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
SYMBOL ∿ DENOTES SURFACE TO BE MACHINED
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
LENGTH OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
TOLERANCE ON LOFTED DELINEATIONS IS

DWG SIZE 34 X 88

PRINTING INFO ONLY
FULL SIZE SHEET AREA (34 X 88) FT.
1/2 SIZE SHEET AREA (1/4 OF FULL) 8 1/2 X 11 FT.
PRINT TRIM LINE

NOTES:
1. COMMERCIAL PART SEE SPECIFICATION CONTROL DRAWING LSC270-817, LSC270-818 & LSC270-819 BEFORE ORDERING.
2. EXPLOSIVE VALVE INITIATOR PORTS TO REMAIN PLUGGED UNTIL INSTALLATION OF INITIATORS.

02702 NAS 9-1100

CODE IDENT 26512	SHT 3.00
LDW270-52304	

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE J	CODE IDENT NO. 26512	LDW270-52304	
LEM MODEL OR END ITEM	SCALE FULL	SHEET 3.00	

LDW270-52304

THIS IS AN ORIG DWG!

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.	GAEC SCH NO.			PART NO. LDW270-52305-3	GAEC SCH NO.			PART NO. LDW270-52305-1	GAEC SCH NO. 55		
LEM				LDW270-52300	LEM-2(32)		1	LEM	LDW270-52300	LEM-2(32)	1

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00	2.00	3.00							
REV										
SHEET										
REV										
SHEET										
REV										

		GRUMMAN REL'E INFO		
LAST SECT LTR USED		PRIM NO.	(d009)	
LAST DASH NO. USED	-3	486	MP 12	B/S 31

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS — DECIMALS — ANGLES ~ ~ ~

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9 1100 | LINE ITEM 9 | DOCUMENTATION TYPE II

DRAWN BY	P.A. CAPPELLI 5-25-66	RELIABILITY	
LAYOUT BY			
CHECKED BY			
GR. LEADER	J. Pruett 5/27/66		
PROPULSION			
VID			
STRESS		PROJ ENGR	
WEIGHTS	S. Garcia 6/8/66		

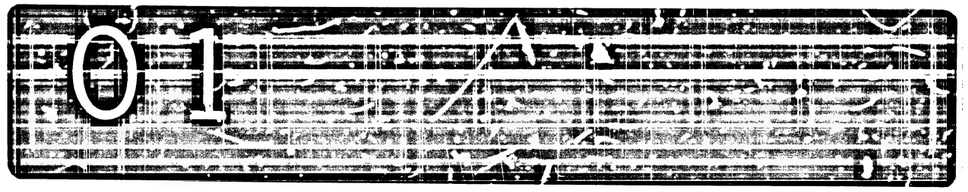
GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

DISCONNECT COUPLING INSTL
DESCENT STAGE - PROPELLANT
PRESSURIZATION SUB-SYSTEM

SIZE	CODE IDENT NO.	
B	26512	LDW270-52305

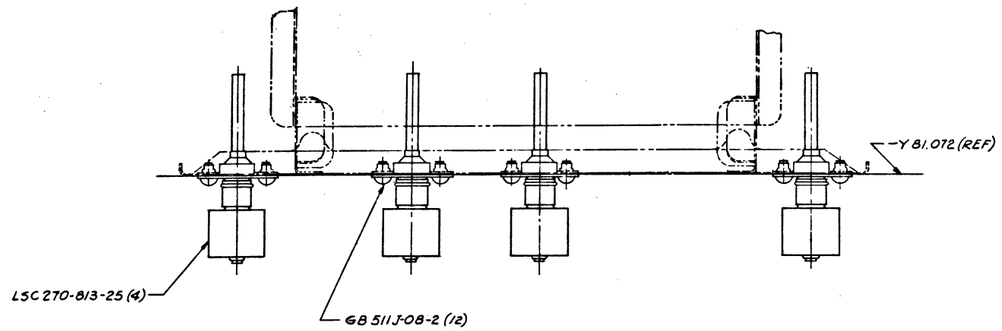
SCALE NONE | SHEET 1.00 OF 3

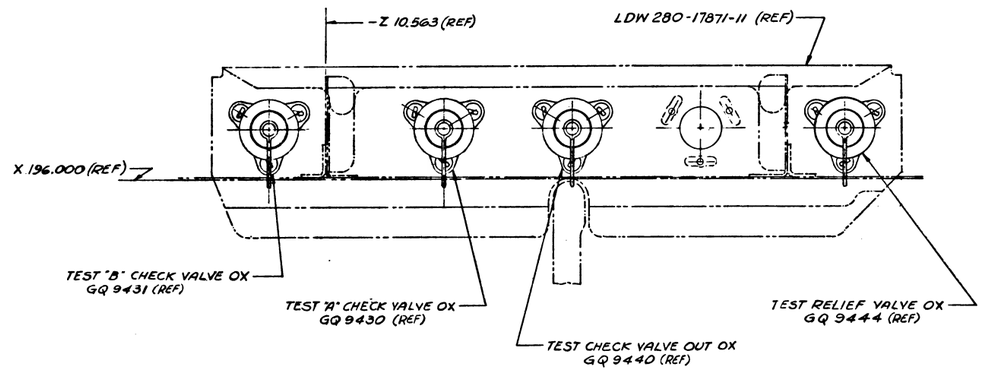
ENG 77.1 9-64



NAS 9-1100

| | | |





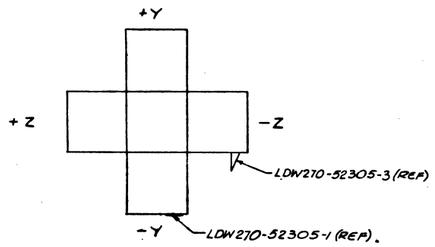
LDW 270-52305-1 ASSEMBLY

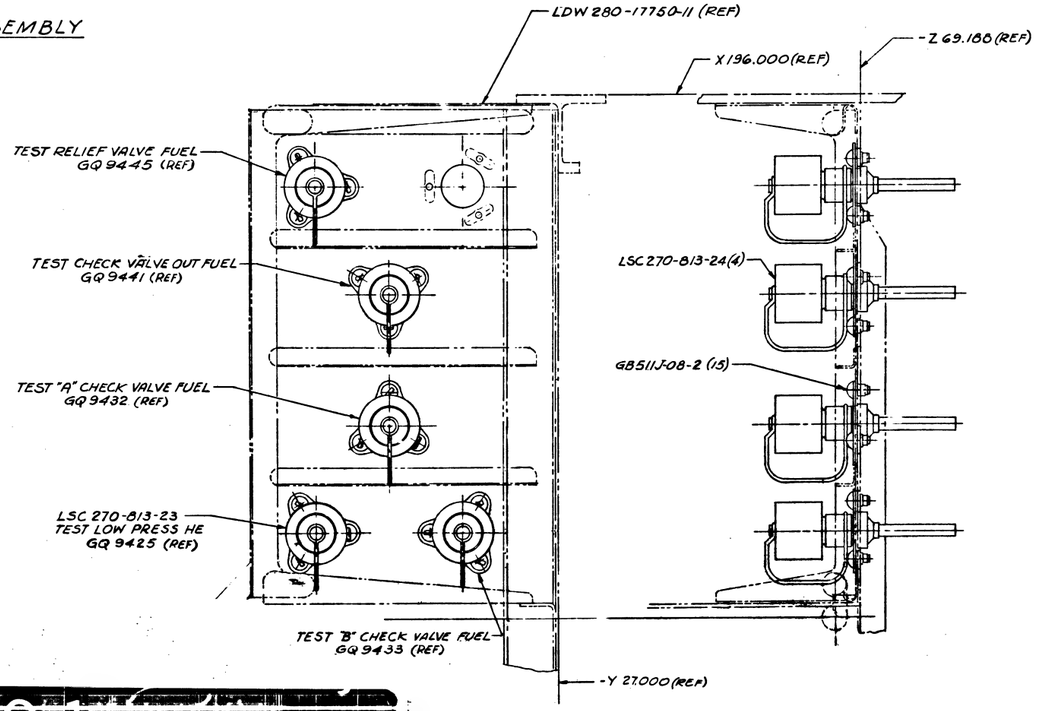
NOTES:

1. COMMERCIAL PART SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING.

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.

- PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY.
- FILLET AND INSIDE CORNER RADII TOLERANCES .010R TO .062R ± .010; .063R TO .250R ± .015; OVER .250R ± .030
- DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS 2-3 MIN THDS. BEYOND PERMISSIBLE.
- EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
- DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
- MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
- DIAMETERS MARKED ⌀ MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
- HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
- ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0001 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
- 125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
- 250 FOR ALL DRILLED HOLES
- REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
- INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
- SYMBOL ⌀ DENOTES SURFACE TO BE MACHINED
- UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
- LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
- TOLERANCE ON LOFTED DELINEATIONS IS





NAS 9-1100

LDW 270-52305-3 ASSEMBLY

LEM MODEL OR END ITEM	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK		
	SIZE E	CODE IDENT NO. 26512	LDW 270-52305
	SCALE FULL		SHEET 3.00

THIS IS AN ORIGINAL DWG

W270-52305 LDW270-52305

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 270 | EO NO. 53
CONTROL INFO NO. LM270-1004

ENG 32.2 REV 3-65 B

ADD NOTE ✱ "BOND IN ACCORDANCE WITH FIGURE 7C OF LSP-14-13334" TO THE FOLLOWING DWG

DRAWING NUMBER	TITLE	EFFECTIVITY	CHANGE NO
LDW270-52100	SEE DWG	LM-2(32)	A8
-53100		LM-3(33)	A5
-54100		LM-4(34) THRU LM-15(45)	A4
-53010		LM-3(33)	A3
-54010		LM-4(34) THRU LM-15(45)	A2
LDW270-52306	SEE DWG	LM-2(32) THRU LM-15(45)	A4

ADD NOTE ✱✱ "BOND IN ACCORDANCE WITH FIGURE 7G OF LSP-14-13334" TO THE FOLLOWING DWG.

LDW270-52304	SEE DWG	LM-2(32)	A5
-53304		LM-3(33)	C4
-54304		LM-4(34) THRU LM-15(45)	A8
-52305		LM-2(32)	A1
-53305		LM-3(33)	A1
-54305		LM-4(34) THRU LM-15(45)	A1
LDW270-52309	SEE DWG	LM-2(32) THRU LM-15(45)	B3

ADD NOTE ✱✱✱ BOND IN ACCORDANCE WITH FIGURE 7A & 7G OF LSP-14-13334 "TO THE FOLLOWING DWG

LDW270-52200	SEE DWG	LM-2(32)	A1
LDW270-53200	SEE DWG	LM-3(33)	A2
LDW270-54200	SEE DWG	LM-4(34) THRU LM-15(45)	A2

ADD NOTE ⊗ BOND IN ACCORDANCE WITH FIGURE 7C & 7G OF LSP-14-13334 "TO THE FOLLOWING DWG

-52201	SEE DWG	LM-2(32)	B3
-53201		LM-3(33)	B3
-54201		LM-4(34) THRU LM-15(45)	B1
-52310		LM-2(32) & LM-3(33)	A6
LDW270-54310	SEE DWG	LM-4(34) THRU LM-15(45)	A1

ADD NOTE ◕ "BOND IN ACCORDANCE WITH FIGURE 7F OF LSP-14-13334" TO THE FOLLOWING DWG

LDW270-52302	SEE DWG	LM-2(32) THRU LM-15(45)	A3

ADD NOTE ⊡ "BOND IN ACCORDANCE WITH FIGURE 12 OF LSP-14-13334" TO THE FOLLOWING DWG

LDW270-53202	SEE DWG	LM-3(33) THRU LM-15(45	A2

	DWG NO	CHG NO
ADD NOTE △ "BOND IN ACCORDANCE WITH FIGURE 12 OF LSP-14-13334, EFF LM-2".	LDW270-51202	A2
ADD NOTE ▽ "BOND IN ACCORDANCE WITH FIGURE 12 OF LSP-14-13334, EFF LM-2 THRU LM-15".	LDW270-23308	B3
ADD NOTE ▼ "BOND IN ACCORDANCE WITH FIGURE 7C OF LSP-14-13334, EFF LM-2."	LDW270-51010	C9
ADD NOTE ▲ "BOND IN ACCORDANCE WITH FIGURE 7C & 7G OF LSP-14-13334, EFF LM-2 THRU LM-15."	LDW270-51453	E1

(MANUFACTURING NOTE) REWORK OF LM-2 WILL NOT BE REQUIRED PROVIDED THE REQUIREMENTS OF PARAGRAPH 4.2 OF LSP-14-13334 ARE COMPLIED WITH.

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD 1961

REASON FOR EO: UPDATE DRAWINGS TO CURRENT BONDING REQUIREMENTS

DESCRIPTION OF EO: ADDED NOTES ✱, ✱✱, ✱✱✱, ⊗, ◕, ⊡, △, ▽, ▼, ▲. (NEXT AVAILABLE NO)

GAEC EO RELEASE: JA 8/2/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		NOTED	

DRAWING CHANGE REQD: ✓ REVISE DWG | RECORD EO
DISPOSITION OF PARTS: ✓ REWORK | SCRAP

APPROVED BY									
DATE				SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ. ENGRG
				—	—	8/3/67	—	—	8/3/67

PRIORITY: C
DRAWING TITLE: NOTED ABOVE
DRAWING NO.: LEO 270
EO NO.: 53

ISSUED BY W. KUTNER X1611 8/2/67 SECTION PROPULSION GROUP NO. 345 PL 25

LEO 270 NAS 9-1100

LDW 270-52306

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW270-52306-1	LEM	LDW270-56300 LEM-6(36)	1
	LEM	LDW270-55300 LEM-5(35)	1
	LEM	LDW270-54300 LEM-4(34)	1
	LEM	LDW270-53300 LEM-3(33)	1
	LEM	LDW270-52300 LEM-2(32)	1
GAEC SCH NO. 55			

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00	2.00	3.00							
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED		GRUMMAN REL INFO		
LAST DASH NO. USED	-1	PRIM NO.	(K001)	
		486	WP 17	BC 5-31

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT

CLASS II ENGRG CHANGE

CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100		LINE ITEM 9	DOCUMENTATION TYPE II
DRAWN BY J. PAVLICA 5/27/66	RELIABILITY		GRUMMAN AIRCRAFT ENGRG CORP
LAYOUT BY —			BETHPAGE, L. I., NEW YORK
CHECKED BY D Gerwl 5/27/66			EXPLOSIVE VALVE INSTALLATION-
GR LEADER			DESCENT PROPELLANT
PROP			PRESSURIZATION SUBSYSTEM
VDI	PROJ ENGR		SIZE B | CODE IDENT NO. 26512 | LDW270-52306
STRESS	REL GROUP		SCALE NONE | SHEET 1.00 OF 3
WEIGHTS			

ENG 77.1 12-65

01

NAS 9-1100

C						2		MS21043-3	F	NUT	STD PART								
C						2		GB511V-3-13	E	BOLT	GRUMMAN STD								
L						1		LSC270-714-3	S	EXPLOSIVE VALVE	SEE NOTE 1								
A						-1		LDW270-52306-1	E	EXPLOSIVE VALVE	INSTL								
C.L.	QTY PER ASSEMBLY						CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE		PROCESS SYM	FINISH NO.	ZONE	

CLEANLINESS PER LSP14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

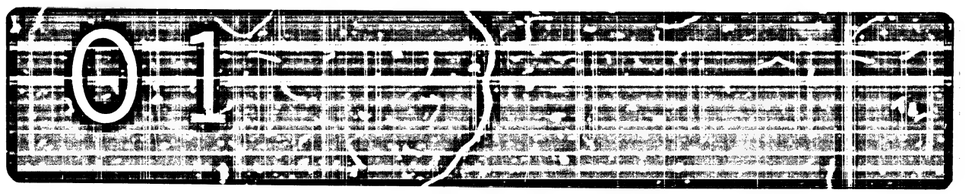
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

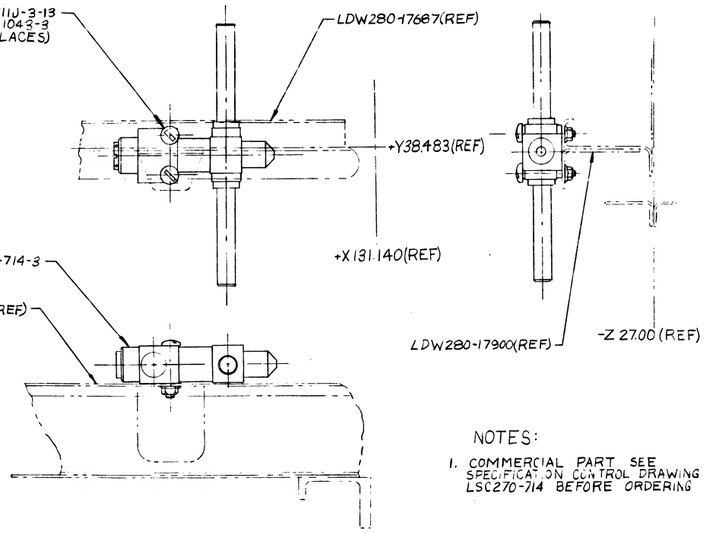
SIZE	CODE IDENT NO.	
B	26512	LDW270-52306

SCALE NONE SHEET 2.06

ENG 77.2 7-65



NAS 9-1100



NOTES:

1. COMMERCIAL PART SEE SPECIFICATION CONTROL DRAWING LSC270-714 BEFORE ORDERING

LDW270-52306-1 EXPLOSIVE VALVE INSTALLATION

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.

- PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED — USE BOTH SIDES IF NECESSARY.
- FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010; .063R TO .250R ± .015; OVER .250R ± .030
- DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 THD THDS. BEYOND PERMISSIBLE.
- EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
- DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
- MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
- DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
- HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
- ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS "F" PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
- SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
- FOR ALL DRILLED HOLES
- REMOVE ALL BURRS BREAK ALL EDGES .015-.031
- INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
- SYMBOL ∫ DENOTES SURFACE TO BE MACHINED
- UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
- LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
- TOLERANCE ON LOFTED DELINEATIONS IS

	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK		
LEM	SIZE C	CODE IDENT NO. 26512	LDW270-52306
MODEL OR END ITEM	SCALE FULL		SHEET 3 OF

NAS 9-1100

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-52306 | EO NO. A1
CONTROL INFO NO. LM 270-698

SHEET 1.00

IN M/B FOR -1 INSTL.

ADD	LM	LDW270-54300	LM15 (45)	1
	LM		LM 14 (44)	
	LM		LM 13 (43)	
	LM		LM 12 (42)	
	LM		LM 11 (41)	
	LM		LM 10 (40)	
	LM		LM 9 (39)	
	LM		LM 8 (38)	
	LM		LM 7 (37)	
	LM		LM 6 (36)	
	LM	LDW270-54300	LM5 (35)	
REMOVE	LM	LDW270-56300	LM6 (36)	1
	LM	LDW270-55300	LM5 (35)	1

MODEL N/A MODULE REQD PER

2

DETAIL SPLC REQ | CL II ENGRG CHG | CL I ENGRG CHG

REASON FOR EO: EXTEND USAGE THRU LM15 & CORRECT NEXT ASSY

DESCRIPTION OF EO: IN M/B FOR -1 ADDED N/A LDW270-54300 FOR LM7 THRU LM15 FOR LM 5 & 6 N/A LDW270-54300 WAS LDW270-55300 & LDW270-56300 RESPECTIVELY

2 GAEC EO RELEASE C

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP	APPROVED BY:	DATE	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	CONF
LM		LM 5 THRU LM15		✓		NOT	Req'd								10/7/66	10/18/66
		(35 THRU 45)						PROP								
				PRIORITY: C	DRAWING TITLE: EXPLOSIVE VALVE INSTALLATION - DESCENT PROP. PRESSURIZATION SUBSYSTEM			DRAWING NO.: LDW270-52306							EO NO.: A1	

ISSUED BY N. GRAUL x1471 SECTION PROPULSION GROUP NO. 270 PL 35 EMF

01 NAS 9-1100

B

ENG 32-1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LDW270-52306 | EO NO. A2
CONTROL INFO NO. LM270-913

ADD NOTE *, "LDW270M10039-11 & GS570W-1 SHALL BE INSTALLED IN LSC270-714-3 EXPLOSIVE VALVE INITIATOR PORTS HAND TIGHT FOR SHIPMENT & STORAGE."

ADD IN FIELD TO LSC270-714-3, (SEE NOTE *).

ADD TO B/M, FOR -1 INSTL, LDW270M10039-11 (SEE NOTE *), 2 REQD & GS570W-1 (SEE NOTE *), 2 REQD.

* USE NEXT AVAILABLE NOTE NUMBER.

DETAIL SPEC REQ		CL II ENGRG CHG	X	CL I ENGRG CHG		LCD 1571

REASON FOR EO: TO PROVIDE A PERMANENT SHIPPING PLUG FOR EXPLOSIVE VALVES.

DESCRIPTION OF EO: ADDED NOTE *, ADDED TO B/M LDW270M10029-11 & GS570W-1, 2 REQD FOR -1.

GAEC EO RELEASE: JK 6/13/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM2 (32)	
		THRU	
		LM15 (45)	

DRAWING CHANGE REQD: REVISE DWG ✓; RECORD EO
DISPOSITION OF PARTS: REWORK ✓; SCRAP
PRIORITY: C

	APPROVED BY	DATE	PROP	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
	Bartlett	6/14/67	5			KAE 6/14/67			Dan 6/16/67

DRAWING TITLE: EXPLOSIVE VALVE INSTL-DESCENT PROP-PRESSURIZATION SUB-SYSTEM
DRAWING NO.: LDW270-52306
EO NO.: A2

ISSUED BY A. HENDRICKS X1471 14 JUNE 1967 SECTION PROPULSION GROUP NO. 345 PL 25

01

NAS 9-1100

B

ENG 37.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER *

DWG. NO. LDW270-52306 | EO NO. A3
CONTROL INFO NO. LM-5-15650

ADD NOTE *: SHIM AS REQUIRED, USING ALUMINUM ALLOY LAMINATED SHIM, 5052H39, MIL-S-22499, COMP I (5052), CLASS 1, TO MAINTAIN ALIGNMENT OF VALVES & PIPING, MAX. ALLOWABLE SHIMMING-.063, AREA OF SHIM SHALL EQUAL MOUNTING AREA.

RELEASED BY LIAISON

* - NEXT AVAILABLE NUMBER

DETAIL SPEC REQ | | CL II ENGRG CHG | ✓ | CL I ENGRG CHG | |

REASON FOR EO	DESCRIPTION OF EO	GAEC EO RELEASE
TO PERMIT SHIMMING WHERE REQUIRED	ADDED NOTE *.	5

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP	APPROVED BY / DATE				GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ. ENGRG
									SUPPORT	RELIAB. GROUP					
LM		LM-2(32)		✓		✓		KB 7/21/67	JFB 8-18-67	CH 7-18-67	MH 7/18/67	8/21/67			
		THRU													
		LM-15(95)													

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	EXPLOSIVE VALVE INSTL.-DESCENT PROP. PRESS. SUB-SYSTEM	LDW270-52306	A3

ISSUED BY LIAISON - J. McGILL X-86226 SECTION PROPULSION GROUP NO. ____ PL 25

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENGINEERING ORDER

ENG 32.2 REV 3-65

B

DWG. NO. LEO 270 | EO NO. 53

CONTROL INFO NO. LM270-1004

ADD NOTE ✕ "BOND IN ACCORDANCE WITH FIGURE 7C OF LSP-14-13334" TO THE FOLLOWING DWG

DRAWING NUMBER	TITLE	EFFECTIVITY	CHANGE NO
LDW270-52100	SEE DWG	LM-2(32)	A8
-53100		LM-3(33)	A5
-54100		LM-4(34) THRU LM-15(45)	A4
-53010		LM-3(33)	A3
-54010		LM-4(34) THRU LM-15(45)	A2
LDW270-52306	SEE DWG	LM-2(32) THRU LM-15(45)	A4

ADD NOTE ✕✕ "BOND IN ACCORDANCE WITH FIGURE 7G OF LSP-14-13334" TO THE FOLLOWING DWG.

LDW270-52304	SEE DWG	LM-2(32)	A5
-53304		LM-3(33)	C4
-54304		LM-4(34) THRU LM-15(45)	A8
-52305		LM-2(32)	A1
-53305		LM-3(33)	A1
-54305		LM-4(34) THRU LM-15(45)	A1
LDW270-52309	SEE DWG	LM-2(32) THRU LM-15(45)	E3

ADD NOTE ✕✕✕ "BOND IN ACCORDANCE WITH FIGURE 7A & 7G OF LSP-14-13334" TO THE FOLLOWING DWG

LDW270-52200	SEE DWG	LM-2(32)	A1
LDW270-53200	SEE DWG	LM-3(33)	A2
LDW270-54200	SEE DWG	LM-4(34) THRU LM-15(45)	A2

ADD NOTE ⊗ "BOND IN ACCORDANCE WITH FIGURE 7C & 7G OF LSP-14-13334" TO THE FOLLOWING DWG

-52201	SEE DWG	LM-2(32)	B3
-53201		LM-3(33)	B3
-54201		LM-4(34) THRU LM-15(45)	E1
-52310		LM-2(32) & LM-3(33)	A6
LDW270-54310	SEE DWG	LM-4(34) THRU LM-15(45)	A1

ADD NOTE ◆ "BOND IN ACCORDANCE WITH FIGURE 7F OF LSP-14-13334" TO THE FOLLOWING DWG

LDW270-52302	SEE DWG	LM-2(32) THRU LM-15(45)	A3

ADD NOTE ⊡ "BOND IN ACCORDANCE WITH FIGURE 12 OF LSP-14-13334" TO THE FOLLOWING DWG

LDW270-53202	SEE DWG	LM-3(33) THRU LM-15(45	A2

	DWG NO	CHG NO
ADD NOTE △ "BOND IN ACCORDANCE WITH FIGURE 12 OF LSP-14-13334, EFF LM-2".	LDW270-51202	A2
ADD NOTE ▽ "BOND IN ACCORDANCE WITH FIGURE 12 OF LSP-14-13334, EFF LM-2 THRU LM-15".	LDW270-23308	B3
ADD NOTE ▼ "BOND IN ACCORDANCE WITH FIGURE 7C OF LSP-14-13334, EFF LM-2".	LDW270-51010	C9
ADD NOTE ▲ "BOND IN ACCORDANCE WITH FIGURE 7C & 7G OF LSP-14-13334, EFF LM-2 THRU LM-15".	LDW270-51453	E1

(MANUFACTURING NOTE) REWORK OF LM2 WILL NOT BE REQUIRED PROVIDED THE REQUIREMENTS OF PARAGRAPH 4.2 OF LSP-14-13334 ARE COMPLIED WITH.

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD 1961

REASON FOR EO: UPDATE DRAWINGS TO CURRENT BONDING REQUIREMENTS

DESCRIPTION OF EO: ADDED NOTES ✕, ✕✕, ✕✕✕, ⊗, ◆, ⊡, △, ▽, ▼, ▲. (NEXT AVAILABLE NO)

GAEC EO RELEASE: JK 8/2/67

EFFECTIVITY				DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY							
MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	REVISE DWG	RECORD EO	REWORK	SCRAP	DATE		—	—	8/3/67	—	—	8/3/67
LM		NOTED										SUPPORT	RELIAB. GROUP	GROUP LEADER	STR'SS GR'UP	L'AISON ENGRG	PROJ ENGRG

PRIORITY: C | DRAWING TITLE: NOTED ABOVE | DRAWING NO.: LEO 270 | EO NO.: 53

ISSUED BY W. KUTNER X1611 8/2/67 SECTION PROPULSION GROUP NO. 345 PL 25

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENG 32.2 REV 3-65 **ENGINEERING ORDER**

DWG. NO. LEO270		EO NO. 80
CONTROL INFO NO. LM270-1369		

REMOVE LM-15(45) EFFECTIVITY FROM THE FOLLOWING DRAWINGS:

DRAWING NO.	*DASH NO	TITLE	CHANGE NO
LDW270P10000	-1	SEE DWG	B4
P10001	-1		C3
M10027	-1		A6
M10039	-11		A7
M10045	-11		A2
M10077	-11-1		A8
-10025	-11		A5
-10030	-1 & -2		A2
-10031	-1, -3 & -5		A3
-23308	-1		B9
-51309	-5		B3
-51401	-1, -3 & -7		C1
-51451	-1, -3, -5, -9, -11 -13 & -19		C1
-51459	-5 & -7		A7
-52302	-1-1		A6
-52306	-1		A6
-52307	-1-1		A4
-52309	-1		B5
-53202	-1-2		A4
-53311	-1 & -2		A3
	-		
-54201	-21 & -23		H7
LDW270-54310	-5	SEE DWG	B4

(5)

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	LCO 3587	LCEP #1 SHT 1 & 2.

REASON FOR EO: ELIMINATION OF PROPULSION SUB-SYST FROM LM-15 (REF TWX JC32-68-1977 & 2328)

DESCRIPTION OF EO: For * REMOVED LM-15 EFFECTIVITY.

GAEC EO RELEASE: (R) JK 12/4/68

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-15 (45)	

DRAWING CHANGE REQD: REVISE DWG ✓; RECORD EO

DISPOSITION OF PARTS: REWORK; SCRAP ✓

APPROVED BY									
DATE	12/3/68	12/1/68						12/4/68	12-12-68
	P&OP	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	DONE

PRIORITY: C

DRAWING TITLE: SEE DWG

DRAWING NO.: LEO 270

EO NO.: 80

ISSUED BY P. CAPPELLI 1471 SECTION PROPULSION GROUP NO. 270 PL 25

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW270-52306 | EO NO. A7

CONTROL INFO NO. LM 210-1915

LFM INFO) CREATE -1-1 INSTL FOR LM6(36) THRU LM14(44) QTY 1; LFM426 FOR LM6 & LM7
SAME AS -1 EXCEPT:
LSC270-714-3-1 WAS LSC270-714-3

DELETE LM8(38) THRU LM14(44) FROM -1

REWORK NOTE: (DO NOT INCORPORATE ON DWG) VALVES INSTALLED SHALL BE VERIFIED FOR CONFORMANCE TO LSC270-714 & RE-IDENTIFIED IN ACCORDANCE WITH LSC DWG. REQMTS.

* USE NEXT AVAILABLE NOTE NUMBER

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD3980.5 (5)

REASON FOR EO: PRECLUDE INSTL OF INTERNALLY BRAZED EXPLOSIVE VALVES

DESCRIPTION OF EO: "NOTED"

(F) GAEC EO RELEASE: 6/6/69

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO. EL	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM426	LM6(36)	
LM	LFM426	LM7(37)	
LM		LM8(38) THRU LM14(44)	

DRAWING CHANGE REQD: ✓ REVISE DWG | RECORD EO
DISPOSITION OF PARTS: ✓ REWORK | SCRAP

	APPROVED BY	DATE	DROP	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
	[signature]	6/6/69				RB 6/6/69		LB 6/6/69	[signature] 6/17/69

PRIORITY: C

DRAWING TITLE: EXPLOSIVE VALVE INSTALLATION - DESCENT PROPELLANT PRESSURIZATION SUBSYSTEM

DRAWING NO.: LDW270-52306

EO NO.: A7

ISSUED BY J. PAVLICA X1471 SECTION LM PROPULSION GROUP NO. 270 PL 25

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NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW270-52306 | EO NO. A8

CONTROL INFO NO. LM 270-1926

ON -1-1 DELETE LM6(36) & LM7(37) FOR LFM 426
DELETE LM8(38) & LM9(39)

RE-INSTATE LM8(38) & LM9(39) EFF FOR -1

ADD NOTE * LSC270-714-3-1 SHALL BE USED FOR ALL FUTURE REPLACEMENTS AND SPARES.

* USE NEXT AVAILABLE NOTE NUMBER

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD3980 (5)

REASON FOR EO: ELIMINATE SCHEDULE IMPACT

DESCRIPTION OF EO: "NOTED"

GAEC EO RELEASE: SWB 6-21-69; DK 6-21-69

MODEL	EFFECTIVITY: PROCURING ACTIVITY	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 426	LM6(36) & LM7(37)	
LM		LM8(38) & LM9(39)	

DRAWING CHANGE REQD: REVISE DWG ✓; RECORD EO

DISPOSITION OF PARTS: REWORK ✓; SCRAP

PRIORITY: C

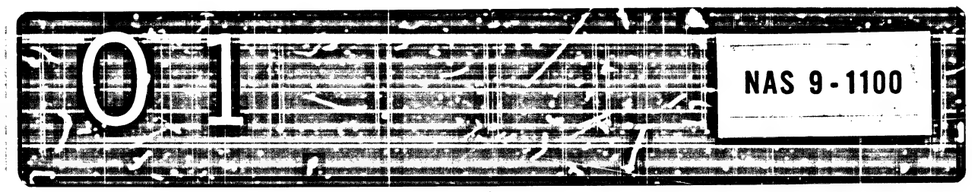
DRAWING TITLE: EXPLOSIVE VALVE INSTALLATION-DESCENT PROPELLANT PRESSURIZATION SUB-SYSTEM

DRAWING NO.: LDW270-52306

EO NO.: A8

APPROVED BY	DATE	AREA	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
[illegible]	6-21-69				6/21		6-21	6/21/69

ISSUED BY J. PAVLICA X1471 SECTION LM PROPULSION GROUP NO. 270 PL 25



LDW270-52307

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW270-52307-1		GAEC SCH NO. 55	
LEM	LDW270-52302	LEM-6(36)	1
LEM	LDW270-52302	LEM-5(35)	1
LEM	LDW270-52302	LEM-4(34)	1
LEM	LDW270-52302	LEM-3(33)	1
LEM	LDW270-52302	LEM-2(32)	1

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	2.00	3.00	4.00					
REV									
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	
LAST DASH NO. USED	-1

GRUMMAN REL INFO: PRIM NO. 66(009) 6-14-66; 486 MP; X

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS – ANGLES

ORIG DWG AUTH

DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS 9 1100		LINE ITEM 9	DOCUMENTATION TYPE II
DRAWN BY N. GRAUL 5/19/66			
LAYOUT BY N. GRAUL			
CHECKED BY			
G.R. LEADER			
PROPULSION			
STRESS		PROJ ENGR	11/14/66
WEIGHTS L. Garcia 7/6/66.		REL GROUP	7-13-66
RELIABILITY P.S. Hoyle for L.K. 7/6			

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

TANK ASSEMBLY - SUPERCRITICAL HELIUM

SIZE	CODE IDENT NO.	
B	26512	LDW270-52307

SCALE NONE SHEET 1 OF 4

ENG 77.1 12-65

3

NAS 9-1100

L														
C.L.	QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
			LDW270-52307-1	S	TANK ASSY.	(MAKE FROM LSC270-821-53-1) SEE NOTES 1 THRU 8						

CLEANLINESS LEVEL PER LSP-14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : LPC-19-2 (GRUMMAN) LPC-19-3 (VENDOR)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW270-52307

SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

NAS 9-1100

NOTES:

1. LSC270-821-53-1 PRE-INSTALLATION TESTS SHALL BE IN ACCORDANCE WITH SPECIFICATION LTP279-29.
2. AFTER PRE-INSTALLATION TESTS AND JUST PRIOR TO INSTALLATION CUT TUBES OFF ON ELECTRO-ETCHED CUTOFF LINE IN ACCORDANCE WITH LSP-14-17400A USING AEROQUIP CUT, DEBURRING AND SIZING TOOLS, AEROQUIP AE506 SERIES OR EQUIVALENT.
3. EXTREME CARE MUST BE EXERCISED IN ORDER TO PREVENT DAMAGE TO, OR CONTAMINATION OF THE TANK AND GLASS PEENED AREA OF THE TUBE STUBS DURING CUTTING, DEBURRING AND SIZING.
4. CLEANLINESS PER LSP-14-0011 LEVEL "L" MUST BE MAINTAINED DURING CUTTING, DEBURRING AND SIZING.
5. THE TUBE TO BE CUT SHALL BE UNCAPPED AFTER PURGE PRESSURIZATION AND PRIOR TO CUTTING TO INSURE CLEANLINESS.
6. THE TUBE TO BE CUT SHALL BE POINTED IN A DOWNWARD DIRECTION DURING THE CUTTING, DEBURRING AND SIZING OPERATIONS.
7. DURING THE CUTTING, DEBURRING AND SIZING OPERATIONS TUBING SHALL BE PURGED WITH 10 MICRON ABSOLUTE FILTERED NITROGEN OR HELIUM GAS IN ACCORDANCE WITH THE FOLLOWING TABLE:

TUBE TO BE CUT	APPLICATION POINT	PURGE PRESSURE
TUBE "A"	FILL COUPLING	5.0 ± 1.0 PSIG
TUBE "B"	TUBE "C"	↑
TUBE "C"	TUBE "B"	
TUBE "D"	TUBE "E"	↓
TUBE "E"	TUBE "D"	5.0 ± 1.0 PSIG

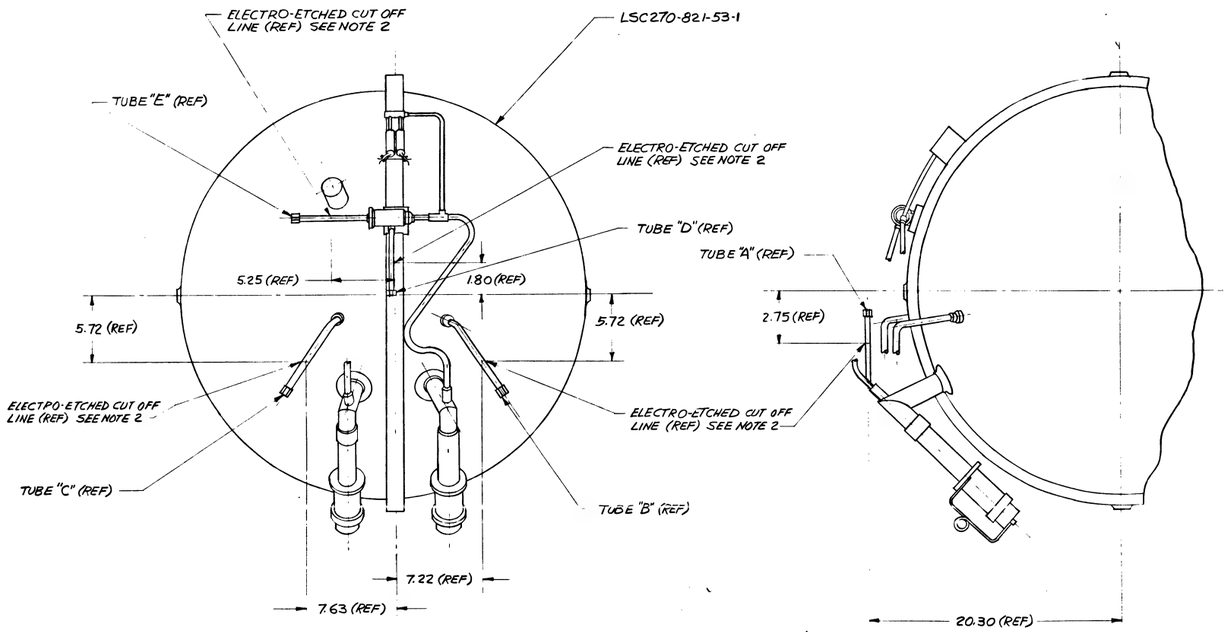
8. AFTER CUTTING OPERATION CAP STUB ENDS PER LSP-14-009.

ENG 72.1 6-64

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-52307	
SCALE NONE			SHEET 3.00

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NAS 9-1100



LDW270-52307-1

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.

- PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.
- FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010; .063R TO .250R ± .015; OVER .250R ± .030
- DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.
- EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
- DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
- MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
- DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
- HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
- ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
- 125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
- 200 FOR ALL DRILLED HOLES
- REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
- INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
- SYMBOL ⚷ DENOTES SURFACE TO BE MACHINED
- UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
- LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
- TOLERANCE ON LOFTED DELINEATIONS IS

LEM	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK		
	SIZE D	CODE IDENT NO. 26512	LDW270-52307
MODEL OR END ITEM	SCALE NONE		SHEET 4 OF

NAS 9-1100

01

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LDW270-52307 | EO NO. A1
CONTROL INFO NO. LM270-701

SHEET 1.00

IN M/B FOR-1 ASSY

ADD

LM	LDW270-52302	LM15 (45)	1
LM		LM14 (44)	1
LM		LM13 (43)	1
LM		LM12 (42)	1
LM		LM11 (41)	1
LM		LM10 (40)	1
LM		LM 9 (39)	1
LM		LM 8 (38)	1
LM	LDW270-52302	LM 7 (37)	1
MODEL	N/A	MODULE	REQD PER

2

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG

REASON FOR EO: EXTEND USAGE THRU LM 15

DESCRIPTION OF EO: IN M/B FOR-1 ADDED N/A LDW270-52302 FOR LM 7 THRU LM 15

② GAEC EO RELEASE: 10/6/66

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM7 THRU LM15 (37 THRU 45)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: REWORK Not | SCRAP REQD

APPROVED BY: DATE 10-7-66 PROP

SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
				Sam	Paul 10/10/66
				10/7/66	

PRIORITY: C

DRAWING TITLE: TANK ASSY- SUPERCRITICAL HELIUM

DRAWING NO.: LDW270-52307

EO NO.: A1

ISSUED BY N. GRAUL X1471 SECTION PROPULSION GROUP NO. 270 PL 35 EMF

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NAS 9-1100

J. Paulca

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINFERING ORDER

DWG. NO. LDW270-52307 | EO NO. A2
CONTROL INFO NO. LM-2-4310

ADD TO NOTE 7 AS SHOWN

7. DURING ... FILTERED NITROGEN, HELIUM OR ADD ARGON GAS
... TABLE:

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG
		✓

REASON FOR EO: TUBING PURGED WITH ARGON DURING BRAZING OPERATION + ARGON CAN ALSO BE USED WHEN ACCOMPLISHING EGATS OF NOTE

DESCRIPTION OF EO: ADD ON TO NOTE 7 --- OR ARGON GAS ...

2

(P) GAEC EO RELEASE: JA

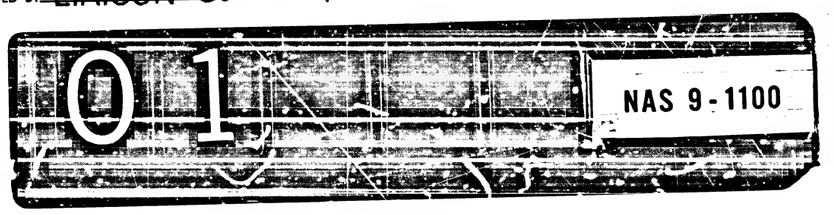
MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.
LM		LM-2(32) thru LM-15(45)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: REWORK ✓ | SCRAP
APPROVED BY: DATE | SUPPORT | RELIAB. GROUP

	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ. ENGRG	
	RB 11/16/67	WJS 12/1/67	CoF 12/4/67	MJH 12/6/67	[illegible] 12/21/67

PRIORITY C | DRAWING TITLE: TANK ASSY- SUPER-CRITICAL HELIUM | DRAWING NO. LDW 270-52307 | EO NO. A2

ISSUED BY LIAISON Co Farley X3604 SECTION FLUID POWER GROUP NO. 357 PL 25



GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW270-52307	EO NO. A3
CONTROL INFO NO. LM 270-1278	

SHEET 1.00
IN M/B, REMOVE -1 ASS'Y. FROM LM-5 THROUGH LM-15 AND REPLACE WITH NEW-1-1 ASS'Y.

SHEET 2.00
IN B/M, ADD NEW "-1-1 ASS'Y. (MAKE FROM LSC270-821-53-1 SEE NOTES 2 THROUGH 9)."
FOR -1 ASS'Y., CHANGE "SEE NOTE 1 THROUGH 8" TO "SEE NOTE 2 THROUGH 9".

SHEET 3.00
DELETE NOTE 1 AND ADD NOTE 9 AS FOLLOWS:
"THE -1 AND -1-1 ASS'Y. ARE IDENTICAL EXCEPT THAT THE -1-1 ASS'Y. IS MADE FROM LSC270-821-53-1 TANK THAT HAS SUCCESSFULLY PASSED PRE-INST'L TESTS PER LTP279-29 REV. F(OR SUBSQ REV.)".

SHEET 4.00
ADD NEW "-1-1 ASS'Y. (SEE NOTE 9)" IN F/D.

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	LCD 19-3196 A
	✓		

REASON FOR EO: RE-IDENTIFICATION REQUIRED BECAUSE OF CHANGE IN P.I.T. REQUIREMENTS ON SHE. TANK

DESCRIPTION OF EO: ADDED -1-1, ON -1 REMOVED LM-5 THRU LM-15 REQUIREMENTS.

GAEC EO RELEASE: 0 (5) 7/16/68

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM5 THRU LM15 (35 THRU 45)	

DRAWING CHANGE REQD: REVISE DWG ✓; RECORD EO; DISPOSITION OF PARTS: REWORK ✓; SCRAP

APPROVED BY / DATE: PROP 6/19/68; SUPPORT; RELIAB GROUP; GROUP LEADER; STRESS GROUP; LIAISON ENGRG; PROJ ENGRG

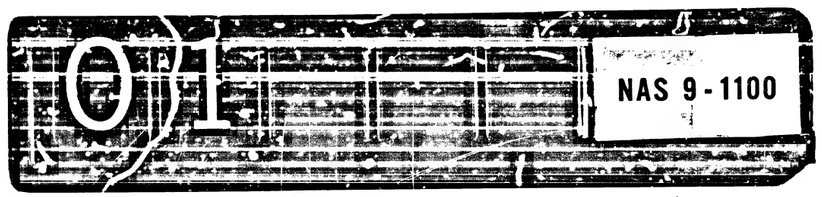
PRIORITY: C

DRAWING TITLE: TANK ASSEMBLY SUPERCRITICAL HELIUM

DRAWING NO.: LDW270-52307

EO NO.: A3

ISSUED BY E. CUDONE SECTION PROPULSION GROUP NO. 270 PL 25



GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.2 REV 3-65

ENGINEERING ORDER

DWG. NO. LEO270 | EO NO. 80

CONTROL INFO NO. LM270-1369

REMOVE LM-15(45) EFFECTIVITY FROM THE FOLLOWING DRAWINGS:

DRAWING NO.	*DASH NO	TITLE	CHANGE NO
LDW270P10000	-1	SEE DWG	B4
P10001	-1		C3
M10027	-1		A6
M10039	-11		A7
M10045	-11		A2
M10077	-11-1		A8
-10025	-11		A5
-10030	-1 & -2		A2
-10031	-1, -3 & -5		A3
-23308	-1		B9
-51309	-5		B3
-51401	-1, -3 & -7		C1
-51451	-1, -3, -5, -9, -11, -13 & -19		C1
-51459	-5 & -7		A7
-52302	-1-1		A6
-52306	-1		A6
-52307	-1-1		A4
-52309	-1		B5
-53202	-1-2		A4
-53311	-1 & -2		A3
-54201	-21 & -23		H7
LDW270-54310	-5	SEE DWG	B4

(5)

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | LCD 3587 LCRP #1 SHT 1 & 2.

REASON FOR EO: ELIMINATION OF PROPULSION SUB-SYST FROM LM-15 (REF TWX JC32-68-1377 & 2028)

DESCRIPTION OF EO: FOR * REMOVED LM-15 EFFECTIVITY.

GAEC EO RELEASE: 12-12-68

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	DATE	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
LM		LM-15 (45)		✓			✓		12/3/68			12/9/68			12/11/68

PRIORITY: C | DRAWING TITLE: SEE DWG | DRAWING NO.: LEO270 | EO NO.: 80

ISSUED BY P. CAPPELLI 1471 SECTION PROPULSION GROUP NO. 270 PL 25

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW270-52307		EO NO. AS
CONTROL INFO NO. LM270-1400		

SHEET 1.00
IN M/B, REMOVE -1-1 ASS'Y. FROM LM-10 THROUGH LM-14 AND REPLACE WITH -1-3 ASS'Y.

SHEET 2.00
IN B/M, ADD NEW -1-3 ASS'Y. (MAKE FROM LSC270-821-53-3 SEE NOTE 2 THROUGH 9).

SHEET 3.00
CHANGE NOTE 9 AS FOLLOWS:
THE -1, -1-1 AND -1-3 ASS'Y. ARE IDENTICAL EXCEPT THAT THE -1-1 AND -1-3 ASS'Y. ARE MADE FROM LSC270-821-53-1 AND -53-3 RESPECTIVELY THAT HAVE SUCCESSFULLY PASSED PRE-INSTL. TESTS PER LTP279-29 REV. F (OR SUB'Q. REV.)

SHEET 4.00
ADD NEW -1-3 ASS'Y. (SEE NOTE 9)" IN F/D.

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓ LCD 3732 E MEG#2 ECP #NA4									GAEC EO RELEASE	
REASON FOR EO: RE-IDENTIFICATION REQUIRED BECAUSE OF CHANGE IN DUAL BURST DISC ASS'Y. ON SHE. TANK					DESCRIPTION OF EO: ADDED -1-3, ON -1-1 REMOVED LM-10 THRU LM-14 REQUIREMENTS.									(B) WB 6-2-69	
														VK 6/3/69	
														LB 6/2/69	6-3-69
MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY							
LM		LM-10 (40)						DATE	6/3/69						
		THRU LM-14 (44)		PRIORITY C	DRAWING TITLE: TANK ASSEMBLY SUPERCRITICAL HELIUM				PRCP	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
												DRAWING NO. LDW270-52307			EO NO. AS

ISSUED BY G. CUDONE SECTION PROPULSION GROUP NO. 270 PL 25

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO.		EO NO.
LDW270-52307		A6
CONTROL INFO NO. LM270-1403		

IN M/B, REMOVE -1-1 ASS'Y FROM LM-9 AND ADD LM-9 EFF TO -1-3 ASS'Y. D/A LDW270-52302 IREQD/MOD

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCD 3732 F

REASON FOR EO: RE-IDENTIFICATION REQUIRED BECAUSE OF CHANGE IN DUAL BURST DISC ASS'Y ON SHE TANK

DESCRIPTION OF EO: FOR -1-1 REMOVED LM-9(39) EFF. FOR -1-3 ADDED LM-9(39) EFF.

(5) GAEC EO RELEASE: RB 7-24-69; JK 8/1/69; RD 7/24/69; 7/31/69

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-9(39)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	DATE		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ. ENGRG
✓		✓		PROP.	7/24/69				RD 7/24/69			7/24/69 7/31/69

PRIORITY: C

DRAWING TITLE: TANK ASSEMBLY SUPERCRITICAL HELIUM

DRAWING NO.: LDW270-52307

EO NO.: A6

ISSUED BY R. POLLOCK SECTION PROPULSION GROUP NO. 270 PL 25

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. No. LDW270-52307 | EO NO. A7

CONTROL INFO NO. LM270-1421

SHEET 1.00
IN M/B, REMOVE -1-3 ASS'Y FROM LM-9
AND REPLACE WITH -1-1 ASS'Y.

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓ LCD3732		PKG 3	(5)
REASON FOR EO: RE-IDENTIFICATION REQUIRED BECAUSE NEW TYPE SHE TANK WILL NOT BE INSTALLED IN LM9					DESCRIPTION OF EO: REPLACE -1-3 ASS'Y. WITH -1-1 ASS'Y. FOR LM-9			GAEC EO RELEASE: (2) JWB 1-16-70; JCJ 2/9/70

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP	APPROVED BY / DATE	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
LM		LM-9 (39)		✓		✓		PROP 1/27/70			JC 1/27/70			R.A.T. Cannon 1/27/70 2/4/1970 ~~DOVE~~

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	TANK ASSEMBLY SUPERCRITICAL HELIUM	LDW270-52307	A7

ISSUED BY G. CUDONE 2/5/70 SECTION PROPULSION GROUP NO. 270 PL 25

01

NAS 9-1100

LDW270-52309 A

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.	

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
LM	LDW270-54300	LM15-(45)	1
		LM14-(44)	1
		LM13-(43)	1
		LM12-(42)	1
		LM11-(41)	1
		LM10-(40)	1
		LM9-(39)	1
		LM8-(38)	1
		LM7-(37)	1
		LM6-(36)	1
		LM5-(35)	1
	-54300	LM4-(34)	1
	-53300	LM3-(33)	1
LM	LDW270-52300	LM2-(32)	1
PART NO. LDW270-52309-1		GAEC SCH NO. 55	

2

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	1.10	2.00	3.00					
REV	A	A	A	A					
SHEET									
REV									
SHEET									
REV									

LAST SECT LTR USED	
LAST DASH NO. USED	-1

GRUMMAN REL INFO #

PRIM NO.			EMF
436	MP-14	A-11-2-6	

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS 9 1100 LINE ITEM 9 DOCUMENTATION TYPE II

DRAWN BY	R.H. CAPRELLI 7-19-66	RELIABILITY	7/27
LAYOUT BY			
CHECKED BY			
G-E LEADER	J. Porath 7/19/66		
PROP			
V.D.I		PROJ ENGR	R.M. Carlucci 8/6
		REL GROUP	8-9-66
WEIGHT			

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

EXPL VALVE, FILTER & DISC CPL IN S.T.L
PROP-DESCENT STAGE-SUB-
SYSTEM-AMBIENT HELIUM

SIZE	CODE IDENT NO.		
B	26512	LDW270-52309	A

SCALE NONE SHEET 1.00 OF 4

ENG 77.1 12-65

0 1 NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT. APPD
A	1	1.00						A1	IN M/B FOR -1, ADDED N/A LDW270-54300 LM7 THRU LM15. FOR LM5 & LM6 N/A LDW270-54300 WAS LDW270-55300 & LDW270-56300 RESPECTIVELY.	NOTED	NOT	REQD	A. HENDRICKS 10-26-66		
	2	1.00 3.00	4B 6B					A2	REMOVE MS21043-3 (6)	NOTED	✓				
	3	3.00	6C 8C						RELOCATED LSC270-712-1 TO STA +Y38.271 (REF).	LM-2 THRU LM-15	✓				

FOR CONTINUATION OF REVISIONS SEE SHEET _____

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52309	A

SCALE NONE — SHEET 1.10

01

NAS 9-1100

C			5	AN 960D10L	E		WASHER	STD PART							
C			1	GC12H-21			CLAMP	GRUMMAN STD							
C			2	GB511J3-16			BOLT	GRUMMAN STD							
C			4	GB511J3-2			BOLT	GRUMMAN STD							
C			1	LSC270-813-31			DISC COUPL.	SEE DWG							
C			1	LSC270-714-3			EXPL VALVE	SEE DWG							
C			1	LSC270-712-1			FILTER	SEE DWG							
C				LDW270-52309-1	E		INSTALLATION	—	—	—	—	—	—		
O.L.		-1		PART NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE		PROCESS SYM	FINISH NO.	ZONE

CLEANLINESS LEVEL PER SP 14-001

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

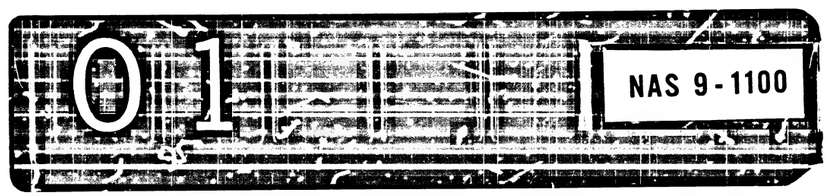
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

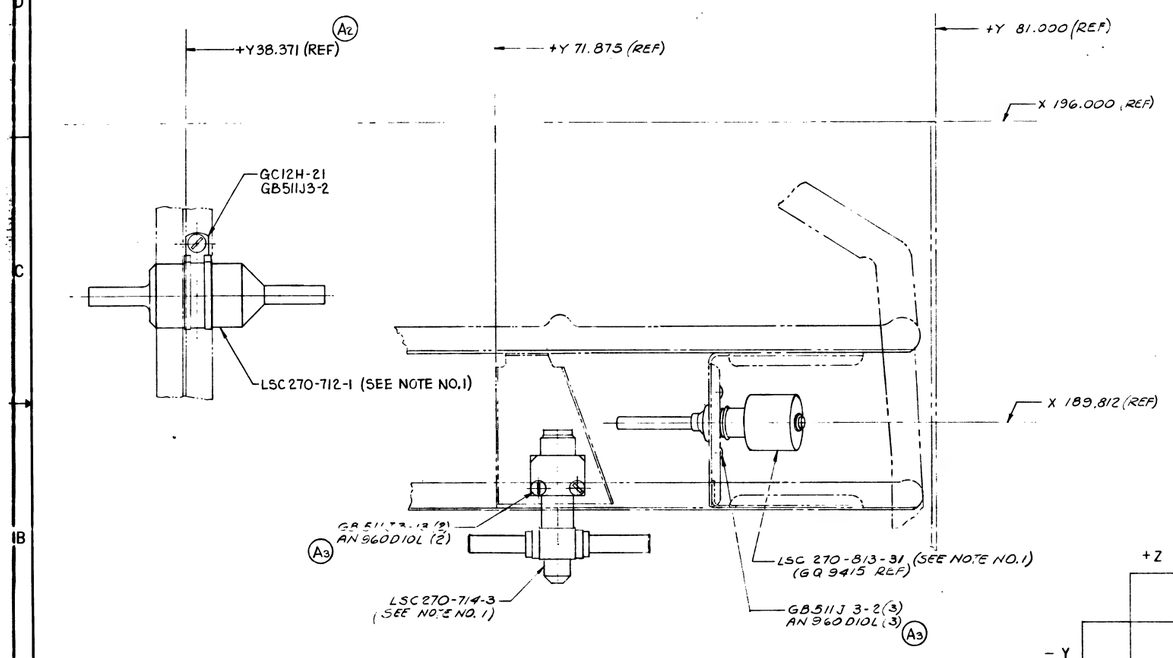
SIZE	CODE IDENT NO.		
B	26512	LDW270-52309	A

SCALE NONE SHEET 2.00

ENG 77.2 5-64



NOTE:
1- BEFORE ORDERING COMMERCIAL PARTS SEE SPECIFICATION CONTROL DWGS.



LDW 270-52309-1 INSTALLATION

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.

FILLET AND INSIDE CORNER RADII TOLERANCES
.016R TO .062R ± .010
.063R TO .250R ± .015
OVER .250R ± .030

.1H SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP. THDS. BEYOND PERMISSIBLE

EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.

DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.

MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.

DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING

HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.

ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES

125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10

200 FOR ALL DRILLED HOLES

REMOVE ALL BURRS. BREAK ALL EDGES .015-.031

INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS

SYMBOL ▲ DENOTES SURFACE (TO BE MACHINED)

UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32

LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED

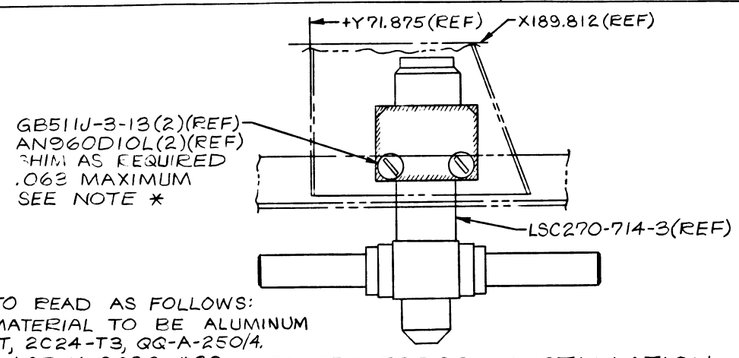
TOLERANCE ON LOFTED DELINEATIONS IS

	GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK		
LEN	SIZE D	CODE IDENT NO. 26512	LDW 270-52309 A
MODEL OR END ITEM	SCALE FULL		SHEET 3 OF

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG NO. LDW270-52309		EO NO. B1
CONTROL INFO NO. LM-2-3642		



ADD NOTE * TO READ AS FOLLOWS:
SHIM MATERIAL TO BE ALUMINUM ALLOY SHEET, 2C24-T3, QQ-A-250/4. FINISH PER LSP-14-9030. #88

LDW270-52309-1 INSTALLATION

* DENOTES NEXT AVAILABLE NOTE NUMBER

DETAIL SPEC REQ		CL II ENGRG CHG	✓	CL I ENGRG CHG	

REASON FOR EO: PROVIDE CLEARANCE TO PROPERLY INSTALL HELIUM BOOSTER CARTRIDGES

DESCRIPTION OF EO: FOR -1 INSTL, IN FLD, ADDED "SHIM AS REQU'RED, .063 MAXIMUM, SEE NOTE *," IN NOTES, ADDED NOTE *.

2

GAEC EO RELEASE: 02925

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO
LM		LM-2(32)THRU	
		LM-15(45)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY: DATE			SUPPORT	RELIAB GROUP
✓		✓		-I-				

	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	CONT
	6/7/67	6/9/67	6/9/67	6/12/67	6/13/67

PRIORITY: C

DRAWING TITLE: EXPL. VALVE, FILTER & DISC CPL INSTL PROP-D/S-SUBSYSTEM-AMBIENT HE

DRAWING NO. LDW270-52309 EO NO. B1

ISSUED BY LIAISON J. MALONEY 6/9/67 X3604 SECTION FLUIDS GROUP NO. 270 PL 25

01
NAS 9-1100

B

ENG 32.1 REV 3-65

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512 *
ENGINEERING ORDER

DWG. NO. LDW270-52309 | EO NO. B2
CONTROL INFO NO. LM270-914

ADD NOTE *, "LDW270M10039-11 & GS570W-1 SHALL BE INSTALLED IN LSC270-714-3 EXPLOSIVE VALVE INITIATOR PORTS HAND TIGHT FOR SHIPMENT & STORAGE."

ADD IN FIELD TO LSC270-714-3 (SEE NOTE *).

ADD TO B/M, FOR -1 INSTL, LDW270M10039-11 (SEE NOTE *), 2 REQD & GS570W-1 (SEE NOTE *), 2 REQD.

* USE NEXT AVAILABLE NOTE NUMBER.

DETAIL SPEC REQ | | CL II ENGRG CHG | X | CL I ENGRG CHG | | LCD1571

REASON FOR EO: TO PROVIDE A PERMANENT SHIPPING PLUG FOR EXPLOSIVE VALVES

DESCRIPTION OF EO: ADDED NOTE *, ADDED TO B/M LDW270M10039-11 & GS570W-1, 2 REQD FOR -1 & -3.

GAEC EO RELEASE: JK 6/16/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM2 (32)	
		THRU	
		LM15 (45)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: REWORK ✓ | SCRAP
PRIORITY: C

APPROVED BY: [signature] | DATE: 6/16/67 | 5
R Bate 6/16/67 | SUPPORT | RELIAB GROUP
GROUP LEADER: [signature] 6/16/67
STRESS GROUP: [signature] 6/16/67
LIAISON ENGRG: [signature] 6/16/67
PROJ ENGRG: [signature] 6/17/67

DRAWING TITLE: EXPL VALVE, FILTER & DISC. CPL INSTL-PROP. DESCENT STAGE-SUB-SYS-AMBIENT HELIUM
DRAWING NO.: LDW270-52309
EO NO.: B2

ISSUED BY A. HENDRICKS X1471 16 JUNE 1967 SECTION PROPULSION GROUP NO. 345 PL 25

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.2 REV 3-65 B

DWG. NO. LEO 270		EO NO. 53
CONTROL INFO NO. LM 270-1004		

ADD NOTE * "BOND IN ACCORDANCE WITH FIGURE 7C OF LSP-14-13334" TO THE FOLLOWING DWG

DRAWING NUMBER	TITLE	EFFECTIVITY	CHANGE NO
LDW270-52100	SEE DWG	LM-2(32)	A8
-53100		LM-3(33)	A5
-54100		LM-4(34) THRU LM-15(45)	A4
-53010		LM-3(33)	A3
-54010		LM-4(34) THRU LM-15(45)	A2
LDW270-52306	SEE DWG	LM-2(32) THRU LM-15(45)	A4

ADD NOTE ** "BOND IN ACCORDANCE WITH FIGURE 7G OF LSP-14-13334" TO THE FOLLOWING DWG.

LDW270-52304	SEE DWG	LM-2(32)	A5
-53304		LM-3(33)	C4
-54304		LM-4(34) THRU LM-15(45)	A8
-52305		LM-2(32)	A1
-53305		LM-3(33)	A1
-54305		LM-4(34) THRU LM-15(45)	A1
LDW270-52309	SEE DWG	LM-2(32) THRU LM-15(45)	B3

ADD NOTE *** BOND IN ACCORDANCE WITH FIGURE 7A & 7G OF LSP-14-13334" TO THE FOLLOWING DWG

LDW270-52200	SEE DWG	LM-2(32)	A1
LDW270-53200	SEE DWG	LM-3(33)	A2
LDW270-54200	SEE DWG	LM-4(34) THRU LM-15(45)	A2

ADD NOTE ⊗ BOND IN ACCORDANCE WITH FIGURE 7C & 7G OF LSP-14-13334" TO THE FOLLOWING DWG

-52201	SEE DWG	LM-2(32)	B3
-53201		LM-3(33)	B3
-54201		LM-4(34) THRU LM-15(45)	B1
-52310		LM-2(32) & LM-3(33)	A6
LDW270-54310	SEE DWG	LM-4(34) THRU LM-15(45)	A1

ADD NOTE ⊕ "BOND IN ACCORDANCE WITH FIGURE 7F OF LSP-14-13334" TO THE FOLLOWING DWG

LDW270-52302	SEE DWG	LM-2(32) THRU LM-15(45)	A3

ADD NOTE ⊡ "BOND IN ACCORDANCE WITH FIGURE 12 OF LSP-14-13334" TO THE FOLLOWING DWG

LDW270-53202	SEE DWG	LM-3(33) THRU LM-15(45	A2

	DWG NO	CHG NO
ADD NOTE △ "BOND IN ACCORDANCE WITH FIGURE 12 OF LSP-14-13334, EFF LM-2."	LDW270-51202	A2
ADD NOTE ▽ "BOND IN ACCORDANCE WITH FIGURE 12 OF LSP-14-13334, EFF LM-2 THRU LM-15."	LDW270-23308	B3
ADD NOTE ▼ "BOND IN ACCORDANCE WITH FIGURE 7C OF LSP-14-13334, EFF LM-2."	LDW270-51001	C9
ADD NOTE ▲ "BOND IN ACCORDANCE WITH FIGURE 7C & 7G OF LSP-14-13334, EFF LM-2 THRU LM-15."	LDW270-51453	E1

(MANUFACTURING NOTE) REWORK OF LM2 WILL NOT BE REQUIRED PROVIDED THE REQUIREMENTS OF PARAGRAPH 4.2 OF LSP-14-13334 ARE COMPLIED WITH.

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCD 1961

REASON FOR EO: UPDATE DRAWINGS TO CURRENT BONDING REQUIREMENTS

DESCRIPTION OF EO: ADDED NOTES *, **, ***, ⊗, ⊕, ⊡, △, ▽, ▼, ▲. (NEXT AVAILABLE NO)

GAEC EO RELEASE: JK 8/2/67

EFFECTIVITY: MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		NOTED	

DRAWING CHANGE REQD: ✓ REVISE DWG; RECORD EO

DISPOSITION OF PARTS: ✓ REWORK; SCRAP

APPROVED BY									
DATE				SUPPORT	RELIAB. GROUP	8/3/67 GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
						8/3/67			8/4/67

PRIORITY: C

DRAWING TITLE: NOTED ABOVE

DRAWING NO.: LE0 270

EO NO.: 53

ISSUED BY W. KUTNER X1611 8/2/67 SECTION PROPULSION GROUP NO. 345 PL 25

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENG 32.2 REV 3-65

ENGINEERING ORDER

DWG. NO. LEO270		EO NO. 80
CONTROL INFO NO. LM-270-1369		

REMOVE LM-15(45) EFFECTIVITY FROM THE FOLLOWING DRAWINGS:

DRAWING NO.	*DASH NO	TITLE	CHANGE NO
LDW270P10000	-1	SEE DWG	B4
P10001	-1		C3
M10027	-1		A6
M10039	-11		A7
M10045	-11		A2
M10077	-11-1		A8
-10025	-11		A5
-10030	-1 & -2		A2
-10031	-1, -3 & -5		A3
-23308	-1		B9
-51309	-5		B3
-51401	-1, -3 & -7		C1
-51451	-1, -3, -5, -9, -11, -13 & -19		C1
-51459	-5 & -7		A7
-52302	-1-1		A6
-52306	-1		A6
-52307	-1-1		A4
-52309	-1		B5
-53202	-1-2		A4
-53311	-1 & -2		A3
-54201	-21 & -23		H7
LDW270-54310	-5	SEE DWG	B4

(5)

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	LCO 3587	LCRP #1 SHT 1 & 2.

REASON FOR EO: ELIMINATION OF PROPULSION SUB-SYST. FROM LM-15 (REF TWX JC32-68-1977 & 2028)

DESCRIPTION OF EO: FOR * REMOVED LM-15 EFFECTIVITY.

GAEC EO RELEASE: 12-12-68

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	DATE	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	EO NO.
LM		LM-15 (45)		✓			✓		12/9/68			12/9/68			12/11/68	80

PRIORITY: C — DRAWING TITLE: SEE DWG — DRAWING NO.: LEO 270

ISSUED BY P. CAPPELLI 1471 SECTION PROPULSION GROUP NO. 270 PL 25

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.2 REV 3-65

ENGINEERING ORDER

DWG. NO. LEO270 | EO NO. 80

CONTROL INFO NO. LM270-1369

REMOVE LM-15(45) EFFECTIVITY FROM THE FOLLOWING DRAWINGS:

DRAWING NO.	*DASH NO	TITLE	CHANGE NO
LDW270P10000	-1	SEE DWG	B4
P10001	-1		C3
M10027	-1		A6
M10039	-11		A7
M10045	-11		A2
M10077	-11-1		A8
-10025	-11		A5
-10030	-1 & -2		A2
-10031	-1, -3 & -5		A3
-23308	-1		B9
-51309	-5		B3
-51401	-1, -3 & -7		C1
-51451	-1, -3, -5, -9, -11 -13 & -19		C1
-51459	-5 & -7		A7
-52302	-1-1		A6
-52306	--1		A6
-52307	-1-1		A4
-52309	-1		B5
-53202	-1-2		A4
-53311	-1 & -2		A3
-54201	-21 & -23		H7
LDW270-54310	-5	SEE DWG	B4

(5)

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	LCO 3587	LCRP #1 SHT 1 & 2.

REASON FOR EO: ELIMINATION OF PROPULSION SUB-SYST. FROM LM-15 (REF TWX JC32-68-1977 & 2028)

DESCRIPTION OF EO: FOR * REMOVED LM-15 EFFECTIVITY.

GAEC EO RELEASE: 12-12-68

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-15 (45)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: REWORK | SCRAP ✓

APPROVED BY / DATE: P.C.T. 12/9/68; P.C.P. 12/11/68

SUPPORT | RELIAB. GROUP | GROUP LEADER | STRESS GROUP | LIAISON ENGRG | PROJ ENGRG

PRIORITY: C

DRAWING TITLE: SEE DWG

DRAWING NO.: LEO 270

EO NO.: 80

ISSUED BY P. CAPPELLI 12/11 SECTION PROPULSION GROUP NO. 270 PL 25

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG NO. LDW270-52303 | EO NO. B6
CONTROL INFO NO. LM 270-1916

LEM INFO

CREATE -1-1 INSTL FOR LM6(36) THRU LM14(44) QTY 1
SAME AS -1 EXCEPT (* LFM 426 FOR LM6 & LM7)

LSC270-714-3-1 WAS LSC270-714-3

DELETE LM8(38) THRU LM14(44) FROM -1

* THIS DRAWING IS AFFECTED BY LFM 426

REWORK NOTE: (DO NOT INCORP ON DWG) VALVES INSTALLED SHALL BE VERIFIED FOR CONFORMANCE TO LSC270-714 & RE-IDENTIFIED IN ACCORDANCE WITH LSC DWG REQMTS.

* USE NEXT AVAILABLE NOTE NUMBER

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ☑ LCD 3980 (15)

REASON FOR EO: PRECLUDE INSTALLATION OF INTERNALLY BRAZED EXPLOSIVE VALVES

DESCRIPTION OF EO: ADDED -1-1 FOR LM6(36) THRU LM14(44)
DELETED LM8(38) THRU LM14(44) FROM -1
ADDED NOTE *

GAEC EO RELEASE: 6/7/67

MODEL	EFFECTIVITY: PROGRAMMING ADVISORY NO. EJ	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 426	LM6(36)	
LM	LFM 426	LM7(37)	
LM		LM8(38) THRU LM14(44)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO | PRIORITY C
DISPOSITION OF PARTS: REWORK ✓ | SCRAP

APPROVED BY	DATE	PROD	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
	6/4/67				RB 6/6/67			RB 6/6/67

DRAWING TITLE: EXPL VLV, FILTER & DISC CPL INST & PROP - DESCENT STAGE SUB-SYSTEM
DRAWING NO.: LDW270-52303
EO NO.: B6

ISSUED BY J. PAVLICA X1471 SECTION LM PROPULSION GROUP NO. 270 PL 25

01

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG NO. LDW270-52309 | EO NO. B7
CONTROL INFO NO. LM 270 - 1927

ON -1-1 DELETE LM6(36) & LM7(37), LFM426 EFF
DELETE LM8(38) & LM9(39)

ON -1 RE-INSTATE LM8(38) & LM9(39) EFF

DELETE NOTE * (ADDED PER EO B6)

ADD NOTE ** LSC270-714-3/ SHALL BE USED FOR ALL FUTURE REPLACEMENTS AND SPARES.

** USE NEXT AVAILABLE NOTE NUMBER

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCD 3980

REASON FOR EO: ELIMINATE SCHEDULE IMPACT

DESCRIPTION OF EO: "NOTED"

GAEC EO RELEASE: 6/21/69

MODEL	EFFECTIVITY: PRODUCTION MODELS INCL	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM	LFM 426	LMG(36), LMX(37)	
LM		LM8(38), LMX(39)	

DRAWING CHANGE REQD: ✓ REVISE DWG; RECORD EO
DISPOSITION OF PARTS: ✓ REWORK; SCRAP
PRIORITY: C

APPROVED BY / DATE: PROD 6-20-69; SUPPORT; RELIAB GROUP 6/21; GROUP LEADER; STRESS GROUP; LIAISON ENGRG; PROJ ENGRG AK 6/21/69; OFM 6/21/69

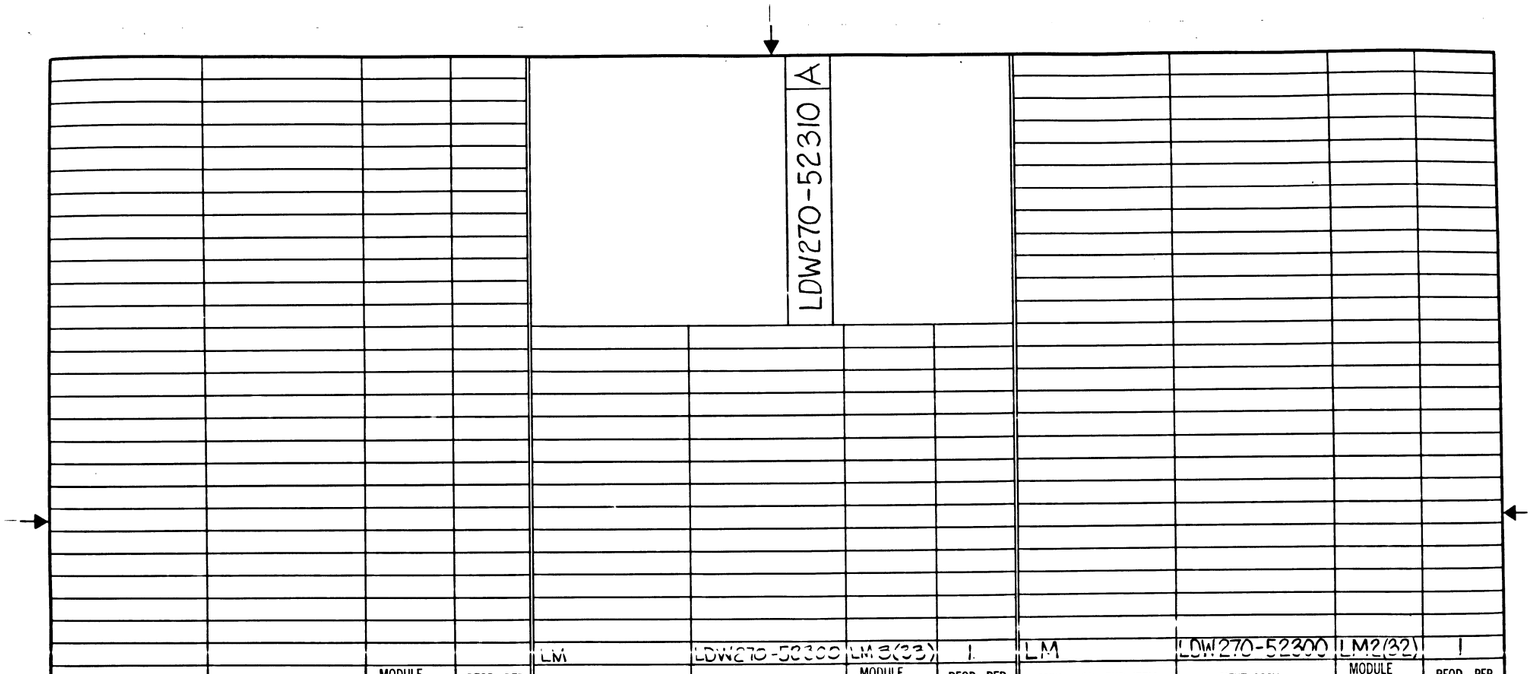
DRAWING TITLE: EXPL VLV, FILTER, DISC CALC INSTL PROP-DESCENT STAGE SUB-SYSTEM

DRAWING NO.: LDW270-52309 | EO NO.: B7

ISSUED BY J. PAVLICA X1471 SECTION LM PROPULSION GROUP NO. 270 PL 25

01

NAS 9-1100



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.	
				LM	LDW270-52300	LM3(33)	1	LM	LDW270-52300	LM2(32)	1
				LDW270-52310-3		55		LDW270-52310-1		55	

5

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH								
SHEET	1.00	1.10	2.00	2.01		3.00		4.00
REV	A	A	A	A		A		A
SHEET								
REV								
SHEET								
REV								

LAST SECT LTR USED	NONE	GRUMMAN REL INFO	
LAST DASH NO. USED	-3	PRIM NO.	UK(CCG)
		486	MP-8A-11/8/67

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/32 NONE ± 1°
ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS9-1100 LINE ITEM 9 DOCUMENTATION TYPE II

DRAWN BY	A.HENDRICKS 67	RELIABILITY	
LAYOUT BY		MATERIALS	3/30/67
CHECKED BY	N. GRAUL 3-27-67		
GR LEADER	3.27.67		
PROP	3-29-67		
VDI		PROJ ENGR	3/29/67
STRESS		REL GROUP	3/31/67
WEIGHTS			

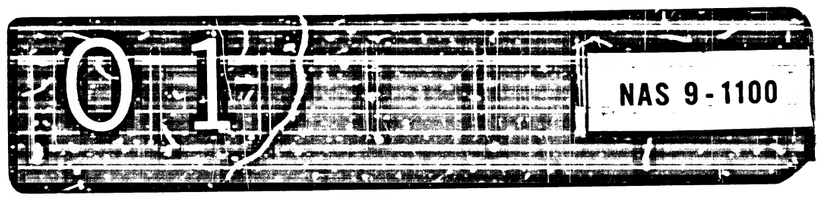
(R) GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

MODULE ASSEMBLY
DESCENT PROPELLANT
PRESSURIZATION SUBSYSTEM

SIZE	CODE IDENT NO.		
B	26512	LDW270-52310	A (A)

SCALE NONE SHEET 1.00 OF 6

ENG 77.1 12-65



REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1.10 3.00 4.00, 2.01 2.00	5C				✓	EO A1 LCD 1032	DELETED NOTE 2 & FIELD REFERENCE, REMOVED AN 815-2C & MS28778-2. REMOVED SERIALIZATION OF LDW270-52310-11 "E" WAS "S". ADDED SH 1.10	LM-2	-1		C. EBZIG 10-27-67		
	2	1.10, 1.00					✓	EOA2, LCD1032	ADDED N/A LDW270-53300 & REQUIREMENTS FOR LM3(33)	LM-3	NOT	REQD			
	3	1.10 2.00					✓	EO A3	EO A3 CANCELLED BY EO A4	NOT REQD	NOT	REQD			
	4	1.10					✓	EOA4	CANCELLED EO A3	LM2 LM-3	NOT	REQD			
	5	1.10, 1.00 2.00, 2.01 4.00	5A				✓	EOA5 LCD 1032	ON-1 REMOVED LM 3 REQMTS, REMOVED LSC 270-713-9-1 & -10-1 ADDED LDW390-28070-15 & -17. ADDED -3 N/A LDW 270-53300 LM3(33) 1 REQD	LM-2 LM-3	✓				
	6	1.10, 3.00				✓		LE0270-53 LCD 1961	ADDED NOTE 13	LM-2 LM-3	✓				
	7	1.10, 2.00 4.00	2G			✓		EO A7 LCD 1995 A	ON-1, REMOVED LDW 390-28070-17, ADDED LSC 270-713-10-1. ON-3 REMOVED LDW 390-28070-11 & -13-1, REPLACED WITH LSC 270-713-9-1 & -10-1.	LM-2 LM-3	✓				
	8	1.10 2.00 4.00				✓		EO A8 LDC1032	IN F/D & B/M FOR -1 & -3 ASSY LDW280-17388-659 DSH-4 WAS LDW 280-17388-262 DSH-4	LM-2 LM-3	✓				
	9	1.10 3.00					✓	LE0270-59	IN F/D ADDED NOTE 14	LM-3	✓				
	10	1.10, 2.00 4.00	1C	S		✓		EO A10 LCD 1995 Ⓢ	FOR -1 ASSY IN B/M & F/D. REMOVED LDW 390-28070-15 ADDED LDW 390-28070-11 T.S. EC	LM 2	✓				

CHG APPROVED	LTR	GROUP LDR	GR LEADER	PROP	MATERIALS
	A				

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52310	A (1)

SCALE NONE SHEET 1.10

ENG 77.16 3-66

01 NAS 9-1100

QTY PER ASSEMBLY		PART NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
-3	-1											
1	1	LSC 270-827-1	S		REDUCING VALVE	SEE NOTE 1						
1	1	LSC 270-814-3	S		FILTER							
1	1	LSC 270-713-10-1	S		SOL. LATCH VALVE							
1		LSC 270-713-9-1	S		SOL. LATCH VALVE							
1	1	LSC 269-258-7	E		TEE							
1	1	LSC 269-255-4	E		CROSS							
1	1	LSC 269-222-8	E		TEE							
3	3	LSC 269-218-8	E		UNION	SEE NOTE 1						
	1	LDW 390-28070-11			SOL. LATCH VALVE	SEE NOTE 1						
1	1	LDW 280H52681-1	E		PLATE ASSEMBLY	SEE DWG						
1	1	LDW 280-17388-636DSH-8			TUBE							
1	1	LDW 280-17388-659DSH-8			TUBE							
1	1	LDW 280-17388-246DSH-8			TUBE							
1	1	LDW 280-17388-245DSH-8			TUBE							
2	2	LDW 280-17388-171N-2	E		TUBE ASSEMBLY	SEE DWG						
1	1	LDW 270-52310-11	E		NAMEPLATE	MAKE FROM	GNIAT-4					
		LDW 270-52310-3	S		MODULE ASSEMBLY							
		LDW 270-52310-1	S		MODULE ASSEMBLY							

CLEANLINESS PER LSP14.0011

SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH LPC 19-2 (GRUMMAN) LPC 19-3 (VENDOR)

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52310	A (14)

SCALE NONE SHEET 2.00

ENG 77.2 5-64

01 NAS 9-1100

C.L.	QTY PER ASSEMBLY	PART NO.	I&T	CODE IDENT	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
N	2 2	510790-203	E		TRANSDUCER	G.F.E.						
C	10 10	MS21043-3			NUT	STD PART						
C	8 8	MS21043-06			NUT							
C	4 4	AN960C10L			WASHER							
C	1 1	AN960D8			WASHER							
C	2 2	AN735D31			CLAMP	STD PART						
C	1 1	GC12H-16			CLAMP	GRUMMAN STD						
C	4 4	GC12H-8			CLAMP							
C	1 1	GC12H-4			CLAMP							
C	3 3	GB511J-3-12			BOLT							
C	1 1	GB511J-3-9										
C	6 6	GB511J-3-3										
C	1 1	GB511J-08-3										
C	8 8	GB511J-06-16	E		BOLT	GRUMMAN STD						
	-3 -1											

CLEANLINESS PER LSP14.0011

SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS SYM OR FINISH NO.	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH NONE.

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52310	A (N)

SCALE NONE SHEET 2.01

ENG 77.2 5-64

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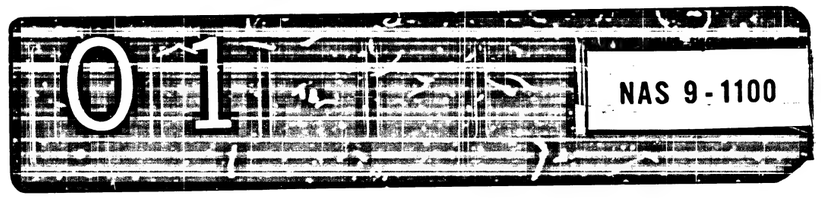
NAS 9-1100

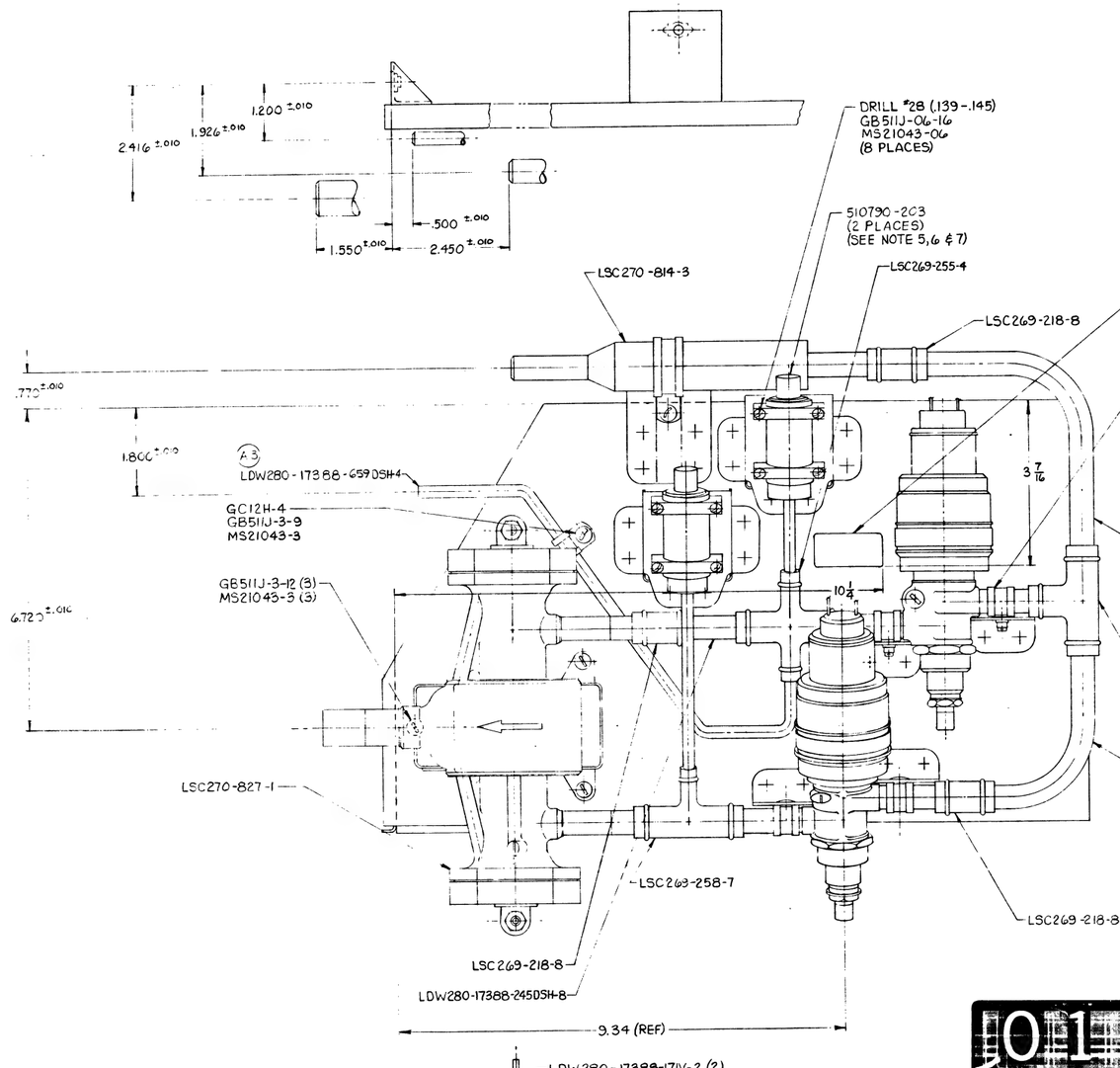
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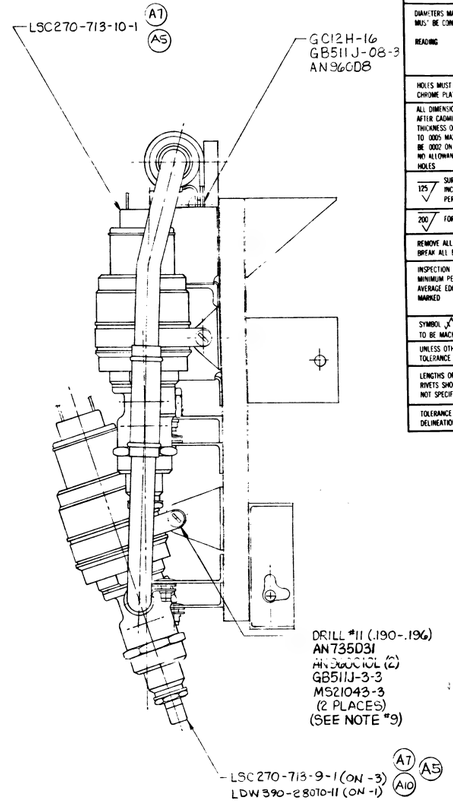
1. COMMERCIAL PART SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING.
2. ~~TORQUE MECHANICAL FITTING 50-60 INCH-LBS.~~
3. INDUCTION BRAZING OF FITTING SHALL BE IN ACCORDANCE WITH SPEC LSP-14-6303.
4. LDW270-52310-1 MODULE ASSEMBLY SHALL BE TESTED IN ACCORDANCE WITH LPT 270-310. PRE-INSTALLATION TEST PLAN FOR MODULE ASSEMBLY-DESCENT HELIUM PROPELLANT PRESSURIZATION SUBSYSTEM.
5. 510790-203 TRANSDUCER SHALL BE PREPARED IN ACCORDANCE WITH SPEC LSP-14-17450 PRIOR TO BRAZING INTO SYSTEM.
6. ELECTRICALLY BOND 510790-203 TRANSDUCER IN ACCORDANCE WITH LSP390-001.
7. FOR ELECTRICAL INTERFACE REFER TO INTERFACE CONTROL DOCUMENT LID360-20001. FOR MECHANICAL INTERFACE REFER TO LID360-20210 (FOR ENGR REF ONLY).
8. TUBE STUBS SHALL BE CAPPED PER LSP-14-009 FOR SHIPMENT AND STORAGE. REMOVE CAPS PRIOR TO BRAZING INTO SYSTEM.
9. INSTALL AN960C10L WASHER ON BOTH SIDES OF TEE BRACKET BETWEEN BRACKET AND AN735D31 CLAMP.
10. PERMISSIBLE TO SHIM WITH AN960C10 OR AN960C10L AS REQUIRED.
11. MARK IN APPROXIMATE AREA SHOWN IN ACCORDANCE WITH SPEC. LSP-14-002, TYPE VII, CLASS 2. MARK $\frac{1}{16}$ INCH HIGH LETTERS.
12. EPON *919 (LSM-14-4103) PER LSP-14-14102 BRUSH THIN COAT OVER NAMEPLATE, CURE 72 HOURS AT ROOM TEMPERATURE.
13. BOND IN ACCORDANCE WITH FIGURE 7C & 7G OF LSP-14-13334
14. BONDING REQUIREMENTS FOR LM2 & LM3 ARE ACCEPTABLE PROVIDED THE REQUIREMENTS OF PARAGRAPH 4.2 OF LSP-14-13334 ARE COMPLIED WITH.

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-52310	A
SCALE NONE		SHEET 3.00	

ENG 72.1 6-64



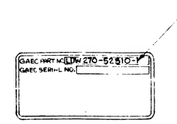




MANUFACTURING OPERATIONS UNLESS OTHERWISE SPECIFIED NOTES CHECKED ✓ APPLY TO THIS DWG	
PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY	
FILLET AND INSIDE CORNER RADII OF FLANGES .000 TO .062R ± .030 .063 TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS 2 3 MIP THDS BEYOND PERMISSIBLE	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF LETTERS AT INSIDE INTERSECTING SURFACES	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN .005 FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING THICKNESS OF PLATE .0003 MIN TO .0005 MAX MIN THICKNESS TO BE .0002 ON THREADED AREAS NO ALLOWANCES FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD 10	
200 FOR ALL DRILLED HOLES	✓
REMOVE ALL BURRS BREAK ALL EDGES .015 .031	✓
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ✓ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED	
TOLERANCE ON LOFTED DELINEATIONS IS	

01

NAS 9-1100



DETAIL A
ZONE 4E
SCALE 2/1

(A5) LDW270-52310-1 HELIUM MODULE ASSEMBLY
LDW270-52310-3 HELIUM MODULE ASSEMBLY (IDENT TO -1 EXCEPT AS NOTED)

GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L.I. NEW YORK			
LM	SIZE E	CODE IDENT NO. 26512	LDW270-52310 A
MODEL OR END ITEM	SCALE FULL		SHEET 1 OF 2

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW 270-52310 | EO NO. B1

CONTROL INFO NO. LM 270 -1120

SH 2.00 IN B/M FOR -3, REMOVE LSC 270-713-9-1 & -10-1 SOLE LATCH VALVE, ADD THE FOLLOWING: LSC 270-713-9-3 SOLE LATCH VALVE-SEE NOTE *, LSC 270-713-9-2 SOLE LATCH VALVE-SEE NOTE *, LSC 270-713-10-3 SOLE LATCH VALVE-SEE NOTE *, LSC 270-713-10-2 SOLE LATCH VALVE-SEE NOTE *.

SH 4.00 IN F/D FOR-3 REMOVE LSC 270-713-9-1, ADD LSC 270-713-9-3 (SEE NOTE *). IN F/D ADD "(FOR-1)" AFTER CALLOUT LSC 270-713-10-1. ADD "LSC 270-713-10-3 (FOR-3) SEE NOTE *.

SH 3.00 ADD NOTE * AS FOLLOWS:

* FOR-1 ASSY, LSC 270-713-9-2 & -9-3 ARE INTERCHANGEABLE WITH LDW390-28070-11 AND SHALL BE USED FOR FUTURE REPLACEMENTS AND SPARES. LSC 270-713-10-2 & -10-3 ARE INTERCHANGEABLE WITH LSC 270-713-10-1 AND SHALL BE USED FOR FUTURE REPLACEMENTS AND SPARES. LSC 270-713-9-2 & -10-2 MAY BE USED AS ALTERNATES FOR LSC 270-713-9-3 & -10-3 RESPECTIVELY.

(* USE NEXT AVAILABLE NOTE NUMBER)

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD 2377 (57)

VALVES REWORKED AT GAEC BY VENDOR. TO AGREE WITH VALVES AVAILABLE FOR ASSEMBLY.

DESCRIPTION OF EO: ON-3 REMOVED LSC 270-713-9-1 & -10-1, ADDED LSC 270-713-9-3 SEE NOTE *, LSC 270-713-9-2 SEE NOTE *, LSC 270-713-10-3 SEE NOTE *, LSC 270-713-10-2 SEE NOTE *, IN F/D ADDED (FOR-1) AFTER LSC 270-713-10-1. ADDED NOTE *.

(R) GAEC EO RELEASE 11/28/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-3	

DRAWING CHANGE REQD: ✓ REVISE DWG | RECORD EO | DISPOSITION OF PARTS: ✓ REWORK | SCRAP

PRIORITY: C

DRAWING TITLE: MODULE ASSEMBLY- DESCENT PROP. PRESS SUBSYTEM

DRAWING NO.: LDW 270-52310

EO NO.: B1

APPROVED BY	DATE	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
KB	11/29/67			KB 11/27/67			MM 11/28/67
PROP							12-2-67

ISSUED BY F. J. ARTUS X1471 11/28/67 SECTION PROPULSION GROUP NO. 270 PL 25

0-1

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENG 32.1 REV 3-65 **ENGINEERING ORDER**

DWG. NO.	LDW270 - 52310		EO NO.	B2
CONTROL INFO NO.	LM5-17528			

1. ON - 3 ASSY

ADD NAMEPLATES AS NOTED IN TABLE & ADHESIVE (EPON 934 CURE RANGE #1) IN B/M & F/D

NAMPLATE	MEAS No
GN 11BF -320	GQ3009P
GN 11BF- 321	GQ3010P

2. ADD NOTE *

INSTALL PER LSP14-22500. NAMEPLATES INSTALLED ON BARE OR PRIMED METAL SURFACES SHALL BE WIPED WITH A CLEAN CLOTH PAD, SATURATED WITH AN APPROVED SOLVENT, PER LSP14-7011. UNDER NO CIRCUMSTANCES ARE THE BARE OR PRIMED METAL SURFACES TO BE SCUFF SANDED. (ROOM TEMP CURE FOR 7 DAYS PERMISSIBLE)
ENGINEERING TO BE NOTIFIED. NAMEPLATES TO BE INSTALLED AS CLOSE TO TRANSDUCER AS POSSIBLE

* NEXT AVAIL NOTE

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓		(13)

REASON FOR EO: ORIG INSTALL. DWG., CANCELLED CREF DCRF323-1462-LDW270-53301)

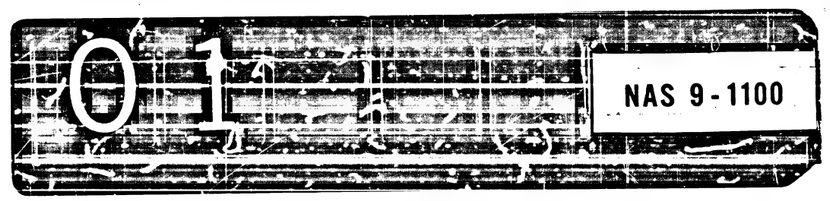
DESCRIPTION OF EO: FOR - 3 ASSY ADD NAMEPLATES & ADHESIVE (EPON 934 CURE RANGE #1) IN F/D & B/M ADDED NOTE *

GAEC EO RELEASE: JK

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	DWT
LM		LM3(33)		✓		✓									
								DATE			12-7-67	12/7/67	12-7-67		
								G							

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	MODULE ASSY DES. PROPELLANT	LDW270-52310	B2

ISSUED BY V. BUXO 12-6-67 SECTION INSTRU GROUP NO. 360 PL 5



GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT . 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG NO.	LDW 270-52310	EO NO.	B3
CONTROL INFO NO.	270-1231		

SH 3,00 TO NOTE * (ADDED PER EO B1) ADD THE FOLLOWING:
"LSC 270-713-21 MAY BE USED AS AN ALTERNATE FOR LSC 270-713-9-2 & -9-3. LSC 270-713-22 MAY BE USED AS AN ALTERNATE FOR LSC 270-713-10-2 & -10-3."

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD 2904

REASON FOR EO: PROVIDE ALTERNATE COMPONENTS FOR REPLACEMENT AS REQUIRED DURING MANUFACTURE

DESCRIPTION OF EO: ADDED ALTERNATE EQUIPMENT REQUIREMENTS TO NOTE * (ADDED PER EO B1).

GAEC EO RELEASE: 8/7/68

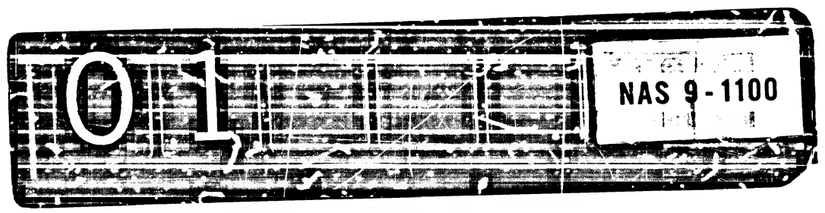
MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-3 (33)	

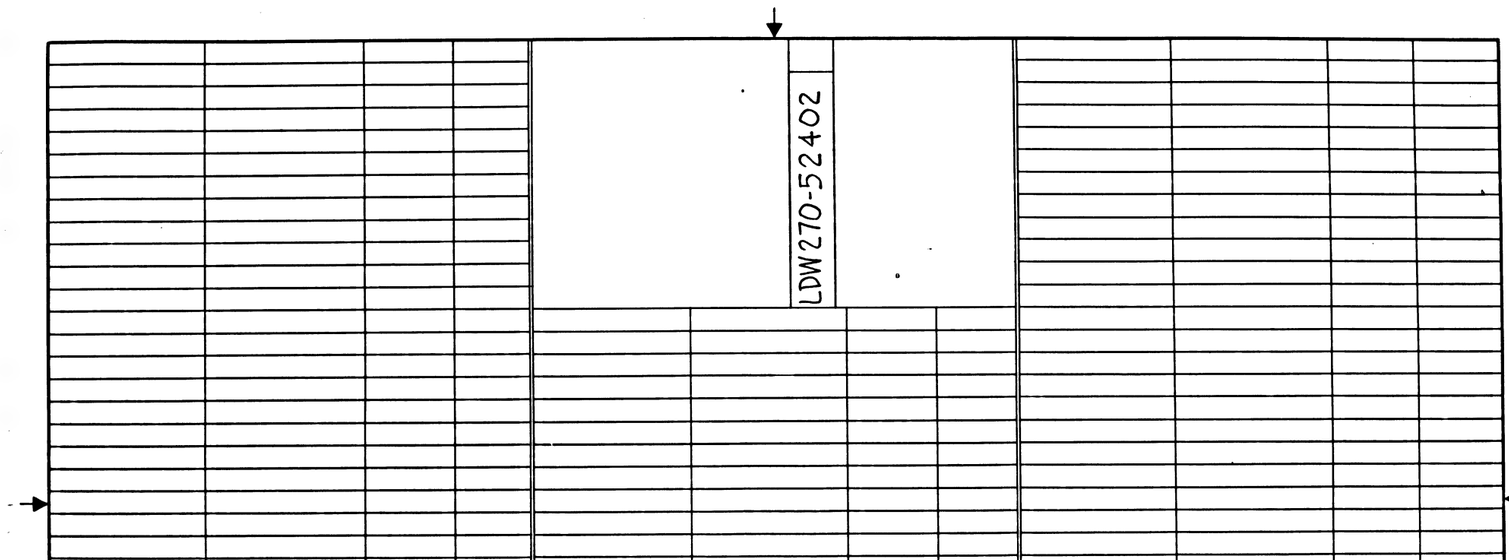
DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO
DISPOSITION OF PARTS: NOT REQD | REWORK | SCRAP

APPROVED BY							B.T			
DATE	8/8/68			8/7/68			7/9/68	8-7-68		
	PROP	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	SCHD		

PRIORITY: C
DRAWING TITLE: MODULE ASSEMBLIES DESCENT PROPELLANT PRESSURIZATION SUBSYSTEM
DRAWING NO.: LDW270-52310
EO NO.: B3

ISSUED BY F. J. ARTUS X1471 8/8/68 SECTION LM PROPULSION GROUP NO. 270 PL 25





MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
								LEM	LDW280-51950	LEM-2(32)	1 EA
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO. LDW270-52402-1 & -3		GAEC SCH NO. 45	

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00		2.00		3.00					
REV										
SHEET										
REV										
SHEET										
REV										

LAST SECT LTR USED	B	GRUMMAN REL INFO	
LAST DASH NO. USED	3	PRIM NO. 450	FR(MG) HP 11/4/6

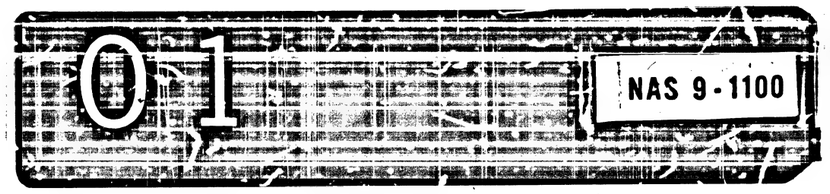
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS — ANGLES

ORIG DWG AUTH
DETAIL SPEC REQUIREMENT
CLASS II ENGRG CHANGE
CLASS I ENGRG CHANGE

CONTRACT NO. NAS 9-1100 | LINE ITEM 009 | DOCUMENTATION TYPE II

DRAWN BY	B.J.ZANGI 4JUL66	WEIGHTS	L Garcia 7/26/66	GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE, L. I., NEW YORK
LAYOUT BY	—	V.D.I.		LEVEL DETECTOR INSTL PROPULSION FEED SYSTEM PROPELLANT TANK - ASCENT
CHECKED BY				
G.R. LDR.	LGD			
PROP.				
REL	7/26	PROJ ENGR	9-10	SIZE B | CODE IDENT NO. 26512 | LDW270-52402
STRUCT	9/9	REL GROUP	9-10-66	SCALE NONE | SHEET 1.00 OF 3
STRUCT	9/8			

ENG 77.1 12-65



N					AR	AR		MS20995NC20	E	LOCKWIRE	STD PART	(SEE NOTE 1)						
N					8	8		AN960D10	E	WASHER	STD PART	"						
N					8	8		GB 511T-3H2	E	BOLT	GRUMMAN STD	(SEE NOTE 1)						
N					1	1		GS 570V-1	E	SEAL	GRUMMAN STD							
J						1		LSC270-801-14	S	DETECTOR, OXIDIZER (SEE NOTE 2)								
J							1	LSC270-801-13	S	DETECTOR, FUEL (SEE NOTE 2)								
G								LDW270-52402-3	E	LEVEL DETECTOR INSTL, OXIDIZER								
G								LDW270-52402-1	E	LEVEL DETECTOR INSTL, FUEL								
C.L.	QTY PER ASSEMBLY				-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE	

CLEANLINESS LEVEL PER LSP 14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW270-52402

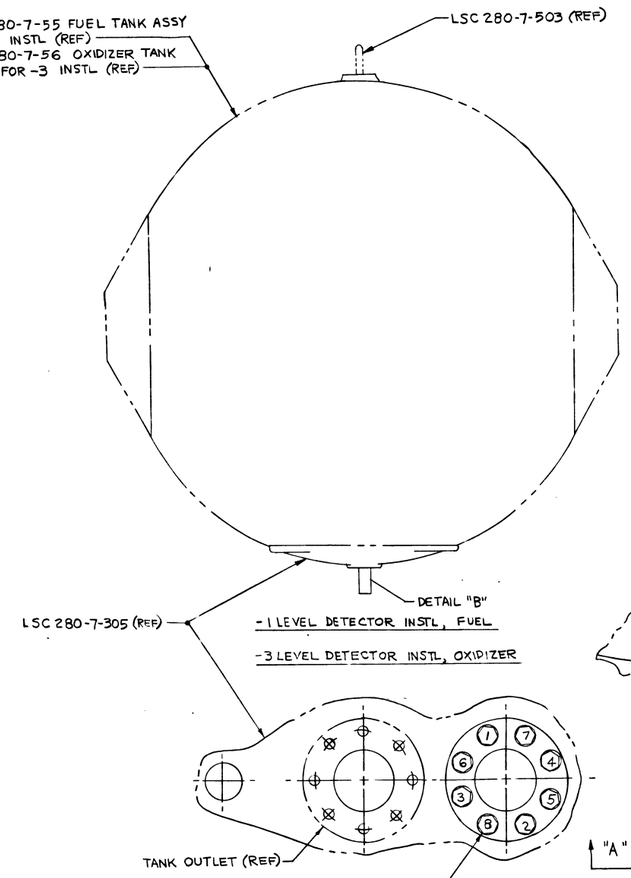
SCALE NONE SHEET 2.00

ENG 77.2 7-65

01

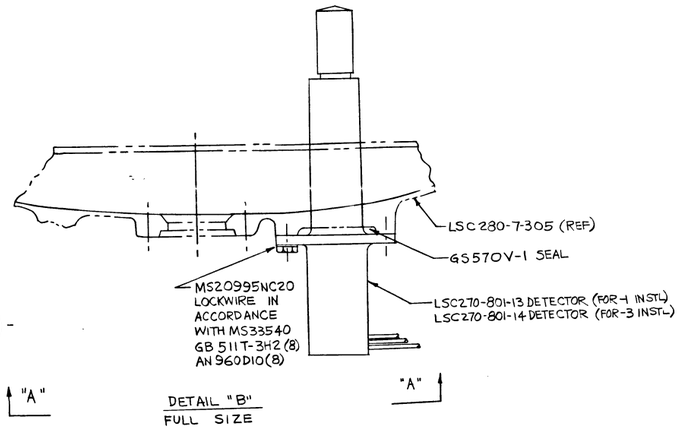
NAS 9-1100

LDW270-52402



NOTES:

1. INSTALL 8 BOLTS FINGER TIGHT THEN TORQUE IN SEQUENCE AS FOLLOWS:
   (a) PHYSICAL LOCATION FOR START OF SEQUENCE (BOLT #1) IS OPTIONAL.
   (b) TORQUE ALL BOLTS PER SEQUENCE TO 10 INCH POUNDS.
   (c) REPEAT STEP (b) APPLYING 20 INCH POUNDS.
   (d) REPEAT STEP (b) APPLYING 32-35 INCH POUNDS FOR FINAL TORQUE.
2. COMMERCIAL PART SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING.



MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.

FILLET AND INSIDE CORNER RADII TOLERANCES
.015R TO .062R ± .010
.063R TO .250R ± .015
OVER .250R ± .030

DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 3.3 IMP. THDS. BEYOND PERMISSIBLE

EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.

DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK

MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.

DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING

HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.

ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES

125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10

200 FOR ALL DRILLED HOLES

REMOVE ALL BURRS BREAK ALL EDGES .015-.031

INSPECTION INFORMATION
MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS

SYMBOL X DENOTES SURFACE TO BE MACHINED

UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32

LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED

TOLERANCE ON LOFTED DELINEATIONS IS

LEM	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK		
	SIZE	CODE IDENT NO.	
	D	26512	LDW270-52402
MODEL OR 2ND ITEM	SCALE 1/8 IF NOTED		SHEET 3 OF

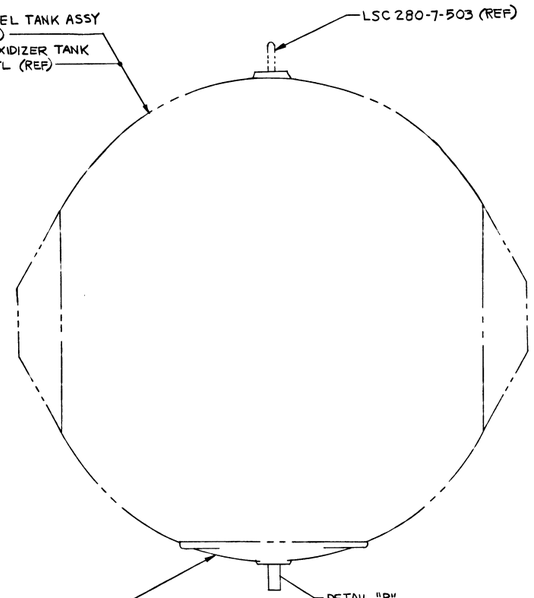
LDW270-52402

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NAS 9-1100

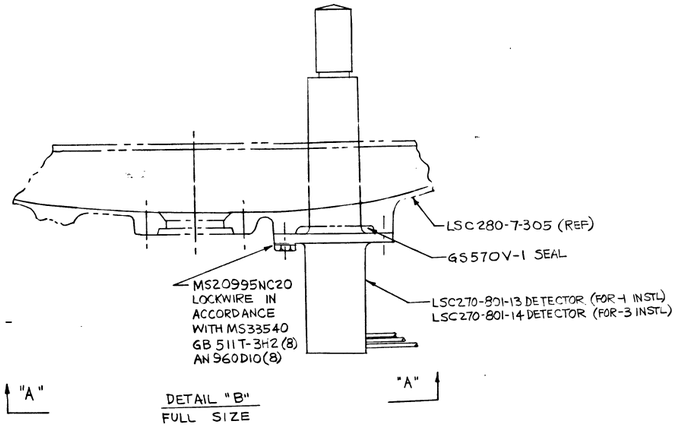
LDW270-52402

LSC 280-7-55 FUEL TANK ASSY FOR -1 INSTL (REF)
LSC 280-7-56 OXIDIZER TANK ASSY FOR -3 INSTL (REF)



VIEW "A-A"
FULL SIZE

INSTALLATION, SEQUENCE & TORQUE OF BOLTS TO BE AS SPECIFIED IN NOTE 1.



DETAIL "B"
FULL SIZE

NOTES:

1. INSTALL 8 BOLTS FINGER TIGHT THEN TORQUE IN SEQUENCE AS FOLLOWS:
   (a) PHYSICAL LOCATION FOR START OF SEQUENCE (BOLT # 1) IS OPTIONAL.
   (b) TORQUE ALL BOLTS PER SEQUENCE TO 10 INCH POUNDS.
   (c) REPEAT STEP (b) APPLYING 20 INCH POUNDS.
   (d) REPEAT STEP (b) APPLYING 32-35 INCH POUNDS FOR FINAL TORQUE.
2. COMMERCIAL PART SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING.

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED ✓ APPLY TO THIS DWG.

PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.

FILLET AND INSIDE CORNER RADII TOLERANCES
.010R TO .062R ± .010
.063R TO .250R ± .015
OVER .250R ± .030

DEPTH SHOWN FOR TAPPED HOLES ALL THDS 2-3 IMP. THDS. BEYOND PERMISSIBLE

EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.

DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED with DOUBLE ASTERISK

MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES

DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING

HOLES MUST BE KEPT FREE OF CHROMIC PLATING SOLUTION

ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN TO .0005 MAX. MIN THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCES FOR PLATING IN HOLES.

125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10

200 FOR ALL DRILLED HOLES

REMOVE ALL BURRS. BREAK ALL EDGES .015-.031

INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED ED

SYMBOL X DENOTES SURFACE TO BE MACHINED

TOLERANCE ON FLANGES IS ± 1/32

LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED

TOLERANCE ON LOFTED DELINEATIONS IS

LEM	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK		
	SIZE	CODE IDENT NO.	
	D	26512	LDW270-52402
MODEL OR END ITEM	SCALE AS NOTED		SHEET 3 OF 3

LDW270-52402

NAS 9-1100

DWG 22.1 REV 3-66

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LDW270-52402 | EO NO. A1

CONTROL INFO NO. LM 270-741

REVISE DWG AS FOLLOWS:

ON-1 & -3 IN F/D & B/M

DELETE AN 960 D 10(8)
SH 3.00 ZONE 8D

LSC 280-7-57 FUEL TANK ASSY FOR -1 INSTL (REF)
(WAS) LSC 280-7-55 (REF)

LSC 280-7-58 OXIDIZER TANK ASSY FOR -3 INSTL (REF)
(WAS) LSC 280-7-56 (REF)

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓

REASON FOR EO: TO PROVIDE ADDITIONAL THREAD ENGAGEMENT LCR-633

DESCRIPTION OF EO: DELETED AN960D10 (8 EACH) FROM -1 & -3 ;N F/D REVISED REF CALLOUTS NOTED ABOVE

GAEC EO RELEASE: FK 11/22/66

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM 2 (32)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO | DISPOSITION OF PARTS: REWORK ✓ | SCRAP

PRIORITY: A

DRAWING TITLE: LEVEL DETECTOR INSTL-PROPULSION FEED SYST-PROPELLANT TK-ASCENT

DRAWING NO.: LDW270-52402

EO NO.: A1

APPROVED BY	RVC	—	—	KB	REP		
DATE	11-21-66	—	—	11/21/66	11/21/66	11-22-66	11-22-66
	1	PROP	SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	

ISSUED BY B. J. ZANG X1472 21NOV 66 SECTION PROPULSION DESIGN GROUP NO. 345 PL 35

01

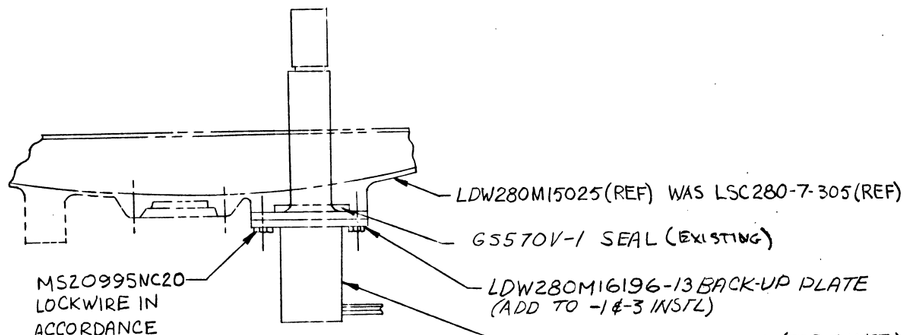
NAS 9-1100

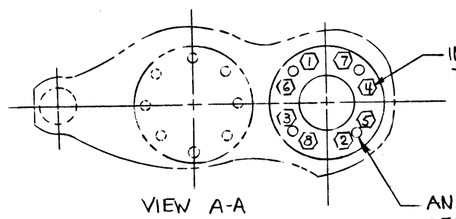
GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.2 REV 3-65

DWG NO. LDW270-52402 | EO NO. A2
CONTROL INFO NO. LM270-1081

LMLK





ADD NOTE: * (NEXT AVAILABLE NO)

* ON-1 APPLY SEALANT LED520-35(VISTANEX) AND ON-3 APPLY SEALANT LED520-34 (NITROSO) IN ACCORDANCE WITH LPC280-46.

IN B/M FOR-1 ADD LED520-35 AS REQD
FOR-3 ADD LED520-34 AS REQD

DESCRIPTION OF EO(COUT)
LDW280M15025(REF) WAS LSC280-7-305(REF). IN B/M FOR-1 ADDED LED520-35 AS REQD & ON-3 LED520-34 AS REQD.

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	✓ LCD1894	LCRP 270-20	3

REASON FOR EO: REDUCE PROPELLANT SYSTEM LEAKAGE.

DESCRIPTION OF EO: REVISED DETAIL "B". ON-1 & -3 REMOVED LSC270-801-13 & 14, ADDED LDW270M10069-13 & -14, AN515C8R4(4), NOTE *, LDW280M16196-13, NAS1003-7H (8) WAS GB511-3H2(8). IN F/D ZONE 3B17B (COUT ABOVE)

GAEC EO RELEASE: (R) JK 10/13/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-2(32)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP	APPROVED BY: DATE								
		✓		M	VDI			RC 11/6/67				10/16/67 10-17-67

PRIORITY	DRAWING TITLE	DRAWING NO.	EO NO.
C	LEVEL DETECTOR INSTL. PROPULSION FEED SYSTEM-PROP. TANK ASCENT	LDW270-52402	A2

GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG

ISSUED BY R.COHEN/WKUTNER X1611 SECTION PROPULSION GROUP NO. 345 PL 25

TO NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG. NO. LDW270-52402 | EO NO. A3
CONTROL INFO NO. LM-5-17212

ON-1&-3 INSTL.
LDW280M-16196-13 S/B LDW280M-16196-11

RELEASED BY LIAISON

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG	DESCRIPTION OF EO	GAEC EO RELEASE
	N		ON-1&-3 LDW280M-16196-11 WAS-13	JAL

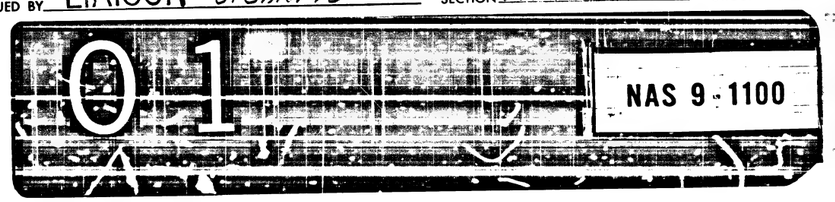
REASON FOR EO: TO CALLOUT CORRECT BACK-UP PLATE.

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-2(32)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS	APPROVED BY									
		NOT REQD.	DATE					RQ	FJ	JH	MHD	
		REWORK	SCRAP			SUPPORT	RELIAB. GROUP	10-6-62	10-28-62	11/1/62	10306	
								GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ. ENGRG	COPY

PRIORITY: C
DRAWING TITLE: LEVEL DETECTOR INSTL. PROP. FEED SYS. PROP. TANK ASCENT
DRAWING NO.: LDW270-52402
EO NO.: A3

ISSUED BY LIAISON J. JARVIS SECTION PROP. GROUP NO. 345 PG 25

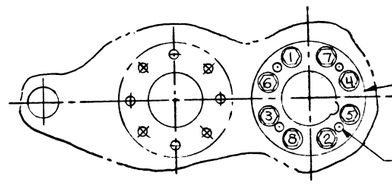


GRUMMAN AIRCRAFT ENGINEERING ~~CORP.~~
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-65

DWG. NO	LDW270-52402		EO NO. A4
CONTROL INFO NO.	LM270-1109		

THIS IS A REVISION OF EO A2



(ADD)
LOCATION OF CUTOUT IN LDW280M16196-13 OPTIONAL.

AN509C8R10(4) SEE NOTE * WAS AN515C8R4(4) SEE NOTE *

VIEW A-A

DESCRIPTION OF EO(COUT)
ADDED "LOCATION OF CUTOUT IN LDW280M16196-13 OPTIONAL".

DETAIL SPEC REQ	CI II ENGRG CHG	CI I ENGRG CHG	LCD1891	LCRP270-26 (5)

REASON FOR EO
REDUCE PROPELLANT SYSTEM LEAKAGE.

DESCRIPTION OF EO
REF EO A2: ON -1 & -3, DELETED AN515C8R4(4) & ADDED AN509C8R10(4). IN VIEW A-A REV PICTURE AND (COUT)ADDED.

GAEC EO RELEASE C
JK 11/3/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-2(32)	

DRAWING CHANGE REQD: REVISE DWG	RECORD EO	DISPOSITION OF PARTS: REWORK	SCRAP
✓		✓	

APPROVED BY									
DATE				M		SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
								RB 10/5/67			MMH 10/11/67

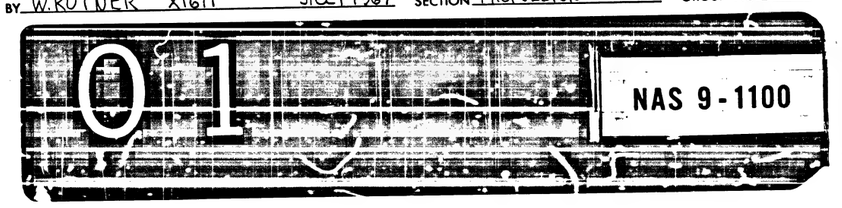
PRIORITY C

DRAWING TITLE
LEVEL DETECTOR INSTL - PROPELLANT FEED SYS - PROP TANK - ASCENT

DRAWING NO. LDW270-52402

EO NO. 14

ISSUED BY W. KUTNER X1611 31 OCT 1967 SECTION PROPULSION GROUP NO. 345 PL 25



GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.1 REV 3-66

DWG NO. LDW270-52402 | EO NO. A5
CONTROL INEO NO. LM-5-17260

THIS IS A REVISION OF E.O. A4.

ON-1 & -3
LDW280M16196-13 S/B LDW280M16196-11.

RELEASED BY LIAISON (5)

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | LCO 1077

REASON FOR EO: TO CORRECT BACKUP PLATE CALLOUT R.T.E. 05-131-331

DESCRIPTION OF EO: REF. EO A4 ON-1 & -3 LDW280M16196-11 WAS-13

(D) GAEC EO RELEASE: JK

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM-2 (32)	
	LIAISON		

DRAWING CHANGE REQD: REVISE DWG | RECORD EO
DISPOSITION OF PARTS: REWORK | SCRAP

APPROVED BY	DATE	PROP.	~~SUPPORT~~	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	BOAT
[illegible] 16	11-21-67					11/7/67	11/7/67	11/20/67	11/28/67

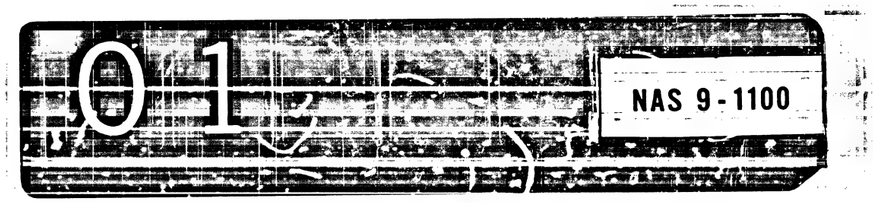
PRIORITY: C

DRAWING TITLE: LEVEL DETECTOR INSTL. PROP FEED SYS. PROP TANK A/S.

DRAWING NO.: LDW270-52402

EO NO.: A5

ISSUED BY J. JARVIS SECTION PROPULSION GROUP NO. 345 PL 25



REVISIONS

CHANGE LTR / ITEM NO.	SHEET NO.	ZONE	SH CHG LTR	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GRUMMAN APPD
1	2.00							A1	ON -1 & -3 NAS1271H4(16)(WAS)8 MS20002-C7(16) (WAS) 8	NOTED	✓		ZANG 6 SEPT 1966		
2	1.00 2.00 4.00								ADDED SH 1.10 SH 1 OF 5 (WAS) 1 OF 4 RESTRICTED -1 & -3 TO LEM 2 ADDED -5, -7, -9 & -11						
3	2.00 4.00								ON-1 LSC 270-00009-31 (WAS) LSC 270-00009-15 ON-3 LSC 270-00009-32 (WAS) LSC 270-00009-16		✓				
4	4.00								ADDED LSC 270-00009-33 (2) FOR -7 ASSY ADDED LSC 270-00009-34 (2) FOR - 5 ASSY ADDED LSC270-00009-35 (2) FOR - 11 ASSY ADDED LSC270-00009-36 (2) FOR- 9 ASSY		✓				
1	1.00, 1.10 2.00, 4.00	C4					✓	EO B1 LCD —1068	ON -1, -3, -5, -7, -9 & -11 REMOVED MS20002-C7 (16), ADDED GW10K-416LC (16).	LM2 (32) THRU LM15 (45)	✓				
2	2.00 4.00 1.10	C4					✓	EO B2 LCD —1068	REF EO B1 ON -1, -3, -5, -7, -9, & -11 REMOVED GW10K-416LC (16), ADDED GW10K-416C (16).						
3	3.00 1.10						✓	EO B3 LCD-1068	REVISE NOTE 1, (IS) 1. LUBRICATE BOLT THREADS WITH DUPONT PR-240AC, INSTALL ALL BOLTS -- ETC -- (WAS) 1. INSTALL ALL BOLTS -- ETC -- (IS) (d) REPEAT STEP b APPLYING 70-75 INCH POUNDS FOR FINAL TORQUE. (WAS) (d) REPEAT STEP b APPLYING 75-80 INCH POUNDS FOR FINAL TORQUE.						
1	110, 3.00						✓	LEO 270-39	IN NOTE 1 ADDED, " SHANK & FAYING SURFACE."						
5	2.00 3.00 4.00 1.10 1.11	C4				✓		EO B5 LCD 1894	ON -1, -3, -5, -7, -9 & -11, REMOVED NAS1271H4(8), ADDED GB511AG-4H4 (8). REVISED NOTE 1, (IS) 1. INSTALL ALL BOLTS FINGER TIGHT & TORQUE IN SEQUENCE AS FOLLOWS: (WAS) 1. LUBRICATE BOLT THREADS --- INSTALL ALL BOLTS. ETC. (IS) (C) REPEAT STEP (b) APPLYING 30 IN-LBS AND THEN 50 IN-LBS. (WAS) REPEAT STEP (b) APPLYING 30 IN-LBS. (CONTD)				A. HENDRICKS 11-10-67		

FOR CONTINUATION OF REVISIONS SEE SHEET 1.11

ENG 77.3 5-64

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52452	B

SCALE NONE | SHEET 1.10

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	SH CHG LTR	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
B	5	2.00 3.00 4.00 1.10 1.11	C4				✓		EO B5 LCD 1894 (CONT)	(15) (d) REPEAT STEP (b) APPLYING 75-80 IN-LBS FOR FINAL TORQUE. (WAS)(d) REPEAT STEP (b) APPLYING 70-75 IN-LBS FOR FINAL TORQUE. ADDED NOTE 5, & SH 1.11,	LM-2 (32) THRU LM-15 (45)	✓		A. HENDPICKS 11-15-67		
	6	2.00 3.00						✓	EO B6	IN B/M FOR -1, -3, -5, -7, -9 & -11 ADDED NAS1271H4, SEE NOTE 6 ADDED NOTE 6.		NOT	REQD			
	7	1.11 2.00 3.00	C4				✓		EO B7 LCD 1894	REF EO B5 NAS1271H4 (16) WAS (8), GB511AG-4H4 (16) WAS (8).		✓				
	8	1.00 1.11 2.00 3.00	D3 C3 B7		M		✓		EO B8 LCD 1894	IN FLD & B/M; ON -1: LDW270M10071-16 WAS LSC270-00009-32; ON -3; LDW270M10071-15 WAS LSC270-00009-31; ON -5; LDW270M10071-18 WAS LSC270-00009-34; ON -7; LDW270M10071-17 WAS LSC270-00009-33; DELETED -9 & -11; ON -1, -3, -5, -7; GS13AK-147 WAS GS13AJ-147; MS20995C32 WAS MS20995NC20. AN960C416L WAS GW10K-416C; GB511AJ-4H12 WAS GB511AG-4H4; ADDED TO -1, -3, -5, -7; (2) LDW280M15563-11; (8) AN515C8R4; ADDED TO -1, -5; LED52035 AS REQD; ADDED TO -3, -7: LED520-34 AS REQD; DELETED NOTE #3; ADDED NOTES #7, #8 & #9, ADDED -13 & -15 LM-4, N/A LDW280-52900.						
	9	1.00 1.11					✓		LE0270-63 LCD 1894	FOR -13 & -15; ADDED LM-5 REQUIREMENTS.	LM-5 (35)	NOT	REQD			
	10	2.00 3.00 4.00						✓	EO B10	ADDED NOTE #10.	LM-2 (32)	✓				
	11	3.00						✓	B (B)	REF EO B6: IN NOTE #6, NAS1271H12 WAS NAS1271H4 & GB511AJ-4H12 WAS GB511AG-4H4	LM-2 (32) THRU LM-15 (45)	NOT	REQD			

CHG APPROVED

LTR	GROUP LDR	PROP.	REL	STRUCT	STRUCT	VDI
B						

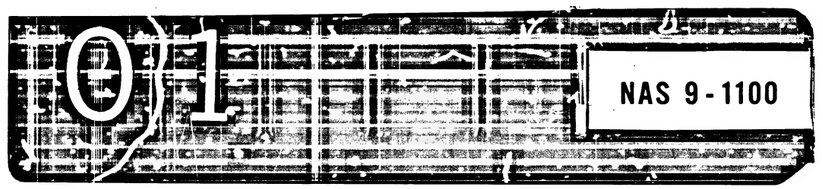
FOR CONTINUATION OF REVISIONS SEE SHEET

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52452	B (B)

SCALE NONE SHEET 1.11

ENG 77.3 5-64



LDW270-52452 C

								LM	LDW280-52900	LM-5(35)	1EA
								PART NO.	LDW270-52452-17#-19		
LM	LDW280-52900	LM-4(34)	1EA	LM	LDW280-52900	LM-3(33)	1EA	LM	LDW280-52900	LM-2(32)	1EA
MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO. LDW270-52452-13 & -15		GAEC SCH NO.		PART NO. LDW270-52452-5 & -7		GAEC SCH NO.		PART NO. LDW270-52452-1 & -3		GAEC SCH NO. 55	

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH								
SHEET	1.00	1.10	1.11	2.00		3.00	3.01	4.00
REV	C	B	B	C		C	C	C
SHEET			1.12					
REV			C					
SHEET								
REV								

LAST SECT LTR USED	B	GRUMMAN REL INFO	B
LAST DASH NO. USED	15	PRIM NO.	JK/009
		482	ME-16 8/26/69

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS — ANGLES

ORIG DWG AUTH				
DETAIL SPEC REQUIREMENT				
CLASS II ENGRG CHANGE				
CLASS I ENGRG CHANGE				

CONTRACT NO. NAS 9-1100 | LINE ITEM 009 | DOCUMENTATION TYPE II

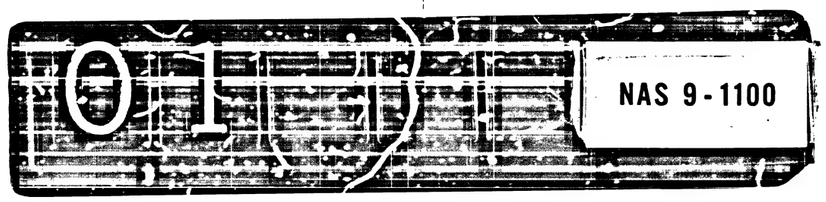
DRAWN BY	B.ZANG 12MAY66			
LAYOUT BY				
CHECKED BY	D POYNTON 5-16-66	VDI		
GR. LDR	LEAD			
PROP				
REL	6-1	PROJ ENGR	14 Jun	
STRUCT	JW 9/c	REL GROUP	6-18-66	
STRUCT	6/6			

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

SENSING UNIT INSTL-PROPELLANT LEVEL-DESCENT-PROPULSION FEED SYSTEM

SIZE	CODE IDENT NO.		
B	26512	LDW270-52452	C
SCALE NONE		SHEET 1.00 OF 8	

ENG 77.1 12-65



REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET _____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
C	1	3.01							INC EO C1. ADDED SH. 1.12 & 3.01	LM-3			WIEBER 2-19-69		
	2	3.00							INC EO C2	LM-2 THRU LM-15					
	3	2.00 4.00							INC EO C3	LM-5 THRU LM-15					
	4	2.00 4.00							INC EO C4	LM-2 THRU LM-15					
	5	2.00 4.00							INC EO C5	LM-5 THRU LM-15					
	6	1.00, 2.00 4.00							INC EO C6	LM-2 THRU LM-15					
	7	2.00, 4.00							INC EO C7	LM-5					
	8	1.00						(P)	INC EO C8 HD	LM-6 THRU LM-15					

CHG APPROVED	LTR	GROUP LDR	PROP	RELIAB	STRUCT	STRUCT	VDI
	C						

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52452	C

SCALE NONE SHEET 1.12 ©

ENG 77.16 3-66

01

NAS 9-1100

J	2									LDW270M10071-13-1	S	SENSING UNIT	(OXIDIZER)							
J		2								LDW270M10071-14-1	S	SENSING UNIT	(FUEL)							
		A/R		A/R		AS REQD		AS REQD		LED520-35	E	SEALANT	VISTANEX	(SEE NOTE 9)						
	A/R		A/R		AS REQD		AS REQD			LED520-34	E	SEALANT	NITROSO	(SEE NOTE 9)						
	2	2	2	2	2	2	2	2		LDW280M15563-11	E	RING	SEE DWG							
										LDW270-52452-19	E	SENSING UNIT INSTL	(OXIDIZER)							
										LDW270-52452-17	E	SENSING UNIT INSTL	(FUEL)							
C	✓	✓	✓	✓	✓	✓	✓	✓		MS20995C32	E	SAFETY WIRE	STD PART							
C	8	8	8	8	8	8	8	8		AN515C8R4	E	SCREW	STD PART							
C	16	16	16	16	16	16				GW10K-416C	E	WASHER	GRUMMAN STD							
							16	16		AN960C416L	E	WASHER	STD PART							
C	16	16	16	16	16	16	16	16		NAS1271H4	E	BOLT	STD PART	(SEE NOTE 6)						
C	8	8								AN565AC832H-4	E	SCREW	STD PART	(SEE NOTE 11)						
C	16	16	16	16	16	16	16	16		GB511AJ-4H12	E	BOLT	GRUMMAN STD							
C	2	2	2	2	2	2	2	2		GS13AK-147	E	SEAL	GRUMMAN STD							
J			2							LDW270M10071-13	S	SENSING UNIT	(OXIDIZER)							
J				2						LDW270M10071-14	S	SENSING UNIT	(FUEL)							
J					2					LDW270M10071-17	S	SENSING UNIT	(OXIDIZER)							
J						2				LDW270M10071-18	S	SENSING UNIT	(FUEL)							
J							2			LDW270M10071-15	S	SENSING UNIT	(OXIDIZER)							
J								2		LDW270M10071-16	S	SENSING UNIT	(FUEL)							
G										LDW270-52452-15	E	SENSING UNIT INSTL	(OXIDIZER)							
G										LDW270-52452-13	E	SENSING UNIT INSTL	(FUEL)							
G										LDW270-52452-7	E	SENSING UNIT INSTL	(OXIDIZER)							
G										LDW270-52452-5	E	SENSING UNIT INSTL	(FUEL)							
G										LDW270-52452-3	E	SENSING UNIT INSTL	(OXIDIZER)							
G										LDW270-52452-1	E	SENSING UNIT INSTL	(FUEL)							
C.L.	-19	-17	-15	-13	-7	-5	-3	-1	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE	
	QTY PER ASSEMBLY																			

CLEAN, LIKE 3CG LEVEL PER LSP 14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

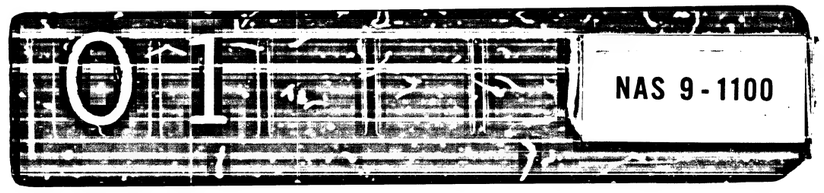
I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : LPC-19-2 (GRUMMAN), LPC-19-3 (VENDOR)

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52452	C

SCALE NONE SHEET 2.00

ENG 77.2 7-65



NOTES:

1. INSTALL ALL BOLTS FINGER TIGHT & TORQUE IN SEQUENCE AS FOLLOWS:
   (a) PHYSICAL LOCATION FOR START OF SEQUENCE (BOLT #1) IS OPTIONAL.
   (b) TORQUE ALL BOLTS PER SEQUENCE TO 15 INCH POUNDS.
   (c) REPEAT STEP b APPLYING 30 INCH-LBS. AND THEN 50 INCH-LBS.
   (d) REPEAT STEP b APPLYING 75-80 INCH-LBS FOR FINAL TORQUE.

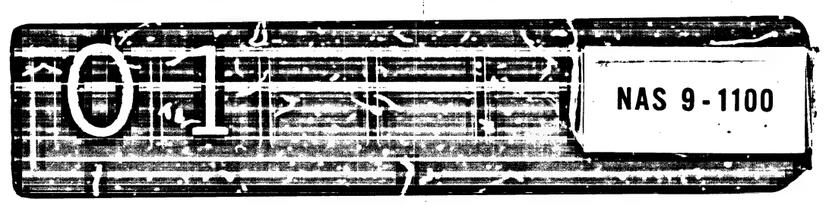
2. SAFETY WIRE PER MS33540.

3. ~~COMMERCIAL PART SEE SPECIFICATION CONTROL DWG BEFORE ORDERING.~~

4. CLEAN PER LSP-14-7072.
5. AFTER INITIAL INSTALLATION, THE BOLT PATTERN MUST BE RETORQUED IN THE TIGHTENING DIRECTION AND IN SEQUENCE TO PRINT VALUES AT 72 HOUR INTERVALS. REPEAT TWICE, I.E., THE INITIAL INSTALLATION PLUS TWO RETORQUES
6. AS AN ALTERNATE, NAS1271H12 BOLTS MAYBE SUBSTITUTED FOR GB511AJ-4H12 BOLTS. NAS1271H12 BOLTS ARE TO BE DRY LUBED IN ACCORDANCE WITH LPC280-40. SAME TORQUE VALUES APPLY TO BOTH TYPE BOLTS (REF NOTE 1).
7. O-RING MINOR DIAMETER FOR EACH SENSOR TO BE ESTABLISHED IN ACCORDANCE WITH LPC 280-42.
8. TORQUE TO HIGH LIMIT TO ASSURE METAL TO METAL CONTACT BETWEEN SENSOR & TANK COVER.
9. ON -1, -5 & -13 INSTL APPLY SEALANT LED520-35 (VISTANEX) AND ON -3, -7 & -15 INSTL APPLY SEALANT LED520-34 (NITROSO) IN ACCORDANCE WITH LPC 280-46 & LPC280-47
10. ON -1 INSTALL. LDW270M10071-18 MAY BE USED AS AN ALTERNATE FOR -16.

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-52452	C
SCALE NONE		SHEET 3.00	

ENG 72.1 6-64



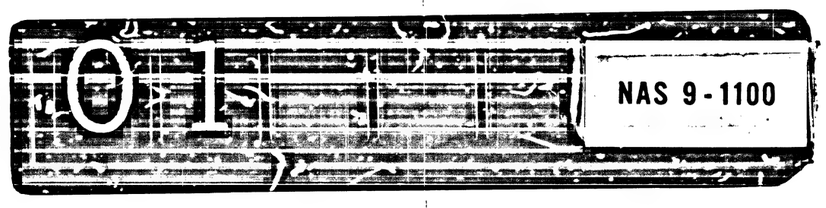
NOTES: (CONTINUED)

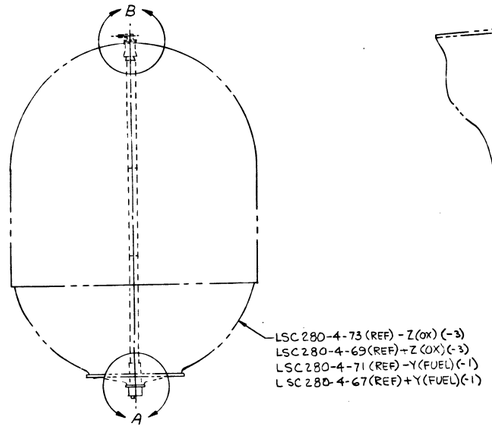
11. ON -5 LDW270M10071 - 16 MAY BE INSTALLED AS AN ALTERNATE FOR LDW270M10071-18.

12. INSERT AN565 FASTENER FLUSH TO .010 BELOW SURFACE. FOR LM-5 ONLY)

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-52452	C
SCALE		SHEET 3.01	

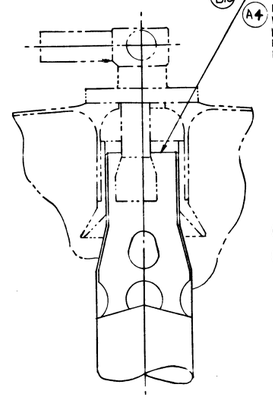
ENG 72.1 8-64





LSC280-4-73 (REF) - Z(OX) (-3)
LSC280-4-69 (REF) + Z (OX) (-3)
LSC280-4-71 (REF) - Y (FUEL) (-1)
LSC280-4-67 (REF) + Y (FUEL) (-1)

LDW270-52452-1 INSTL (FUEL)
LDW270-52452-3 INSTL (OXIDIZER)
(A2) LDW270-52452-5 INSTL (FUEL)
LDW270-52452-7 INSTL (OXIDIZER)
LDW270-52452-13 INSTL (FUEL) (B8)
LDW270-52452-15 INSTL (OXIDIZER)
LDW270-52452-17 INSTL (FUEL) (SAME AS -15 EXCEPT AS SHOWN) (C6)
LDW270-52452-19 INSTL (OXIDIZER) (SAME AS -15 EXCEPT AS SHOWN)

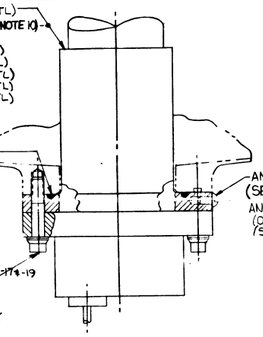


DETAIL "B"
SCALE: FULL

(B8) (A3) LSC270M10071-15 (2) (FOR -3 INSTL)
(B10) LDW270M10071-16 (2) (FOR -1 INSTL) (SEE NOTE K)
LDW270M10071-17 (2) (FOR -7 INSTL)
(A4) LDW270M10071-18 (2) (FOR -5 INSTL)
LDW270M10071-19 (2) (FOR -15 INSTL)
LDW270M10071-14 (2) (FOR -13 INSTL)
LDW270M10071-13-1 (2) (FOR -19 INSTL)
LDW270M10071-14-1 (2) (FOR -17 INSTL)
(C3) (C4) (C6)

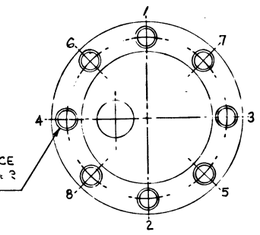
(B8) GS13AK-147
SEE NOTE 7

(B8) LDW280M15563-11
GB511AJ-4H12 (14)
(C4) (B7) GW10K-416C (16) ON -5, -7, -13, -15, -17 & -19
MS20995C32
(B1) (B2) (SEE NOTES *2, 6 & 8)
AN960C416L (16) ON -1 & -3 ONLY



AN515C8R4 (3) (B8)
(SEE NOTE 9)
AN565A8R3-4 (8)
(ON -17 & -19, -15 ONLY)
(SEE NOTE 12) (C7)

DETAIL "A"
SCALE: FULL



INSTALLATION, SEQUENCE & TORQUE OF BOLTS PER NOTE #1

MANUFACTURING OPERATIONS

UNLESS OTHERWISE SPECIFIED NOTES CHECKED √ APPLY TO THIS DWG.

- PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.
- FILLET AND INSIDE CORNER RADII TOLERANCES .015R TO .062R ± .010; .063R TO .250R ± .015; OVER .250R ± .030
- DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.
- EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
- DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
- MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
- DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
- HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
- ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .305 MAX. MIN. THICKNESS TO BE .002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
- 125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10
- 200 FOR ALL DRILLED HOLES
- REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
- INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
- SYMBOL ∿ DENOTES SURFACE TO BE MACHINED
- UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
- LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
- TOLERANCE ON LOFTED DELINEATIONS IS

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
D	26512	LDW270-52452 C

MODEL OR END ITEM | SCALE AS NOTED | SHEET 4 OF

NAS 9-1100

LDW270-52452C

LDW270-52456 B

MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.	
								LEM	LDW280-25562	PA-1(47)	1 EA
								LEM	LDW280-23350	LTA-3 (13)	1 E.A
								LDW 270-52456-1&-3		30	

(5)

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH									
SHEET	1.00	1.10	2.00		3.00		4.00		
REV	B	B	B		B		B		
SHEET									
REV									
SHEET									
REV									

		GRUMMAN REL INFO B	
LAST SECT LTR USED		PRIM NO.	LK (009)
LAST DASH NO. USED	3	450	ME-3B 10/3/14

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED
FRACTIONS - DECIMALS - ANGLES
± 1/16 ±.003 —

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS 9-1100 LINE ITEM 009 DOCUMENTATION TYPE II

DRAWN BY	W. HANSEN 6-23-66	WEIGHTS	L. Garcia 6/28/66
LAYOUT BY	—	VDI	
CHECKED BY	—		
GR. LDR	LGO 6/28		
PROP			
REL		PROJ ENGR	29 Jun 66
STRUCT		REL GROUP	Both 6-30-66

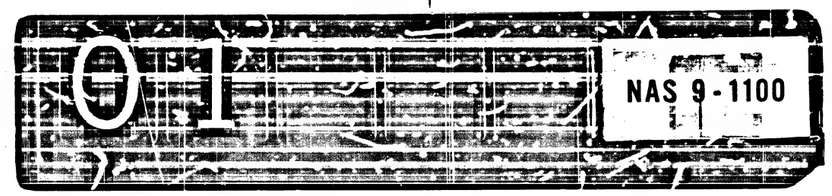
(R) GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

BELLOWS ASSY FLANGED
PROPELLANT LINES
ASCENT STAGE

SIZE	CODE IDENT NO.		
B	26512	LDW270-52456	B

SCALE NONE SHEET 1.00 OF 5

ENG 77.1 12-65



REVISIONS FOR CONTINUATION OF REVISIONS SEE SHEET ____

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	1	1, 1.10						EO A1	ADDED LTA-3(13) EFF FOR -1 & -3. SH 1 OF 5 WAS 1 OF 4, ADDED SH 1.10.	LTA-3(13)	NOT	REQ'D	ALETEL 9-1-66	X	X
B	1	1.10 1.00					✓	LEO270-41 LCD1124	ADDED PA-1 REQ	PA-1(47)	NOT	REQD	A. HENDRICKS 10-30-68	X	X
	2	1.10 1.00					✓	LEO270-44 LCD1124	REF: NOTED CHG ON LEO270-41 REVISED NEXT ASSY WAS LTM280-25504.	PA-1(47)					
	3	1.10 4.00	5C			✓		E.O. B3 LCD 1894	IN F/D FOR -1 & -3 ADDED FINISH & FLATNESS CALLOUT.	LM2(32)	✓				
	4	1.00, 2.00 4.00	6B 4C			✓		E.O. B4 LCD 1894	ADDED -5 & -7 EFF LM-2 N/A LDW280-52350 & PA-1 N/A LTM280-25562, ON -1 & -3 DELETED LM-2 EFF. -1 & -3 MAY BE REWORKED TO -5 & -7.	LM2(32) PA-1(47)	NOTED				
	5	1.00, 2.00 3&4..	6B 4C	M		✓		E.O. B5 LCD 1894	DELETED -5 & -7. ADDED NOTE 6 L.D.			✓	L.D.		

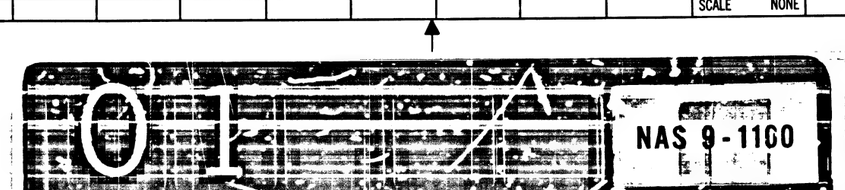
CHG APPROVED	LTR	GROUP LDR	PROP	RELIABILITY	STRUCTURES	WEIGHTS	VEH.DES.INT.
	A						
	B						

ENG 77.16 3-66

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52456	B

SCALE NONE SHEET 1.10



G.L.	QTY PER ASSEMBLY						CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
				-3	-1												
C				1	1			LDW270M10024-1	E	FLANGE	(SEE DWG)						
J					1			LSC270-826-11	E	BELLOWS ASSY	(SEE NOTE 1)						
J						1		LSC270-826-9	E	BELLOWS ASSY	(SEE NOTE 1)						
G								LDW270-52456-3	E	BELLOWS ASSY	(OXIDIZER)				SW	ONE	
G								LDW270-52456-1	E	BELLOWS ASSY	(FUEL)				SW	ONE	

CLEANLINESS LEVEL PER LSP 14-0011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC
SW	FUS. WELD, STEEL	MIL-W-8611						

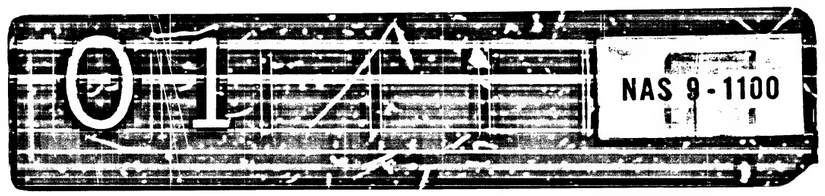
I&T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-52456	B

SCALE NONE SHEET 2.00

ENG 77.2 7-65

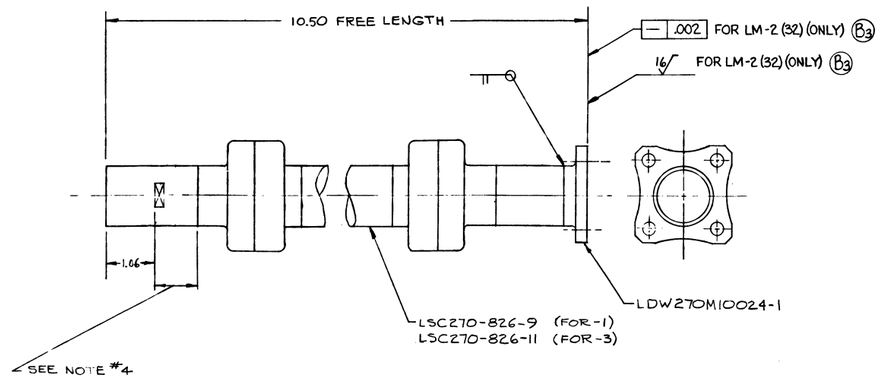


NOTES:
1. COMMERCIAL PART SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING.
2. 100% RADIOGRAPHIC INSPECTION OF WELDS REQUIRED. WELDS SHALL CONFORM TO TABLE III OF LSP-14-6201.
3. OPERATING PRESSURE 270 PSIG PROOF PRESSURE TEST PER LSP-14-19150, WITH BELLOWS RESTRAINED.
4. MARK IN APPROXIMATE AREA SHOWN IN ACCORDANCE WITH SPEC. LSP-14-002, TYPE I, CLASS 1. MARK 1/8 INCH HIGH LETTERS.
5. REMOVE ALL INTERNAL WELD BEADS IN EXCESS OF .010.
6. THIS DRAWING AFFECTED BY THE FOLLOWING LFM, LFM 31, SEE LFM FOR EFFECTIVITY AND MODIFICATION.

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-52456	B
SCALE NONE		SHEET 3.00	

ENG 78.1 6-64

NAS 9-1100



-1 BELLOWS ASSY (FUEL)
-3 BELLOWS ASSY (OXIDIZER)

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.	
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 √ SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 √ FOR ALL DRILLED HOLES	
REMOVE ALL BURRS. BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL ✓ DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FRACTIONS IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

01 NAS 8-1100

LEM	GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
	SIZE D	CODE IDENT NO. 26512	LDW270-52456	B
MODEL OR END ITEM	SCALE FULL		SHEET 4 OF 5	

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
	1	6.00	27B 28B					LE0270-12	REVISED WIRING FOR MEASUREMENTS GQ7498U AND GQ7499U						
	2	2.01 7.00 10.00	34B&C 35B&C 76A,D					LE0270-13	CONN. J556 PIN "B" WAS PIN "R", GP7615T WAS GP7606T & GP7625T WAS GP7608T						
	3	4.00 9.00	6C 63B 68C 69B					E.O. A_3	ADDED WIRES L219 & L220 TO 10M3, LSC270-807-7 WAS -1, REVERSED TERMINALS 6 & 7 ON 10M1. ADDED WIRES TO PIN B OF P55A, P55B FOR SHLD RETURN.						
	4	4.00	11B					LE0270-16	LSC270-814-3 WAS LSC270-814-1						
	5	8.00	44C					LE0270-17	REVISED WIRING FOR 10MT47 (GQ3476T), 10MT47 HAD 3 WIRES.						
	6	4.00	6C					LE0270-20	REROUTED HEAT EXCHANGER LINES -8(3), -32, -6 & REVISED TANK COILS ACCORDINGLY.						
A	7	3.01 4.00 8.00	13B 45B					LE0270-22	DELETED NOTE 33. ADDED NOTE 41. YEL, BLK, RED, GRN WAS RED, BLK, YEL, WHT ON 10MT45. DUAL BURST DISC ASSY LSC270-821-87 WAS BURST DISC LSC270-821-35.	NOTED	NOT	REQD	BEN AZZARA 2-27-67		
	8	2.01 7.00	34B 35B					LE0270-23	10MT65 WAS 10MT33 (GP7606T - ENG INTERFACE FUEL). 10MT66 WAS 10MT34 (GP7608T - ENG INTERFACE OXID).						
	9	4.00	6B					LE0270-25	ADDED LSC270-813-26, LINE RUN & FLEX LINE FOR TEST SHUT OFF VALVE PREVALVE. REMOVED "PLUGGED GQ9475 FROM 1/4 PORT (REF) CALLOUT.						
	10	10.00	75D					E.O. A_{10}	LSC270-00500-10 ASCENT ENGINE MODIFIED BY LDW270-53010-3 WAS LSC270-00500-10 ASCENT ENGINE.						
	11	6.00	23C 24C 30B					LE0270-26	ORN WAS GRN AT J562 PIN HH, REMOVED "NO.7", "NO.2" & "NO.7" AT J564 PINS L, K, F, E, Z, S, X, FF, W.						
	12	10.00	79A 79D					LE0270-27	LSC270-715-5-3 WAS LSC270-715-5 ON LM-3 AND LSC270-715-5-1 ON LM-4 THRU LM-15. LSC270-715-7-3 WAS LSC270-715-7 ON LM-3 AND LSC270-715-7-1 ON LM-4 THRU LM-15.						

FOR CONTINUATION OF REVISIONS SEE SHEET 1.11

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-53000	A
SCALE NONE			SHEET 1.10

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
A	13	4.00	10A					LE0270-28	LSC270-816-11-2 WAS LSC270-816-11	NOTED	NOT	REQD	BEN AZZARA 2-27-67		
	14	8.00 9.00	55B 64A					E.O. A14	DELETED LMP WIRES BETWEEN CONNECTORS J155 AND P713/J733.						
	15	9.00	67A					LE0270-29	D6080 WAS D1314, D6081 WAS D1319						
	16	4.00	8A-C 9A-C					E.O. A16	ADDED GQ9449, GQ9448, LSC310-403-204, LSC310-403-303, LSC270-813-24, LSC270-813-25 & 4 LINES (2)						
	17	7.00 8.00	41B 48-52 A-B					E.O. A17	ADDED 10FL5, 10FL6, 10L7, 10L8, 10S9 & 10S10 AND ASSOCIATED CIRCUITRY.						
	18	6.00	23C 24C					LE0270-31	CHANGED GQ7213T TO GQ7208T AND GQ7214T TO GQ7209T.						
	19	4.00	4C					LE0270-32	GQ7208T WAS GQ7213T, GQ7209T WAS GQ7214T						
	20	4.00	6A 6C					LE0270-34	ADDED LDW270-51459-5 & (REF) LSC270-802-1, ADDED LDW270-51459-7 & (REF) TO LSC270-803-1						
	21	8.00	53B-C 54B-C					E.O. A21	ADDED 10A6 & 10A7, REMOVED 10L1 & 10L2, LSC270-713-9 & -10 WAS LSC270-713-7 & -8.						
	22	2.00						E.O. A22	10A7L1 WAS 10L2 LSC270-713-8, 10A6L1 WAS 10L1 LSC270-713-7, ADDED 10A7A1CR2, 10A7A1CR1, 10A6A1CR2, 10A6A1CR1, 10A7 & 10A6.						
	23	4.00	11A 11D					E.O. A23	IN ZONE 11A & 11D REMOVED LSC270-713-7 & -8 SOLENOID LATCHING VALVE. ADDED LDW390-28070-11 & -13 SOLENOID LATCHING VALVE.						
	24	2.00 7.00 10.00	3BD 5CA 8CD					E.O. A24	LSC270-713-10 WAS LSC270-713-15, LDW390-51070-5 WAS LDW390-51070-1.						
	25	2.00, 4.00, 6.00	5C 23C					E.O. A25	LSC270-00600-20 WAS LSC270-00600-14						
	26	2.00, 7.00, 10.00	3BB 7CC					LE0270-35	LSC270-00822-7-2 WAS LSC270-00822-7						
	27	4.00 10.00	6C, 6D 10, 7B 7CA 23C 7A, 8A 8AB, 8D					E.O. A27	LSC270-714-113(22) WAS LSC270-714-111(22), LSC270-826-15-1 (2) WAS LSC270-826-15(2), LSC270-826-5-1 (4) WAS LSC270-826-5(4), LSC270-820-11-1 WAS LSC270-820-11, LSC270-717-11 WAS LSC270-717-3 & LSC270-717-12 WAS LSC270-717-4.						

FOR CONTINUATION OF REVISIONS SEE SHEET 1.12

ENG 77.3 5-66

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-53000	A

SCALE NONE SHEET 1.1

01 NAS 9-1100

NOTES CHECKED ✓ APPLY TO THIS DRAWING

	1. SOLDERING OF ELECTRICAL CONNECTIONS TO BE IN ACCORDANCE WITH	✓
	2. BOND PER LSP-390-001.	
	3. WIRING INSTALLATION PER LSP-390-002.	
✓	4. WIRES ARE TO BE TWISTED IN ACCORDANCE WITH LSP-530-001, TABLE III.	✓
	5. QUANTITIES OF END CAPS, SPLICES AND TERMINALS ARE NOT SPECIFIED IN THE BILL OF MATERIALS. USAGE: AS REQ'D.	
	6. FOR SCHEMATIC WIRING DIAGRAM SEE DRAWING NO.	
	7. ALL WIRES TO BE HOT STAMPED EVERY INCHES WITH WIRE NUMBER.	
	8. WIRE BUNDLING AND ROUTING: WIRES OF THE SAME CLASSIFICATION MAY BE BUNDLED TOGETHER WHEN A CLASSIFICATION LETTER IS PRECEEDED BY A NUMBER, SUCH SUBCLASSIFICATION SHALL BE SEPARATED BY A MINIMUM OF ONE-INCH. (EXAMPLE: 1D, 2D SEPARATED ONE-INCH MINIMUM) A MINIMUM OF ONE-INCH SEPARATION REQUIRED BETWEEN CLASSIFICATION GROUPS A, B, C, D, & E. A MINIMUM OF ONE-INCH SEPARATION REQUIRED BETWEEN CLASSIFICATION GROUPS F, G, & H. ANYONE OF THE CLASSIFICATION GROUPS A, B, C, D, OR E SHALL BE SEPARATED BY A MINIMUM OF FOUR-INCHES FROM ANYONE OF THE CLASSIFICATION GROUPS F, G, & H. WIRE BUNDLES TO BE ROUTED IN CONSOLE AS SHOWN.	✓
	9. WIRE LENGTHS SHOWN ARE APPROXIMATE. EXACT LENGTHS TO BE DETERMINED ON FIRST MANUFACTURED UNIT AND ENGINEERING DEPARTMENT NOTIFIED.	✓
	10. STENCIL OR MARK CHARACTERS PER MS33558, ( ) HIGH UNLESS OTHERWISE SPECIFIED, USING BLACK LACQUER PER TT-L-595, #1775 (GRUMMAN FINISH #69) COVER WITH CLEAR FLAT LACQUER PER TT-L-58 TYPE I (GRUMMAN FINISH #133).	✓
	11. ENGRAVE CHARACTERS ( ) HIGH x 0.005 MINIMUM DEPTH PER MS33558 (EXCEPT AS NOTED). FILL WITH BLACK LACQUER PER TT-C-595, #1775 (GRUMMAN FINISH #69).	✓
	12. ENGRAVE ALL INDEX DIVISIONS APART 3/16 LONG, ROTATING OUTWARD FROM RADIUS.	✓
	13. CENTRALIZE ALL CHARACTERS.	
	14. BREAK ALL SHARP EDGES.	
	15. BEND RELIEF TO BE MINIMUM RADII.	
	16. ALL BEND RADII TO BE MINIMUM RADIUS.	
	17. FINISH: APPLY EPOXY POLYAMIDE PRIMER MIL-P-23377 OR G.M.S. #1012. APPLY COATS OF MIL-L- LACQUER COLOR # ( ) PER FEDERAL STANDARD #595.	

18. INSTRUMENTATION CALLOUT ON MEASUREMENT LIST & NOT SHOWN ON THIS DWG ARE TELEMETERING NOTATIONS INDICATING COMBINATIONS OF TRANSDUCERS.

19. THIS DRAWING INCORPORATES MEASUREMENTS SHOWN IN LEM 1-3 MEASUREMENT LIST, LED 360-22, REV. F DATED 15 JULY 1966 AND THESE PROJECT-APPROVED MCR'S: 341, 504, 429C, 572A, 601, 601A, 601C & 676

20. ELECTRICAL DRAWING SYMBOLS SHOWN ON THIS DRAWING ARE IN ACCORDANCE WITH SECTION 15 OF THE MSFC DRAFTING MANUAL MIL-STD-15-1A & GS22B.

21. REFER TO LDW320-53000 SYSTEM SCHEMATIC LEVEL 3 FOR ELECTRO EXPLOSIVE DEVICES ASSOCIATED WITH PROPULSION SUBSYSTEM.

22. GROUND DESIGNATIONS: N1=AC GRD, N2=DC GRD, N3=SIGNAL GRD, N4= STRUCTURE GRD.

23. NOTED FLAGS WILL SHOW A STRIPE INDICATION WHEN SIGNAL POWER IS APPLIED TO FIN "1". (NORMALLY GRAY).

24. NOTED FLAG WILL SHOW GRAY INDICATION WHEN SIGNAL POWER IS APPLIED TO FIN "1". (NORMALLY STRIPED)

24. THIS DWG WILL BE REDRAWN AT A FUTURE DATE. REVISIONS TO THIS DWG WILL BE HANDLED IN THE SAME MANNER AS A REGULAR DWG RELEASE.

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-53000	A

SCALE NONE SHEET 3.00

This Is An ORIGINAL DRAWING

01

NAS 9-1100

FROM INST LDW360-52507

He TEMP/PRESS
115 VAC BUS
4CB169
2A
AC RETURN BUS N1
LDW390-53110 CDR'S CIRCUIT BREAKER PNL XI
(REF)
P60 J60 J56 P56
K602-22(B) K602-22 (B) K603-22 (B)
K603-22(B)
INTEGRAL LIGHTING LDW340-53000
15-115V 400CPS
10M1
LSC350-20100-02
HELIUM TEMPERATURE /PRESSURE INDICATOR
K317-22 (H)
K318-22 (H)
K604-22 CASE GND N4
K602-22(B)
K603-22(B)
K54-22 (E)
K335-22 (E)
K336-22 (E)
K42-22 (E)
K43-22 (E)
K44-22 (E)
K45-22 (E)
ESCENT ASCENT
SUPCRIT PRESS
AMB PRESS
OFF
TEMP
PRESS
PRESS
He TEMP/PRESS MON SW 1056
TEMP1
TEMP 2
PRESS1
PRESS2
P55A J55 P55B BHD
D321-22(H) F
D331-22(H) Z
D333-22(H) C
D323-22(H) V
D325-22 (H) D
H
D322-22 (H) K
D332-22 (H) A
D334-22 (H) Y
D324-22 (H) E
D326-22 (H) J
C
B
D8000-22 R
D8000-22 A
D8000-22 E
N4
GQ3436P GP0001P GP0002P GQ3015P
D322-26 (H)
D323-26 (H)
D324-26 (H)
D325-26 (H)
D326-26 (H)
D6088-26(H)
D6087-26(H)
D322-26 (H)

J56 P56
TO INST LDW360-52507
GP0501P K197K D365-22(H)
GQ3501P K195K D1319-22(H)
RETURN K194K D1121-22(H)
GP1001P K193K D361-22(H)
GQ4001P K196K D1314-22(H)
SPLICE
SEE NOTE 39
SEE SHEETS 5&6
INT LTG LDW340-53000 L219-22(A) +D28
L220-22(A) RET
RET K10-22(A)
K7-22(A) +D28
INTEGRAL LIGHTING LDW340-53000
0-75V 400N
10M3
FUEL PRESSURE METER
LSC350-80125-13
OXIDIZER PRESSURE METER
K338-22(H)
K340-22(H)
10M4
FUEL TEMPERATURE METER
LSC350-80179-13
OXIDIZER TEMPERATURE METER
K342-22(H)
K344-22 (H)
K7-22(A)
K10-22 (A)
P55A
D365-22(H) GP0501P
D6081-22 (H) GQ3501P
D1121-22 (H) RET
D361-22 (H) GP1001P
D6080-22 (H) GQ4001P
D8000-22
J55 (BHD) SEE INST LDW 360-52007
D357-22(H) GP0718T
D355-22 (H) GQ3718T
D353-22 (H) GQ3719T
D1123-22 (H) RET
D351-22 (H) GP1218T
D349-22 (H) GQ4218T
D347-22 (H) GQ4219T
ASC
DES 1
DES 2
PROPELLANT TEMP/PRESS MON SW 1051
MAIN PROPULSION PANEL I - LDW390-53101

01403 NAS 9-1100

FROM INST LDW360-52007

GQ3436P GP0001P GP0002P GQ3015P GP0201P GP0202T

P55P

D321-26(H) D322-26(H) D323-26(H) D324-26(H) D325-26(H) D326-26(H) D6086-26(H) D6087-26(H) D331-26(H) D332-26(H) D333-26(H) D334-26(H)

N4

B

B

10MT52

LSC 270-00009-34 FUEL QUANTITY SENSING UNIT

DES-1-F

TEST CMD	(H)	E3318	NAT	1	DES-1-F
SIGNAL RETURN	(H)	E3319	BRN	2	
FUEL QUANTITY	(H)	E3320	VIO	3	
FUEL LOW LEVEL	(H)	E3321	GRN	4	
+D20	(H)	E3322	RED	5	
RETURN	(H)	E3323	BLK	6	

K671-22(H)

10MT53

LSC 270-00009-34 FUEL QUANTITY SENSING UNIT

DES-2-F

TEST CMD	K615-22(H)	E3324	NAT	1	DES-2-F
SIGNAL RETURN	K616-22(H)	E3325	BRN	2	
FUEL QTY	K617-22(H)	E3326	VIO	3	
FUEL LOW LEVEL	K618-22(H)	E3327	GRN	4	
+D20	K619-22(H)	E3328	RED	5	
RETURN	K620-22(H)	E3329	BLK	6	

K672-22(H)

K672-22(H)

10M5

SPARES 1, 8, 6, 10

OXIDIZER QUANTITY 11

FUEL QUANTITY 12

7

5

4

9 N4

FROM INTEGRAL LIGHTING 15-115VAC 400~ 3, 13, 14

DES-1 / DES-2 1 2

LSC 350-00401-03-2

DES-1 / DES-2 2 OFF

DES-1 / DES-2 5 OFF

DES-1 / DES-2 6

DES-1 / DES-2 3 OFF

10SB — PROPELLANT QUANTITY MONITOR SELECTOR SWITCH

+D28 PQG54CB32 2A RET -D

SYS ENGR CKT BKR PANEL XVI LDW 390-53114 (REF)

P38 J38 J56 P56 +D28 4 RET

K607-22(C) J K608-22(C) K

K607-22(E) J77 K608-22(E) 178

MAIN PROPULSION PANEL #1 LDW 390-53101

B H P155 J155

PROPELLANT QUANTITY GAGING CONTROL UNIT LSC-270-00009-43

BHD CONN J55 P55A P55B J173 P173

GQ3605Q FUEL QTY SELECTED	PP	K621-22(F)	214		BLU	
FUEL CLOCK	NN	K622-22(F)	202		BLK	
GROUND	JJ	K623-22(F)	203		BRN	
GQ4105Q OXIDIZER QTY SELECTED	KK	K624-22(F)	204		GRN	
OXIDIZER CLOCK	LL	K625-22(F)	205		ORN	
	B	N4	N4	N4		

BHD CONN J55 P55A P55B INTERSTAGE CONN P75 J75 P173 J173

K626-22(E)	MM	K626-22(E) 1		VIO	
K627-22(E)	CC	K627-22(E) 2		NAT	
K628-22(C)	DD	K628-22(C) 221		RED	
K608-22(C)	R	K608-22(C) 239		BLK	

J55 (F,HD) SEE INST LDW 360-52007

10MT54

LSC-270-00009-33 OXIDIZER QUANTITY SENSING UNIT

DES-1-OX

TEST CMD	K629-22(H)	E3330	NAT	1	DES-1-OX
SIGNAL RETURN	K675-22(H)	E3331	BRN	2	
OXIDIZER QTY	K631-22(H)	E3332	VIO	3	
OXIDIZER LOW LEVEL	K632-22(H)	E3333	GRN	4	
+D20	K633-22(H)	E3334	RED	5	
RETURN	K634-22(H)	E3335	BLK	6	

K673-22(H)

K673-22(H)

10MT55

LSC-270-00009-33 OXIDIZER QUANTITY SENSING UNIT

DES-2-OX

TEST CMD	K635-22(H)	E3336	NAT	1	DES-2-OX
SIGNAL RETURN	K636-22(H)	E3337	BRN	2	
OXIDIZER QTY	K637-22(H)	E3338	VIO	3	
OXIDIZER LOW LEVEL	K638-22(H)	E3339	GRN	4	
+D20	K639-22(H)	E3340	RED	5	
RETURN	K640-22(H)	E3341	BLK	6	

K674-22(H)

K674-22(H)

TLM: FUEL QTY TANK #1 QTY JQ90235V; FUEL QTY TANK #2 QTY JQ90236V; OXID QTY TANK #1 QTY JQ90237V; OXID QTY TANK #2 QTY JQ90238V; SENSOR TEST DRY JQ90257X; SIGNAL GROUND; SENSOR OUTPUT

TEST COMMANDS G F E A C B D J

TO GSE

02103 NAS 9-1100

10A3

PROPELLANT QUANTITY GAGING CONTROL UNIT LSC-270-00009-43

DES-1-F

D	(H)	E3318	NAT
TURN	(H)	E3319	BRN
ANTITY	(H)	E3320	VIO
W LEVEL	(H)	E3321	GRN
	(H)	E3322	RED
	(H)	E3323	BLK

K671-22(H)

DES-2-F

M D	KG 5-22(H)	E3324	NAT
ETURN	KG 6-22(H)	E3325	BRN
TY	KG 7-22(H)	E3326	VIO
EVEL	KG 8-22(H)	E3327	GRN
	KG 9-22(H)	E3328	RED
	KG 30-22(H)	E3329	BLK

K672-22(H)

D4971-22(E) GRN — D4971-26(E)
GQ4455X
D4972-22(E) BRN — D4972-26(E)
} TO INST LDW 360-52007
PROPELLANT TANKS LIQUID LOW LEVEL

BHD CONN J55 P55A P55B — J173 P173

P55A	J55	P55B	J173 P173	
EL QTY SELECTED	PP	K621-22(F)	214	BLU
	NN	K622-22(F)	202	BLK
	JJ	K623-22(F)	203	BRN
IDIZER QTY SELECTED	KK	K624-22(F)	204	GRN
OCK	LL	K625-22(F)	205	ORN
	B			

N4

BHD CONN J55 — INTERSTAGE CONN P75 J75

P55A	J55	P55B	P75 J75	
K626-22(E)	MM	K626-22(E)	1	VIO
K627-22(E)	CC	K627-22(E)	2	NAT
K628-22(C)	DD	K628-22(C)	221	RED
K608-22(C)	R	K608-22(C)	239	BLK

P173 J173

DES-1-OX

D	KG29-22(H)	E3330	NAT
RETURN	KG75-22(H)	E3331	BRN
QTY	KG31-22(H)	E3332	VIO
OW LEVEL	KG32-22(H)	E3333	GRN
	KG33-22(H)	E3334	RED
	KG34-22(H)	E3335	BLK

K673-22(H)

DES-2-OX

MD	KG35-22(H)	E3336	NAT
RETURN	KG36-22(H)	E3337	BRN
R QTY	KG37-22(H)	E3338	VIO
OW LEVEL	KG38-22(H)	E3339	GRN
	KG39-22(H)	E3340	RED
	KG40-22(H)	E3341	BLK

K674-22(H)

TLM
- FUEL QTY TANK #1
- FUEL QTY TANK #2
- OXID QTY TANK #1
- OXID QTY TANK #2

1	GQ3603Q	BLU	D4973-22(H)	D4973-26(H)
2	GQ3604Q	BLK	D4974-22(H)	D4974-26(H)
3	GQ4103Q	BRN	D4975-22(H)	D4975-26(H)
4	GQ4104Q	GRN	D4976-22(H)	D4976-26(H)
5	RET	ORN	D4977-22(H)	D4977-26(H)

} TO INST LDW 360-52007

G	F	E	A	C	B	D	J	H	K	
SENSOR TEST DRY	SIGNAL GROUND	FUEL TANK #1 QTY	OXID TANK #1 QTY	FUEL TANK #2 QTY	OXID TANK #2 QTY	SENSOR OUTPUT INHIBIT			SPARE	
JQ90357X		JQ90335V	JQ90335V	JQ90334V	JQ90334V	JQ90357X				
TEST COMMANDS										

J556

TO GSE

03/03 NAS 9-1100

FOR NOTES SEE SH 3.00

FOR ENGRG INFO ONLY

GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE L I N Y

SIZE	CODE IDENT NO	LDW270-53000	A
J	26512		

SCALE NONE — SHEET 9.0C

LDW270-53000A

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	~~CHGS~~ APPD
A	36	10.00	73A 74A 74D 75A 75B 75D 76B 76C 77B 78A 78C 79B 81A 81B 81C						DELETED FIG. 1 & ON SH. 3.01 NOTE 31 & DELETE SEE GRAPH FIG. 1 SH 9.00. ON GP9473 & GP9471 DELETED OBD SYMBOL & BELLOWS SYMBOL. ADDED FLEX LINE SYMBOL. ON GP9474 & GP9472 DELETED OBD SYMBOL & BELLOWS SYMBOL. ADDED FLEX LINE SYMBOL. ON GP9476 & 9477 ADDED BELLOWS SYMBOL (2) & CALLOUT DRAINS (ENGINE VALVE SEAL) (2). DELETED OBD SYMBOL (2) & "BALD ENDS CUT DIAGONALLY & OPEN TO AMBIENT." ON GP9463 & GP9461 DELETED BELLOWS SYMBOL 1 EACH. ADDED FLEX LINE SYMBOL 1 EACH. ON GP9462, GP9464 & GP9455 DELETED BELLOWS SYMBOL 1 EACH & ADDED FLEX LINE SYMBOL (1) EACH. ADDED "INSTALL" TO BEFORE FLIGHT CALLOUT. ADDED LINE SIZES TO INSTRUMENTATION TRANSDUCERS. DELETED TEE FROM THRUST NEUTRALIZERS GP9447 & GP9446. REROUTED BY PASS LINES TO MATCH VEHICLE CONFIGURATION. RELOCATED GP9425, GP0018P & GP0025P TO MATCH VEHICLE CONFIGURATION. RELOCATED GP9406 TO MATCH VEHICLE CONFIGURATION. RELOCATED GP0001P & GP0002P TO MATCH VEHICLE CONFIGURATION.	LM-3	NOT	REQD	BEN AZZARA 2-27-67		
	37								SH. 1.00 OF 18 WAS SH. 1.00 OF 14. ADDED SHEETS 1.10, 1.11, 1.12 & 1.13.						
	38	2.00 2.01 3.00							10M3 WAS LSC350-80125-13; 10S1 WAS LSC350-84-02011; 10S3, 10S4, 10S5 & 10S7 WERE LSC350-81-05312; 10S8 WAS LSC350-83-10211; 10S9 & 10S10 WERE LSC350-82-05211; NOTE 19 ADDED MCR'S: 572A, 601, 601A, 601C & 676 (B)				T.A. CRISAFULLI 5-1-67		
B	1	10.00 3.01	79A 79C	LE0270-36 LCD19-1031			✓		IN F/D: LSC270-721-1 (SEE NOTE 32) WAS LSC270-715-5-2 OR LSC270-715-5-3 (SEE NOTE 34). LSC270-721-3 WAS LSC270-715-7-2 OR LSC270-715-7-3 (SEE NOTE 34). REVISE NOTE 32 PARA "B" AS SHOWN ABOVE & AS FOLLOWS: (CONT'D)	NOTED	NOT	REQD	C. FLEISCHMANN 10-12-67		

FOR CONTINUATION OF REVISIONS SEE SHEET 1.14

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-53000	B

SCALE NONE | SHEET 1.13

ENG 77.3 5-65

01 NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
B	1								1.45±.05 WAS 1.55±10% (4 PLACES). 186PSIG TO 194 PSIG WAS 192 TO 196. FOR-1 WAS-5 (2 PLACES). FOR-3 WAS-7 (2 PLACES). 178 PSIG TO 186 PSIG WAS 186 TO 190. 180PSIG TO 188 PSIG WAS 194 TO 198. 172 PSIG TO 180PSIG WAS 188 TO 192. "PRIMARY OR DOWNSTREAM" (WAS) "PRIMARY OR UPSTREAM".	NOTED	NOT	REQD	C. FLEISCHMANN 10-13-67		
	2	10.00	B2 AC				✓	LE0270-37	ADDED: GP0007T & GP0008T.						
	3	7.00	41B				✓	EO-B3 LCD1280	REVERSED +D28 & -D CONNECTIONS TO P38-H & I.						
	4	10.00	76C				✓	LE0270-38 LCD19-1134	ADDED: HIGH POINT BLEED LINE TO ENGINE PRE-VALVE FEED LINE.						
	5	7.00 8.00	39B TO 42C 45A TO 50B				✓	EO-B5 LCD1382	AT PANEL I & XVI ADDED 20GA WIRES K1 THRU K6 WITH ASSOC SPLICES, WIRES WERE 22 AWG. AT PNL XI & VIII & BETWEEN & FROM PNL VIII TO BHD. CHANGED K195, 198, K709, 710, K713, 714 TO SINGLE #20 AWG (ALL WERE 2 LEADS #22 AWG). ADDED ASSOC. SPLICES.						
	6	6.00	26A 26B				✓	EO-B6 LCD1421	ADDED LEADS S530 & S531 TO PINS G & E OF P560. INSIDE DESC ENG ADDED RED (+28) & BLACK (RETURN) LEADS TO J560 G & E FOR REDUNDANT SOV PWR FEED.						
	7	2.01					✓	EO-B7	LSC360-624-1 (4) WAS, LSC360-624-007 (4) AT 10MT60, 10MT61, 10MT63 & 10MT64. LSC360-624-3 WAS LSC360-624-007 AT 10MT62						
	8	10.00 2.00	75D				✓	LE0270-43	LSC270-00500-10-2 (WAS LSC270-00500-10).						
	9	7.00	34B 35B				✓	EO-B9 LCD1779	REPLACED 10MT65 XDUCER FUEL TANK OUTLET TEMP LSC360-605-301 GP7615T, BY 10MT79 XDUCER ENGINE INTERFACE FUEL TEMP NTN510782-001 GP7015T. REPLACED 10MT66 XDUCER OXID TANK OUTLET TEMP LSC360-605-301, GP7625T, BY 10MT80 XDUCER ENGINE INTERFACE OXIDIZER						

FOR CONTINUATION OF REVISIONS SEE SHEET 1.15

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-53000	B (B)

SCALE NONE — SHEET 1.14

NAS 9-1100

10MT80	NTN510782-001	TEMP TRANSDUCER	10	76C	GP7025T
10MT79	NTN510782-001	TEMP TRANSDUCER	10	76A	GP7015T
10MT64	LSC360-624-1	TRANSDUCER-PRESS OX ISOL VLV INLET	5	21	GP1503P
10MT63	-1	TRANSDUCER-PRESS FUEL ISOL VLV INLET	5	20C	GP1501P
10MT62	-3	TRANSDUCER-PRESS THRUST CHAMBER	5	20C	GP2010P
10MT61	-1	TRANSDUCER-PRESS OXID. INJECTOR INLET	5	17C	GP2006P
10MT60	LSC360-624-1	TRANSDUCER-PRESS FUEL INJECTOR INLET	5	17C	GP2001P
10S8	LSC350-83-10212	PROPELLANT QTY MONITOR SEL SWITCH	9	64B	
10S7	LSC350-81-05312	DESCENT REGULATOR NO. 2 SWITCH	8	56B	
10S6	LSC350-80305-11	He TEMP/PRESS MONITOR SWITCH	9	68B	
10S5	LSC350-81-05312	DESCENT REGULATOR NO. 1 SWITCH	8	56B	
10S4	LSC350-81-05312	ASCENT REGULATOR NO. 2 SWITCH	7	40B	
10S3	LSC350-81-05312	ASCENT REGULATOR NO. 1 SWITCH	7	41C	
10S1	LSC350-84-02012	TEMP/PRESS MONITOR SWITCH	9	68A	
10MT59	LSC360-624-111	TRANSDUCER, PRESS AMBIENT	8	52C	GQ3015P
10MT58	LSC360-601-107	TRANSDUCER, PRESS ABSOLUTE	7	31B	GP0018P
10MT57	LSC360-601-107	TRANSDUCER, PRESS ABSOLUTE	8	48B	GQ3025P
10MT56	LSC270-821-29	TRANSDUCER, PRESS ABSOLUTE	8	48B	GQ3436P
10MT55	LSC270-00009-33	SENSING UNIT OXIDIZER QUANTITY	9	63C	
10MT54	LSC270-00009-33	SENSING UNIT OXIDIZER QUANTITY	9	63C	
10MT53	LSC270-00009-34	SENSING UNIT FUEL QUANTITY	9	63C	
10MT52	LSC270-00009-34	SENSING UNIT FUEL QUANTITY	9	63C	
10MT51	LSC360-605-407	TRANSDUCER TEMP	8	43B	GQ3463T
10MT50	LSC360-605-407		8	43B	GQ3459T
10MT49	LSC360-605-407		8	44B	GQ3455T
10MT48	LSC360-605-409		8	44B	GQ3451T
10MT47	NTN510724-001	TRANSDUCER, TEMP	8	44B	GQ3476T
10MT45	LSC270-821-65	TRANSDUCER, PRESS ABSOLUTE	8	45B	GQ3435P
10MT43	LSC270-801-14	OX TANK LEVEL LOW	7	31B	GP1403X
REF DESIGNATION	PART NUMBER	DESCRIPTION	SHEET	ZONE	

10MT42	LSC360-601-107	TRANSDUCER PRESS ABSOLUTE	7	32B	GP0025P
10MT41	LSC270-801-13	FUEL TANK LEVEL LOW	7	32B	GP0908X
10MT40	LSC360-605-303	TEMP, TRANSDUCER	7	33B	GP1218T
10MT39	LSC360-605-303	TEMP, TRANSDUCER	7	33B	GP0718T
10MT38	LSC360-605-405	TEMP, TRANSDUCER	7	33B	GP0202T
10MT37	LSC360-605-405	TEMP, TRANSDUCER	7	34B	GP0201T
10MT36	LSC360-601-101	TRANSDUCER PRESS ABSOLUTE	7	34B	GP0002P
10MT35	LSC360-601-101	TRANSDUCER PRESS ABSOLUTE	7	34B	GP0001P
~~10MT66~~	~~LSC360-605-301~~	~~TEMP ENGINE INTERFACE OX~~	~~7~~	~~34B~~	~~GP7625T~~
~~10MT65~~	~~LSC360-605-301~~	~~TEMP ENGINE INTERFACE FUEL~~	~~7~~	~~35B~~	~~GP7615T~~
10MT32	NTN510981-201	PRESS Δ "P" OX TANK INTERFACE	7	35B	GP1146P
10MT31	NTN510790-201	PRESS OX TANK VENT RELIEF VALVE INLET	7	25B	GP1004P
10MT30	LSC360-601-107	PRESS OX TANK ULLAGE	7	36B	GP1001P
10MT29	NTN510981-201	PRESS Δ "P" FUEL TANK INTERFACE	7	36B	GP0616P
10MT28	NTN510790-201	PRESS FUEL TANK VENT RELIEF VALVE INLET	7	36B	GP0504P
10MT27	LSC360-601-107	PRESS FUEL TANK ULLAGE	7	36B	GP0301P
10MT26	NTN510790-202	PRESS He SEC REG UPSTREAM INLET	7	37B	GP0020P
10MT25	NTN510790-202	PRESS. He PRIM REG UPSTREAM INLET	7	37B	GP0019P
10MT24	LSC360-601-107	TRANSDUCER PRESS ABSOLUTE	8	49B	GQ3611P
10MT23	NTN510981-201	PRESS Δ "P" OX TK #1 BOT TO ENG. INTERFACE	8	45B	GQ4116P
10MT22	NTN510790-201	PRESS OX TANK VENT RELIEF VALVE INLET	8	46B	GQ4005P
10MT21	LSC360-601-107	PRESS OX TANK #1 ULLAGE	8	44B	GQ4001P
10MT20	NTN510981-201	PRESS Δ "P" FUEL TK #2 BOT TO ENG INTERFACE	8	46B	GQ3666P
10MT19	LSC360-601-107	TRANSDUCER PRESS ABSOLUTE	8	45B	GQ3018P
10MT18	NTN510790-201	PRESS FUEL TANK VENT RELIEF VALVE INLET	8	47B	GQ3505P
10MT17	LSC360-601-107	PRESS ULLAGE FUEL TANK #1	8	47B	GQ3501P
10MT16	LSC360-601-107	TRANSDUCER PRESS ABSOLUTE	8	49B	GQ4111P
REF DESIGNATION	PART NUMBER	DESCRIPTION	SHEET	ZONE	

ENG 77.10 7-64

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-53000	B

SCALE NONE SHEET 2.01

THIS IS AN ORIGINAL DRAWING

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
B	9								TEMP NTN510782-001, G7025T. DELETED C/O "MEAS NO. GP7615T NOT IMPLEMENTED ON LM-3". COLOR CODE ON LSC360-605-301 XDUCER WAS GRN, RED & YEL.	NOTED	NOT	REQD	C. FLEISCHMANN 10-14-67		
	10	2.01, 7.00 10.00	34B 76A 76B				✓	EO-B10 LCD1779	DELETED GP7625T MEASUREMENT ADDED GP7015T & GP7025T MEASUREMENTS.						
	1	10.00 4.00	32A 11B				✓	LE0270-45 LCD1299	DELETED: GP0007T & GP0008T MEASUREMENTS. ADDED: GP2910T, GP2911T & GQ3541T MEASUREMENTS.						
	2	10.00 3.01	79 A-D				✓	LE0270-46 LCD1031	IN F/D & REF NOTE: LSC270-715-9 WAS LSC270-721-1. LSC270-715-11 WAS LSC270-721-3.						
	3	2.00 4.00 6.00	6C 23C				✓	EO-C3 LCD1421	IN F/D & B/M FOR 10A1 LSC270-00600-26 WAS LSC270-00600-20.						
	4	10.00	73-75 A-D				✓	LE0270-48	ADDED "LSC360-624" AFTER GP1501P, GP1503P, GP2010P, GP2001P, GP2006P.						
C	5	7.00 8.00	32A 52C				✓	LE0270-49 LCD1299	ADDED: GP2910T & GP2911T 10MT81 & 10MT82. ADDED: GQ3541T 10MT83 W/ASSOC. WIRING.						
	6	4.00 10.00	6B 76 A-C				✓	LE0270-50 LCD1843	ADDED: DASH POT & RESTRICTOR(4), FUEL TEST POINT LSC270-813-26(2), OXIDIZER TEST POINT LSC270-813-27(2).						
	7						✓	EO-C7 LCD1032	THIS EO CANCELLED BY EO-D2.						
	8	8.00	57B 52B			✓		EO-C8 LCD1694	REVISED P/J60 PIN Z WAS J.						
	9	3.02 10.00	71A				✓	LE0270-51 LCD1566	IN F/D LSC270-717-13 WAS -11. REVISED NOTE 35.						
	10	7.00	30B				✓	LE0270-52	IN B/M & F/D 10L6 LSC270-00822-7 & -7-2 SOLENOID VALVE PRE-VALVE WAS 10L6 LSC270-00822-7 & -7-2 ACTUATOR ISOLATION VALVE.						

FOR CONTINUATION OF REVISIONS SEE SHEET 1.16

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-53000	C

SCALE NONE SHEET 1.15

ENG 77.3 5-65

OTI NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	ET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	GOVT APPD
D	1	6.00	26A 26B 29B				✓	EO-D1 LCD1797	ON SH 6.00 AT 1A10 P560 PINS G, E, I, S, C, N, I, P, R & Q. EMI CODE ON WIRES -16(A1) WAS -16(A).	NOTED	NOT	REQD	C. FLEISCHMANN 10-16-67		
	2						✓	EO-D2 LCD1032	CANCEL EO NO. C7						
	3	3.01 4.00	10A				✓	EO-D3 LCD1032	LSC270-827-1 WAS LSC270-816-11-2.						
	4	7.00	41B				✓	LE0270-54	J38 WAS P38, P38 WAS J38.						
	5	8.00 2.00 4.00	53B 53C 54A 54B	B			✓	EO-D5 LCD1995	IN THE B/M DELETED 10A6, 10A7, 10A6CR1 & CR2, 10A6 LSC270-713-9-1 WAS 10A6L1 LSC270-713-9. 10A7 LSC270-713-10-1 WAS 10A7L1 LSC270-713-10. IN THE F/D REVISED 10A6 & 10A7 BY DELETING A1 & L1 ASSYS. DELETED LDW390-28070-11 & LDW390-28070-13-1; LSC270-713-9-1 WAS LSC270-713-9; LSC270-713-10-1 WAS LSC270-713-10. ADDED EMI SUPPR CKS ACROSS 10A6 & 10A7.						
	6	2.00 5.00	14 B-C				✓	LE0270-55 LCD1978	ADDED 10A8, LSC270-00723 ROUGH COMB. CUT OFF CONTROL ASSY WITH ACCELEROMETERS "A & B". ADDED J/P 517, 518; WIRES S551 & S553 THRU S561. ADDED REF TO C.E.S.						
	7	6.00	23-30B				✓	LE0270-56 LCD1767	ADDED P562 & J567 PINS FF, R, U, B, W, X, E, L, G, W X, HH, GG, Q, R, CC, BB, J, D, H, C, Y, D, V, N, K, M, J, Z, P, AA, I, Y, E, V, PLUS ASSOCIATED WIRE NO. K719 THRU K753.						
	8	3.01 10.00	79 A-D	H			✓	LE0270-58 LCD1031	IN F/D & NOTE 32 LSC270-721-5 WAS LSC270-715-9. LSC270-721-7 WAS LSC270-715-11.						
	9						✓		REF EO-B7 IN DESCRIPTION "AT 10MT63" SHOULD BE "AT 10MT62".						
							√	B.C.P. (1)	SH 1.00 OF 21 WAS SH 1.00 OF 18. ADDED SH 1.14, 1.15 & 1.16.						

FOR CONTINUATION OF REVISIONS SEE SHEET _ _ _ _

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-53000	D (7)
SCALE NONE		SHEET 1.16	

ENG 77.3 5-65

01

NAS 9-1100

NOTES (CON'T) (NOTES CHECKED ✓ APPLY TO THIS DWG)

✓ 26. WIRES K346-22(A)* K347-22(A)* & K7-22(A)* ARE CONNECTED AS SHOWN FOR MANNED FLIGHTS ONLY. FOR UNMANNED FLIGHTS, DISCONNECT WIRES ABOVE AT TERMINAL STRIP, CAP & STOW & REPLACE WITH NOTED WIRES.

✓ 27. ASCENT AND DESCENT ENGINE ELECTRICAL CIRCUITS AND INTERFACES ARE NOT DOCUMENTED BY LSC DWG'S. ENGINE WIRING DIAGRAMS SHOWN IN THIS LEVEL 3 ARE BASED ON THE BEST INFORMATION AVAILABLE.

✓ 28. SEE SHEET NO. 8.00 FOR SCHEMATIC OF DESCENT STAGE PROPULSION FLUID LINES. SEE SHEET NO. 9.00 FOR SCHEMATIC OF ASCENT STAGE PROPULSION FLUID LINES.

✓ 29. FLUIDS:
(1) PRESSURIZING AGENT: HELIUM IN ACCORDANCE WITH MIL-P-27407.
(2) PROPELLANT: NITROGEN TETROXIDE IN ACCORDANCE WITH MIL-P-26539
(3) PROPELLANT: HYDRAZINE IN ACCORDANCE WITH MIL-P-27402.

✓ 30. HELIUM STORAGE PRESSURE (MAXIMUM):
(a) 1555 PSIA @ 100°R (DESCENT STAGE)
(b) 3500 PSIA @ 100°F (ASCENT STAGE)

✓ 31. HELIUM STORAGE VESSEL DATA:
(a) DESCENT STAGE;
CHARGE PRESSURE =

CAPACITY = 52.66 LBS TOTAL, 41.85 LBS USABLE.

(b) ASCENT STAGE:
CHARGE PRESSURE = ~~SEE GRAPH FIG (NOT YET)~~
CAPACITY = 6.5 LBS PER STORAGE VESSEL.

✓ 32. PRESSURE REDUCER REQUIREMENTS.
(a) LSC 270-827-1 (DESCENT STAGE) INLET PRESS APPLIED TO EITHER OF TWO INLET PORTS (BUT NOT TO BOTH SIMULTANEOUSLY) = 350 PSIG TO 1750 PSIG. PRESSURE AND FLOW AT OUTLET PORT = 243 PSIG TO 248 PSIG @ 0.43 LBS TO 4.25 LBS PER MINUTE.
(b) LSC 270-715-9 AND -11 (ASCENT STAGE)
PRESSURE AT INLET PORT FOR -9 AND -11 = 400 PSIG TO 3500 PSIG.
PRESSURE AND FLOW AT OUTLET PORT (WITH SECONDARY STAGE REGULATING PRESSURE = 186 PSIG TO 194 PSIG @ 1.45 ±.05% LBS PER MINUTE FOR -9, AND 178 PSIG TO 186 PSIG @ 1.45 ±.05% LBS PER MINUTE FOR -11.
PRESSURE AND FLOW AT OUTLET PORT (WITH PRIMARY OR DOWNSTREAM STAGE REGULATING PRESSURE) = 180 PSIG TO 188 PSIG @ 1.45 ±.05% LBS PER MINUTE FOR -9 AND 172 PSIG TO 180 PSIG @ 1.45 ±.05% LBS PER MINUTE FOR -11.

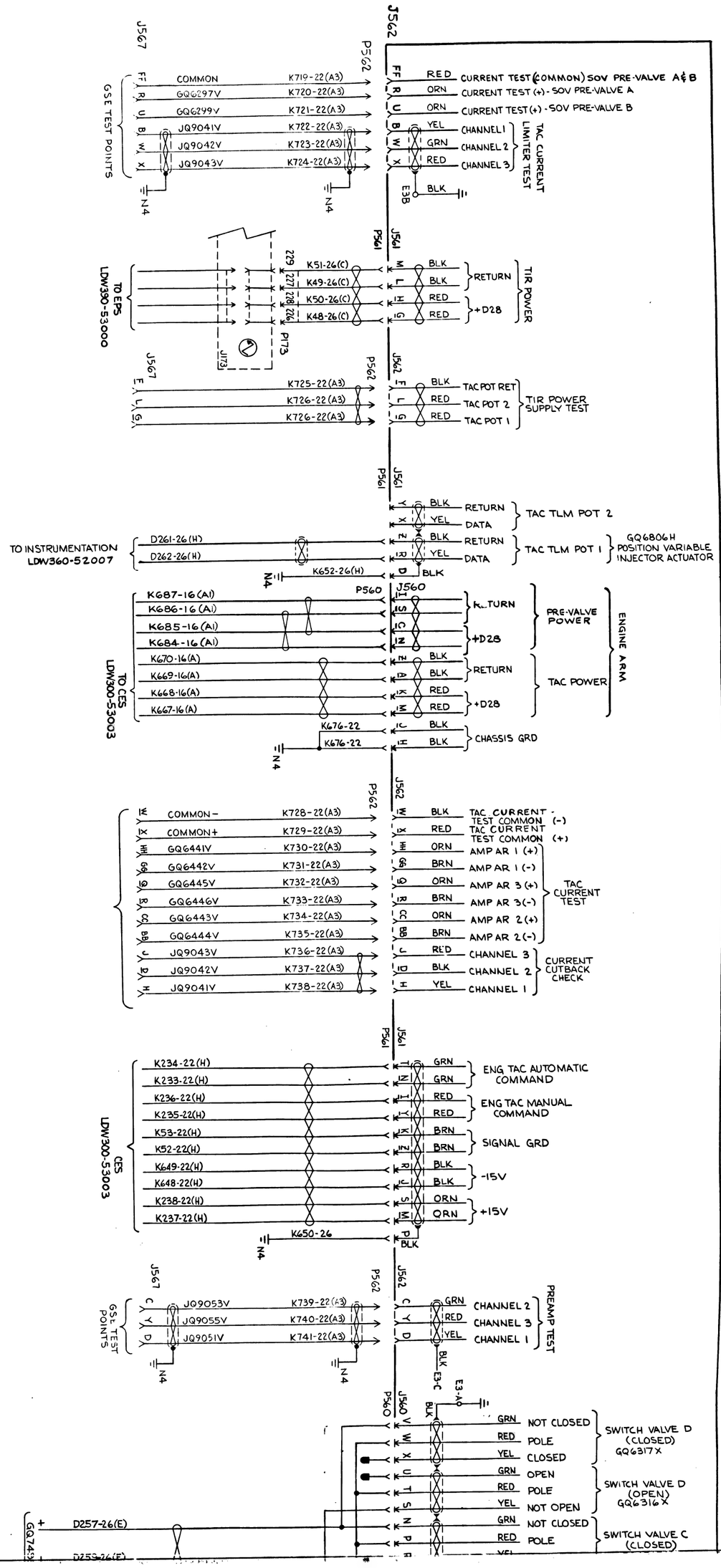
✓ ~~33. REFER TO SHEET NO. 8.00~~
~~LSC 270-821-23~~
~~BURST DISC RUPTURE PRESSURE = 1425 PSIG TO 1540 PSIG.~~

✓ 34. OVERBOARD DRAIN LINE SHALL HAVE OPEN END, EXACT DESCRIPTION OF TERMINAL TO BE PROVIDED LATER.

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-53000	D
SCALE		SHEET 3-01	

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01 NAS 9-1100



01 7403
NAS 9-1100

CODE IDENT 26512
LDW270-53000
SHEET 6.00

0247033
NAS 9-1100

GSE TEST POINTS
J567 P562

GQ6331V	K742-22(A3)	ORN	VALVE A CURRENT TEST (+)
GQ6332V	K743-22(A3)	BRN	VALVE A CURRENT TEST (-)
GQ6333V	K744-22(A3)	ORN	VALVE B CURRENT TEST (+)
GQ6334V	K745-22(A3)	BRN	VALVE B CURRENT TEST (-)
GQ6335V	K746-22(A3)	ORN	VALVE C CURRENT TEST (+)
GQ6336V	K747-22(A3)	BRN	VALVE C CURRENT TEST (-)
GQ6337V	K748-22(A3)	ORN	VALVE D CURRENT TEST (+)
GQ6338V	K749-22(A3)	BRN	VALVE D CURRENT TEST (-)
COMMON(+)	K750-22(A3)	RED	VALVE CURRENT TEST COMMON (+)
COMMON(-)	K751-22(A3)	BLK	VALVE CURRENT TEST COMMON (-)

J562 P562

J560 P560

S530-16(A1)		RED	+D28 — SOV POWER REDUNDANT FEED
S531-16(A1)		BLK	RETURN
K226-16(A1)		RED	+D28 — SOV POWER (ENGINE START)
K225-16(A1)		RED	
WB350-16(A1)		BLK	RETURN
WA350-16(A1)		BLK	

TO CES LDW300-53003

J561 P561

TO EPS LDW390-53000

K683-26(C) — BLK — RETURN
K682-26(C) — RED — +D28

P173 J173

GQ6510P PRESSURE, THRUST CHAMBER

TO INSTRUMENTATION LDW360-52007 & LDW360-52507

D249-26(H) — BLK — RETURN
D248-26(H) — YEL — DATA

J567 P562

K752-22(A3) — BLK
K753-22(A3) — YEL
CHAMBER PRESSURE CALIBRATE TEST

J563 P563

TO INSTRUMENTATION LDW360-52007

D689-26(H)		BLK	RETURN — PRESSURE OXIDIZER INJECTOR INLET GQ6506P
D688-26(H)		YEL	DATA
D694-26(H)		BLK	RETURN — PRESSURE FUEL INJECTOR INLET GQ6501P
D693-26(H)		YEL	DATA
		BLK	RETURN
DI779-26(C)		BLK	RETURN
DI780-26(C)		RED	+D28 — TRANSDUCER POWER
		RED	+D28
DI783-26(H)	-	BLK	RETURN — GQ7303D VIBRATION THRUST CHAMBER ZZ AXIS
DI782-26(H)	+	YEL	DATA
D4436-26(H)	-	BLK	RETURN — GQ7302D VIBRATION THRUST CHAMBER YY AXIS
D4435-26(H)	+	YEL	DATA
DI785-26(H)	-	BLK	RETURN — GQ7301D VIBRATION THRUST CHAMBER XX AXIS
DI784-26(H)	+	YEL	DATA
		BLK	
		YEL	CALIBRATE TEST — OXIDIZER INJECTOR PRESSURE
		BLK	
		YEL	CALIBRATE TEST — FUEL INJECTOR PRESSURE
		BLK	
		YEL	CALIBRATE TEST — VIBRATION HEAD END ZZ DATA NO.3
		BLK	
		YEL	CALIBRATE TEST — VIBRATION HEAD END YY DATA NO.2
		BLK	
		YEL	CALIBRATE TEST — VIBRATION HEAD END XX DATA NO.1

J564 P564

D4431-26(H)		YEL DATA	TEMP: ENG THET TI CASE NO. 2 GQ7209T
D4432-26(H)		GRN RET	
		RED PWR	
		YEL DATA	TEMP SENSOR NOZZLE HEAT SHIELD SPARE
		GRN RET	
		RED PWR	
D4429-26(H)		YEL DATA	TEMP: ENG THET TI

GSE TEST POINTS
J566 P566

JQ9055V	K740-22(A3)	RED	CHANNEL 3
JQ9051V	K741-22(A3)	YEL	CHANNEL 1
		GRN	CHANNEL 2
		BLK	

AMP TEST

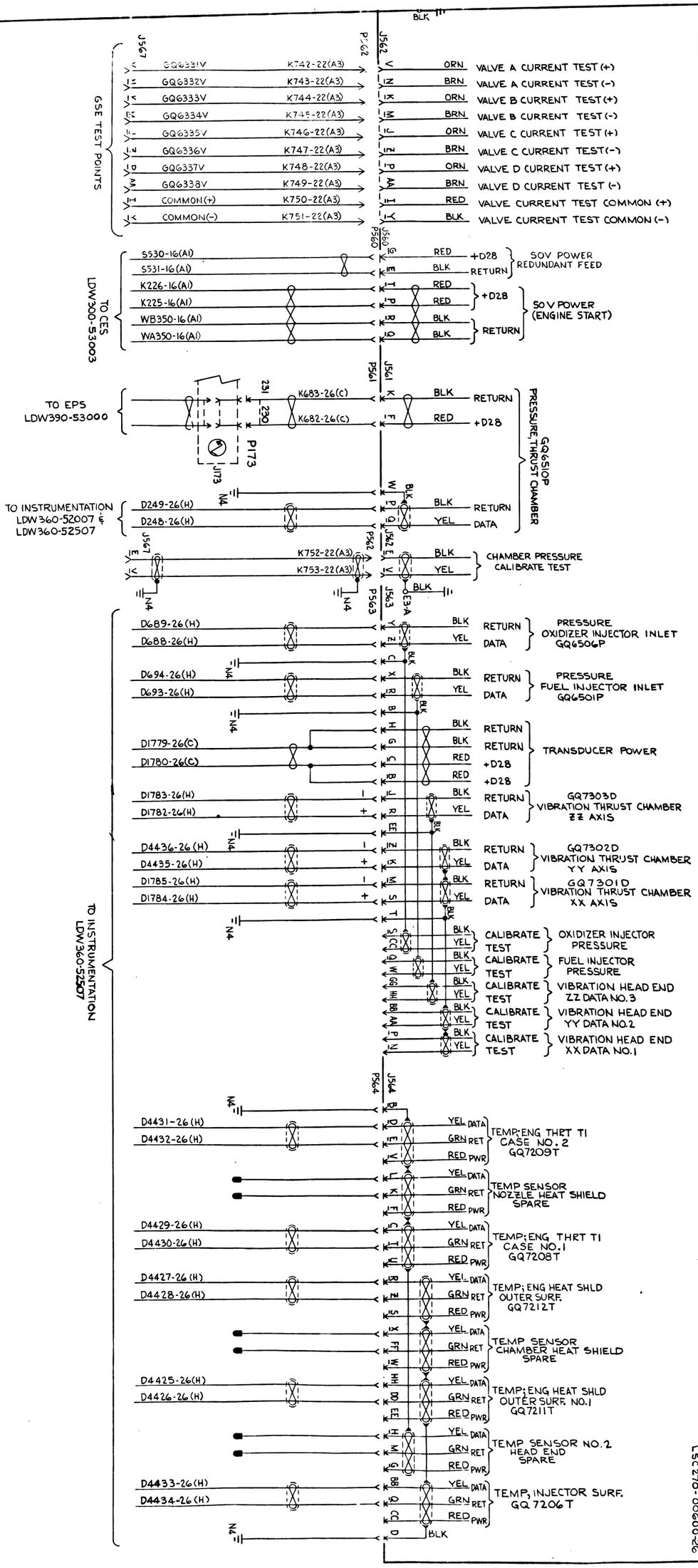
J560 P560

		GRN	NOT CLOSED — SWITCH VALVE D (CLOSED) GQ6317X
		RED	POLE
		YEL	CLOSED
		GRN	OPEN — SWITCH VALVE D (OPEN) GQ6316X
		RED	POLE
		YEL	NOT OPEN
D257-26(E)	+	GRN	NOT CLOSED — SWITCH VALVE C (CLOSED) GQ6315X
D259-26(E)	-	RED	POLE
		YEL	CLOSED
		GRN	OPEN — SWITCH VALVE C (OPEN) GQ6314X
		RED	POLE
		YEL	NOT OPEN
		GRN	NOT CLOSED — SWITCH VALVE B (CLOSED) GQ6309X
		RED	POLE
		YEL	CLOSED
D254-26(E)	+	GRN	OPEN — SWITCH VALVE B (OPEN) GQ6308X
D256-26(E)	-	RED	POLE
		YEL	NOT OPEN
		GRN	NOT CLOSED — SWITCH VALVE A (CLOSED) GQ6307X
		RED	POLE
		YEL	CLOSED
		GRN	OPEN — SWITCH VALVE A (OPEN) GQ6306X
		RED	POLE
		YEL	NOT OPEN

GQ7499U
GQ7498U
TO INSTRUMENTATION LDW360-52007

BLK

IDENT 26512
LDW270-53000 SHEET 6-00



10837103
NAS 9-1100

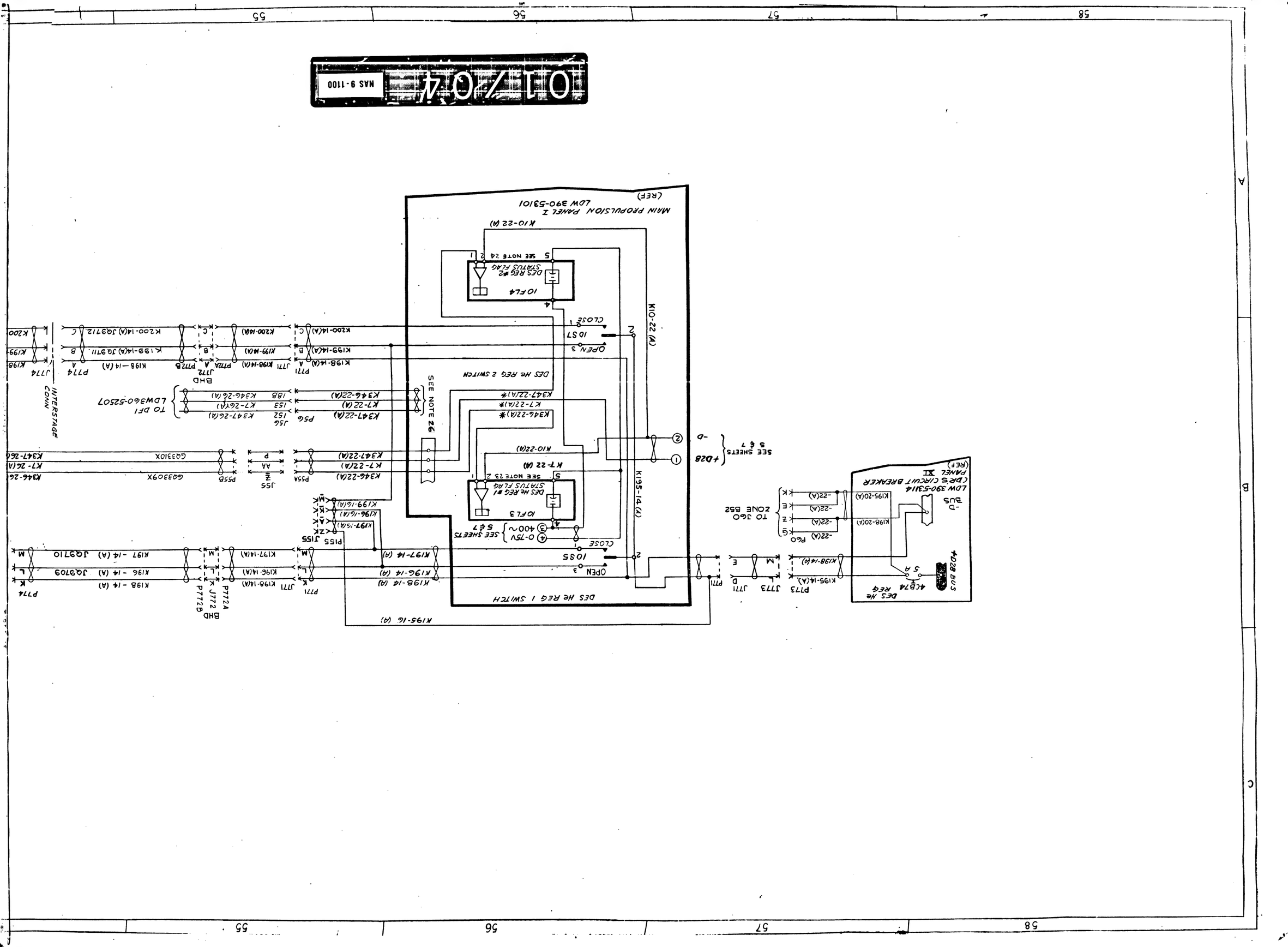
DESCENT

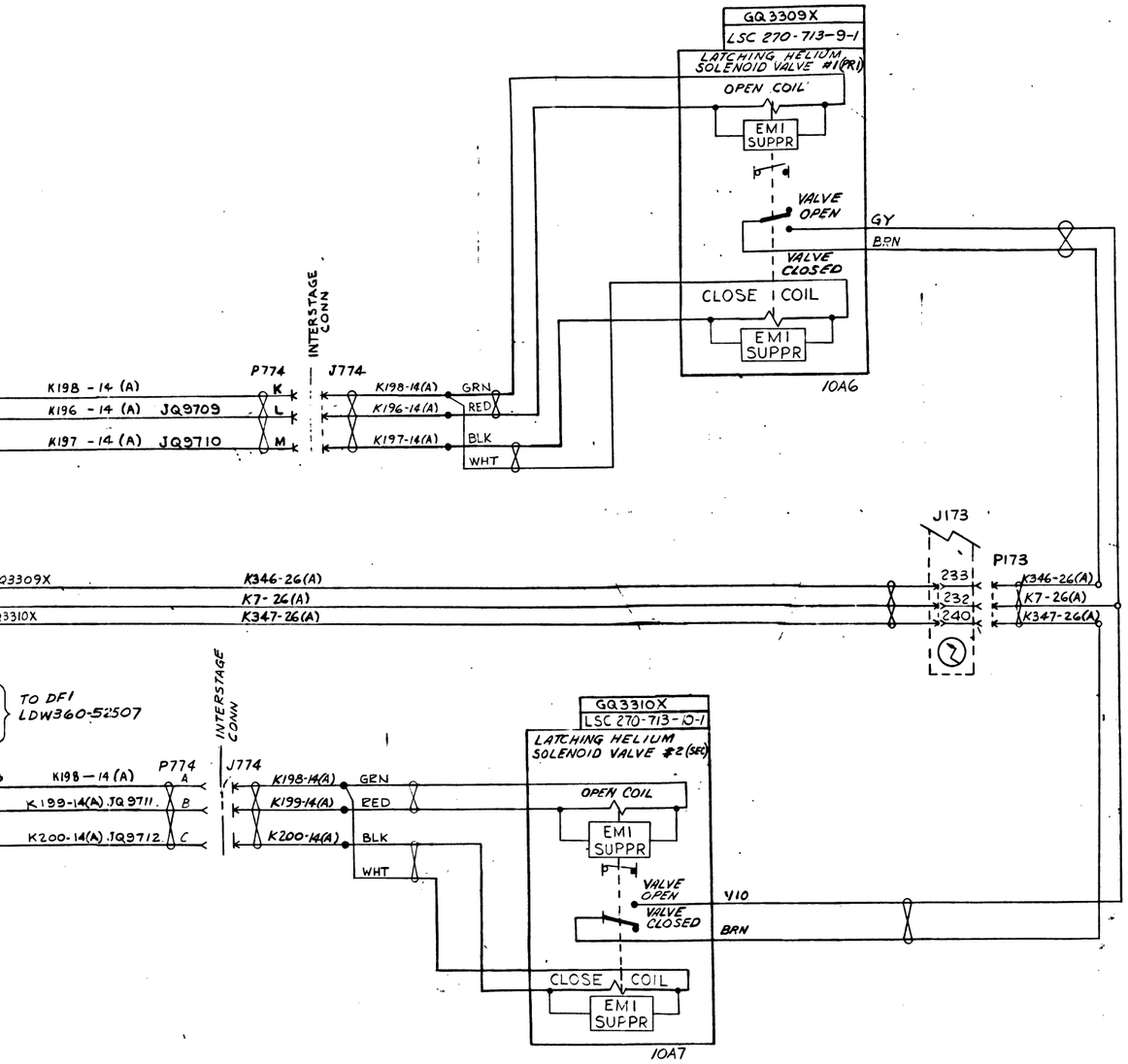
FOR NOTES SEE SH 3.00

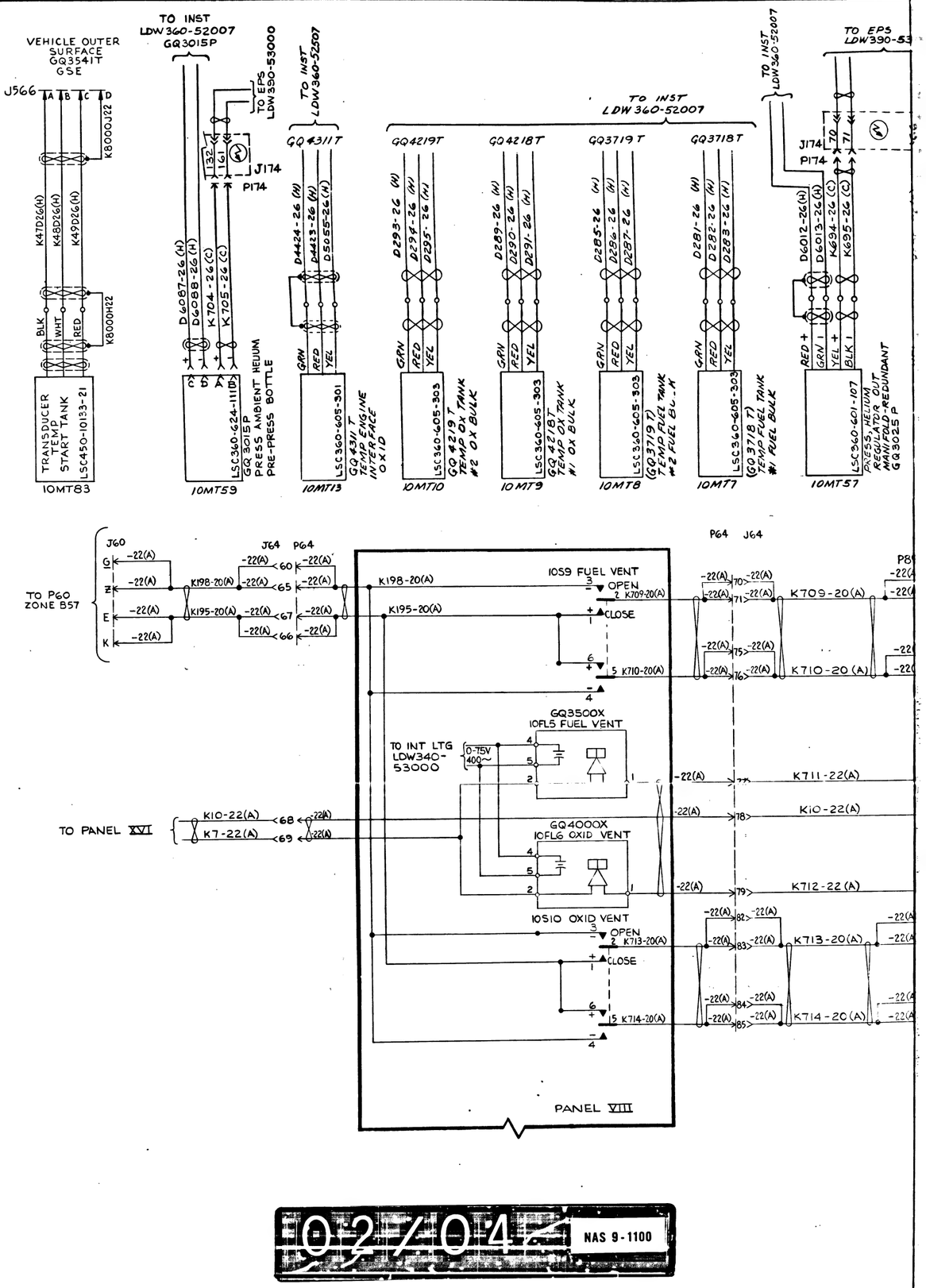
FOR ENGINEERING INFORMATION ONLY

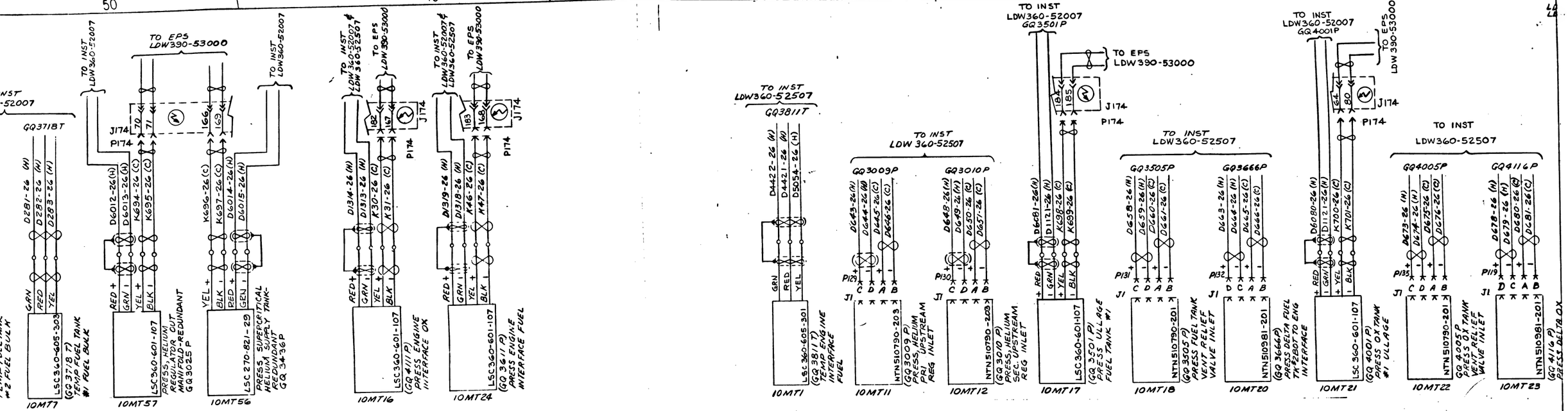
LEM			
MODEL OR TYPE ITEM	SIZE	CODE IDENT NO	
	J	26512	LDW270-53000 C
	SCALE		SHEET 6-00

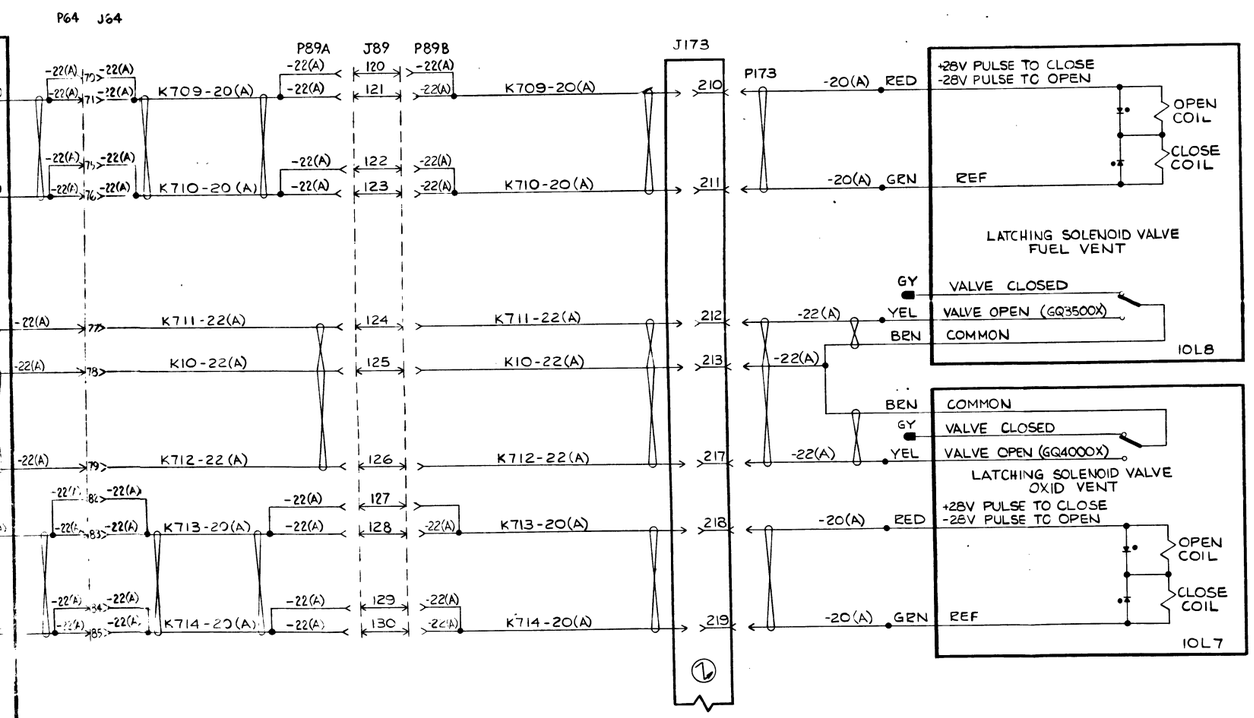
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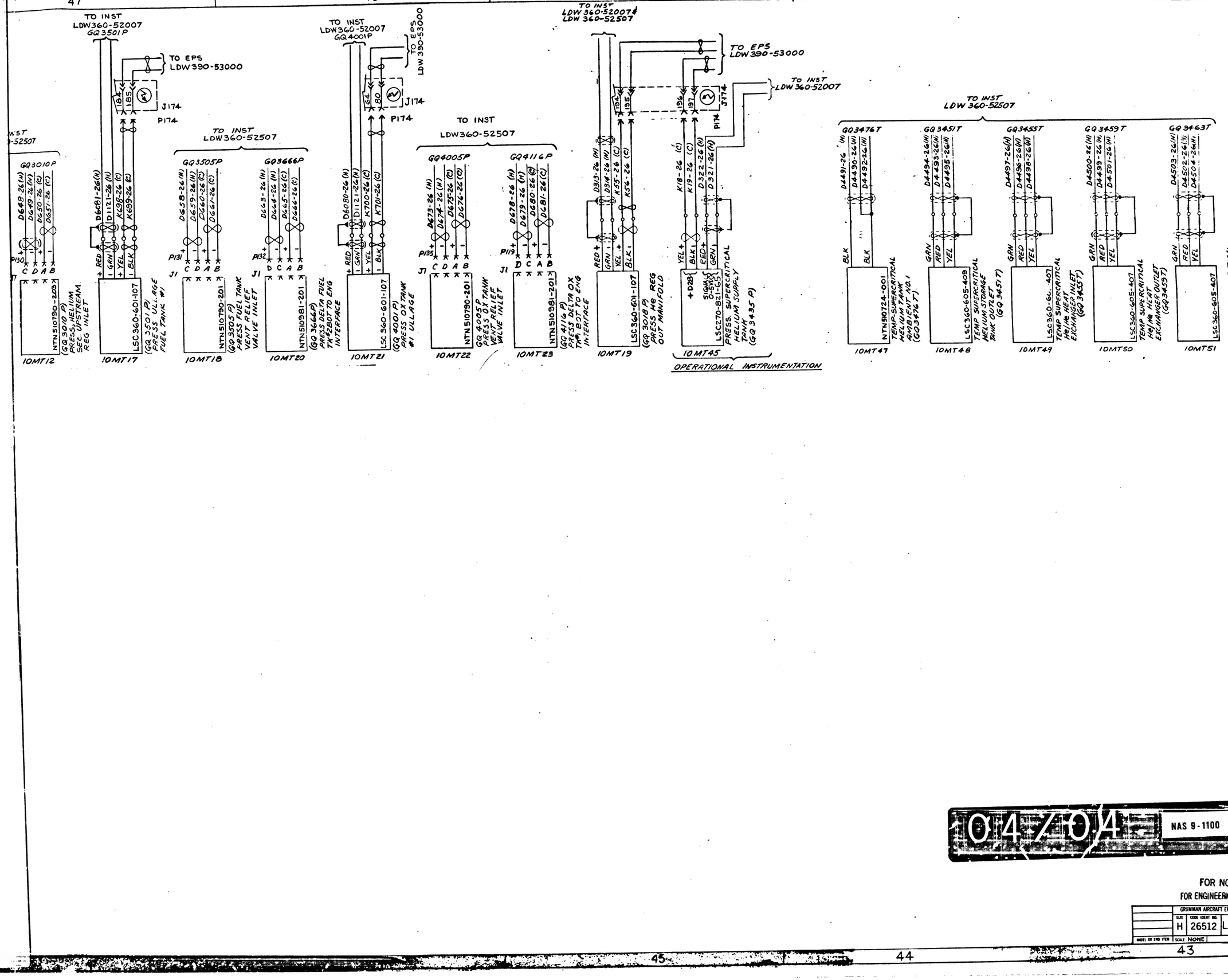

58
57
56
55
A
B
C
MAIN PROPULSION PANEL I
LDW 390-53101
(REF)
K10-22 (A)
10 FL4
DES REG #2 STATUS FLAG
SEE NOTE 24
CLOSE
OPEN
10 ST
K10-22 (A)
DES HE REG 2 SWITCH
K198-14(A)
K199-14(A)
K200-14(A)
P771
J771
A
B
C
K200-14(A) J097I2 C
K199-14(A) J0 97II B
K198-14 (A)
P772B
P772A
J772
BHD
P774
J774
INTERSTAGE CONN
TO DFI LDW360-52507
K347-22(A)
K7-22(A)
K346-22(A)
188
153
152
J56
P56
K346-26(A)
K7-26T(A)
K347-26(A)
SEE NOTE 26
K347-22(A)*
K7-22(A)*
K346-22(A)*
K10-22(A)
K7-22 (A)
SEE NOTE 23 2
10 FL3
DES HE REG #1 STATUS FLAG
SEE SHEETS 5 & 7
0-75V
400~
K195-14 (A)
K195-16 (A)
K197-14 (A)
K196-14 (A)
K199-16(A)
K196-16(A)
K197-16(A)
P155
J155
K
L
M
K198 -14 (A) J097I0
K196 -14 (A) J09709
K197 -14 (A) J097I0
K197-14(A)
K196-14(A)
K197-16(A)
P771
J771
P772B
P772A
J772
BHD
P774
K347-26(A)
K7- 26(A)
K346-26
GQ3330X
GQ3309X
P558
P559A
J55
P
AA
K347-22(A)
K7-22(A)
K346-22(A)
P559A
J55
SEE SHEETS 5 & 7
+D28
-D
10 ST
CLOSE
OPEN
10 SS
K10-22 (A)
K195-14 (A)
P771
J771
J773
M
E
D
P773
K198-14(A)
K195-14(A)
P60
-22(A)
G
K
-22(A)
E
-22(A)
Z
-22(A)
K
TO J60 ZONE B52
DES HE REG
4CB74
5 A
4028 BUS
-D BUS
LDW 390-53114
CDR'S CIRCUIT BREAKER PANEL XII
(REF)
K198-20(A)
K195-20(A)


GQ3309X
LSC 270-713-9-1
LATCHING HELIUM SOLENOID VALVE #1(PRI)
OPEN COIL
EMI SUPPR
VALVE OPEN
VALVE CLOSED
CLOSE COIL
EMI SUPPR
10AG
GY
BRN
INTERSTAGE CONN
P774
J774
K198 - 14 (A)
K196 - 14 (A) JQ9709
K197 - 14 (A) JQ9710
K198-14(A)
K196-14(A)
K197-14(A)
GRN
RED
BLK
WHT
J173
P173
233
232
240
K346-26(A)
K7-26(A)
K347-26(A)
Q3309X
3310X
TO DF1 LDW360-52507
INTERSTAGE CONN
K198-14 (A)
K199-14(A) JQ9711
K200-14(A) JQ9712
K198-14(A)
K199-14(A)
K200-14(A)
GRN
RED
BLK
WHT
GQ3310X
LSC 270-713-10-1
LATCHING HELIUM SOLENOID VALVE #2(SEC)
OPEN COIL
EMI SUPPR
VALVE OPEN
VALVE CLOSED
CLOSE COIL
EMI SUPPR
10A7
V10
BRN


VEHICLE OUTER SURFACE GQ3541T GSE
J566
K8000J22
K8000H22
K47D26(H)
K48D26(H)
K49D26(H)
BLK
WHT
RED
TRANSDUCER TEMP START TANK LSC450-10133-21
10MT83
TO INST LDW360-52007 GQ3015P
TO EPS LDW390-53000
D6087-26(H)
D6088-26(H)
K704-26(CC)
K705-26(CC)
J174
P174
LSC360-624-11105 GQ3015P PRESS AMBIENT HEUM PRE-PRESS BOTTLE
10MT59
TO INST LDW360-52507
GQ4311T
D4424-26(H)
D4423-26(H)
D5055-26(H)
GRN
RED
YEL
LSC360-605-301 GQ4311T GSE ENGINE INTERFACE OX10
10MT13
TO INST LDW360-52007
GQ4219T
GQ4218T
GQ3719T
GQ3718T
D293-26(H)
D294-26(H)
D295-26(H)
D289-26(H)
D290-26(H)
D291-26(H)
D285-26(H)
D286-26(H)
D287-26(H)
D281-26(H)
D282-26(H)
D283-26(H)
LSC360-605-303 GQ4219T TEMP OX TANK #2 OX BULK
10MT10
LSC360-605-303 GQ4218T TEMP OX TANK #1 OX BULK
10MT9
LSC360-605-303 (GQ3719T) TEMP FUEL TANK #2 FUEL BULK
10MT8
LSC360-605-303 (GQ3718T) TEMP FUEL TANK #1 FUEL BULK
10MT7
TO INST LDW360-52007
TO EPS LDW390-53
D6012-26(H)
D6013-26(CC)
K694-26(CC)
K695-26(CC)
RED +
GRN -
YEL +
BLK -
LSC360-601-107 PNEUMATIC CUT REGULATOR REDUNDANT GQ3025P
10MT57
TO P60 ZONE B57
J60
J64
P64
K198-20(A)
K195-20(A)
1059 FUEL VENT
OPEN
CLOSE
K709-20(A)
K710-20(A)
GQ3500X 10FL5 FUEL VENT
TO INT LTG LDW340-53000
0-75V 400~
K711-22(A)
K10-22(A)
GQ4000X 10FLG OXID VENT
K712-22(A)
10S10 OXID VENT
K713-20(A)
K714-20(A)
TO PANEL XVI
K10-22(A)
K7-22(A)
PANEL VIII


TO INST LDW360-52007
GQ3718T
D281-26 (W)
D282-26 (W)
D283-26 (W)
GRN
RED
YEL
LSC360-605-303
(GQ 3718 T)
TEMP FUEL TANK #1 FUEL BULK
10MT7
TO EPS LDW390-53000
J174
P174
70
71
166
167
D6012-26(H)
D6013-26(H)
K694-26 (C)
K695-26 (C)
RED +
GRN -
YEL +
BLK -
LSC360-601-107
PRESS, HELIUM REGULATOR OUT MANIFOLD-REDUNDANT GQ 3025 P
10MT57
K696-26 (C)
K697-26 (C)
D6014-26(H)
D6015-26(H)
YEL +
BLK -
RED +
GRN -
LSC 270-821-29
PRESS, SUPERCRITICAL HELIUM SUPPLY TANK-REDUNDANT GQ 3436P
10MT56
TO INST LDW360-52007 & LDW360-52507
TO EPS LDW390-53000
182
183
D1314-26 (W)
D1313-26 (C)
K30-26 (C)
K31-26 (C)
RED +
GRN -
YEL +
BLK -
LSC360-601-107
(GQ 4111 P)
PRESS ENGINE INTERFACE OX
10MT16
D1319-26 (W)
D1318-26 (W)
K46-26 (C)
K47-26 (C)
RED +
GRN -
YEL +
BLK -
LSC360-601-107
(GQ 3611 P)
PRESS ENGINE INTERFACE FUEL
10MT24
TO INST LDW360-52507
GQ3811T
D4422-26 (W)
D4421-26 (W)
D5054-26 (H)
GRN
RED
YEL
LSC360-605-301
(GQ 3811 T)
TEMP ENGINE INTERFACE FUEL
10MT1
GQ3009P
D643-26(W)
D644-26(W)
D645-26(C)
D646-26(C)
P129
J1
C D A B
NTN510790-203
(GQ 3009 P)
PRESS, HELIUM PRI UPSTREAM REG INLET
10MT11
GQ3010P
D648-26(W)
D649-26(C)
D650-26(C)
D651-26(C)
P130
J1
C D A B
NTN510790-203
(GQ 3010 P)
PRESS, HELIUM SEC UPSTREAM REG INLET
10MT12
TO EPS LDW390-53000
184
185
P174
D6681-26(W)
D1121-26(W)
K698-26 (C)
K699-26 (C)
RED +
GRN -
YEL +
BLK -
LSC360-601-107
(GQ 3501 P)
PRESS ULLAGE FUEL TANK #1
10MT17
GQ3505P
D658-26(W)
D659-26(C)
D660-26(C)
D661-26(C)
P131
J1
C D A B
NTN510790-201
(GQ 3505 P)
PRESS FUEL TANK VENT RELIEF VALVE INLET
10MT18
GQ3666P
D643-26(W)
D644-26(W)
D645-26(C)
D646-26(C)
P132
J1
D C A B
NTN510981-201
(GQ 3666P)
PRESS DELTA FUEL TK #2 TO ENG INTERFACE
10MT20
TO EPS LDW390-53000
164
80
P174
D6680-26(W)
D1121-26(W)
K700-26 (C)
K701-26 (C)
RED +
GRN -
YEL +
BLK -
LSC360-601-107
(GQ 4001 P)
PRESS OX TANK #1 ULLAGE
10MT21
GQ4005P
D673-26(W)
D674-26(W)
D675-26(C)
D676-26(C)
P135
J1
C D A B
NTN510790-201
(GQ 4005 P)
PRESS OX TANK VENT RELIEF VALVE INLET
10MT22
GQ4116P
D678-26(W)
D679-26(W)
D680-26(C)
D681-26(C)
P119
J1
D C A B
NTN510981-201
(GQ 4116 P)
PRESS DELTA OX


P64 J64
P89A J89 P89B
J173
P173
K709-20(A)
K710-20(A)
K711-22(A)
K10-22(A)
K712-22(A)
K713-20(A)
K714-20(A)
210
211
212
213
217
218
219
-20(A) RED
-20(A) GRN
-22(A) YEL
-22(A) BEN
+28V PULSE TO CLOSE
-28V PULSE TO OPEN
OPEN COIL
CLOSE COIL
REF
LATCHING SOLENOID VALVE FUEL VENT
VALVE CLOSED
VALVE OPEN (GQ3500X)
COMMON
10L8
LATCHING SOLENOID VALVE OXID VENT
VALVE CLOSED
VALVE OPEN (GQ4000X)
10L7



04704 NAS 9-1100

FOR NOTES SEE SH 3.00
FOR ENGINEERING INFORMATION ONLY

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK				
SIZE H	CODE IDENT NO. 26512	LDW270-53000	D
MODEL OR END ITEM	SCALE NONE	SHEET 8.00	

LDW270-53000D

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	APPD
		10.00					✓		RETRACED N.C. LAST REV WAS "D" 10-16-67 (SPEIRS 4-22-68)						
E	1	10.00	74A & D 76A & D				✓	E0E1 LCD1572	DELETED FLEX HOSE SYMBOLS ON GP9455; GP9461, 2, 3 & 4; GP9471, 2, 3 & 4.	LM3(33)	NOT	REQD	G. SPEIRS 4-23-68		
	2	10.00	76A 76D			✓		E0E2 LCD1574 C	DELETED: GP7615T, GP7625T, LSC270-826-9, LSC270-826-15 & LSC270-826-11 (2) ADDED: BALL JOINTS (11), LSC270-722						
	3	2.00 8.00	53B & C			✓		E0E3 LCD2377	IN F/D & B/M, 10AG, LSC270-713-9-3 WAS LSC270-713-9-1. 10A7, LSC270-713-10-3 WAS LSC270-713-10-1.						
	4	4.00	6C				✓	LE0270-65 LCD1982 A	IN F/D LSC270-820-13 WAS LSC270-820-11-1.						
	5	2.00 10.00	75D				✓	E0E5 LCD2485	LSC270-00500-10-3 WAS LSC270-00500-10-2. LDW270-53020 WAS LDW270-53010-3						
	6	9.00	67A 67B				✓	E0E6 LCD1754	IN F/D ADDED PIN DESIG, M, Q, T, N, P & W ON WIRES D365, D6081, D1121, D361, D6080 & D8000 AT P55A.						
	7	10.00	73B 74B			✓		E0E7 LCD2636	ADDED LSC270-00723, GP7723A & GP7724A TO SH 10.00						
	8	7.00 8.00 9.00 3.03	39C 52C 52A	& 32B			✓	E0E8	IN F/D ADDED "SEE NOTE 42" TO GSE C/O's. SH 3.03 ADDED NOTE 42	NOT	REQD				
	9	2.00 4.00	12B 10B 7BC 4.5B				✓		AT10L8 ADDED "FUEL VENT." AT10L7 ADDED "OXID VENT. AT10FL6 OXID (WAS) FUEL, ADDED GQ4000X. AT10FL5 ADDED GQ3500X. ADDED RESTRICTOR & BY-PASS. JQ9410 & JQ9412 WERE REVERSED. DELETED CAPS SHOWN IN ERROR. ADDED PISTON CAVITY VENT LINES. SH 1.00 OF 22 WAS 1.00 OF 21 ADDED SH 1.17	NOT REQD	NOT	REQD			

FOR CONTINUATION OF REVISIONS SEE SHEET 1.18

ENG 77.3 5-65

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

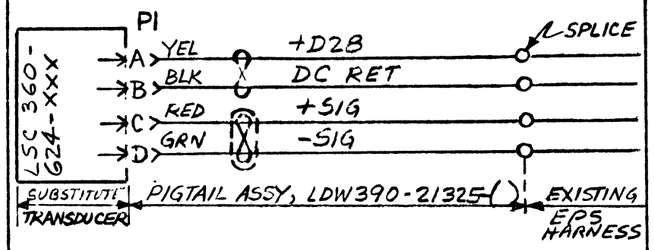
SIZE	CODE IDENT NO.		
B	26512	LDW270-53000	E

SCALE NONE SHEET 1.17

01 NAS 9-1100

NOTES(CONT.) (NOTES CHECKED ✓ APPLY TO THIS DWG)

40. PRESSURE TRANSDUCER LSC360-624-XXX MAY BE SUBSTITUTED FOR ANY PRESSURE TRANSDUCER LSC360-601-XXX SHOWN ON THIS LEVEL 3 (PER LAV-262-34 DATED 6-23-66). IN THIS EVENT, THE RESPECTIVE LSC360-601 WIRING DIAGRAM IS SUPERSEDED BY THE SUBSTITUTE TRANSDUCER WIRING DIAGRAM SHOWN BELOW:-



41. DUAL BURST DISC ASSY LSC270-821-87, IS SET TO BURST AT PRESSURES OF 1881 PSID TO 1967 PSID.

42. GSE VEHICLE INTERFACES ARE DEFINED IN THE FOLLOWING CHART:

VEHICLE CONN	GSE INTERFACE CABLE (REF)	GSE EQUIPMENT (REF)
J556	LDW410-11994-1-1	CHECKOUT EQUIPMENT ELECTRICAL LDW410-11930-1-1.
J1411	LDW410-12323-1	CHECKOUT EQUIPMENT ELECTRICAL LDW410-11930-1-1

(NOTE 42 CONTINUED)

J1822	LDW450-62375-1	LDW450-62372-1, CABINET ASSY, TEMP. READOUT SYSTEM.
	OR	
	LDW410-64595-1	LDW430-64572-1, FILL UNIT DISTRIBUTION ASSY, PRESSURE HELIUM PROPULSION SYSTEMS.
J566	LDW450-62376-1	LDW450-62372-1, CABINET ASSY, TEMP. READOUT SYSTEM.
	OR	
	LDW410-64597-1	LDW430-64572-3, FILL UNIT DISTRIBUTION ASSY, PRESSURE HELIUM PROPULSION SYSTEMS.

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-53000	E

SCALE | SHEET 3.03

ENG 72.1 6-64

01 NAS 9-1100

NOTES (CON'T) (NOTES CHECKED ✓ APPLY TO THIS DWG)

✓ 35. PRESSURE RELIEF VALVE REQUIREMENTS:
LDW270-53311-1 AND -2 (DESCENT STAGE)
LSC 270-717-13 AND -12 (ASCENT STAGE)

	LDW270-53311-1 AND -2	LSC270-717-13, 12
RATE FLOW PRESSURE	260 PSIG TO 275 PSIG @10.0 LBS PER MINUTE	250 PSIG
RESEAT PRESSURE	254 PSIG MINIMUM	225 PSIG MIN
BURST DISC RUPTURE PRESSURE	LSC270-830-1 260PSIG TO 275PSIG	226 PSIG TO 250 PSIG

✓ 36. INSTALL LINE TO OUTSIDE OF VEHICLE AND PROVIDE EXTERNAL GSE CONNECTION FOR SENSING ΔP, FUEL TO OXIDIZER AT ENGINE INTERFACE.

✓ 37. MECHANICAL SYMBOLS SHOWN ARE IN ACCORDANCE WITH MSFC STD-162 WITH THE FOLLOWING ADDITIONS:

FUEL LINE
HELIUM LINE
OXIDIZER LINE
DIFFERENTIAL PRESSURE TRANSDUCER

LINE SIZES (O.DIA)

(-2) = 1/8" (-4) = 1/4" (-6) = 3/8" (-8) = 1/2" (-10) = 5/8"

(-12) = 3/4" (-16) = 1" (-20) = 1 1/4" (-24) = 1 1/2" (-28) = 1 3/4"

(-32) = 2" (-5) = 5/16"

✓ 38. TUBING DATA:

SIZE O.DIA	PRESSURE MAXIMUM	WALL THICK.	MAT'L	SPEC
1/8				
1/4	4000	.028	304L	LSM-14-1001
1/4	250	.016		
3/8	4000	.042		
3/8	250	.016		
1/2	4000	.058		
1/2	250	.016		
5/8	250	.016		
3/4	250	.016	304L	LSM-14-1001

✓ 39. WIRE NUMBERS D365, D1319, D1121, D361 & D1314 ARE CONNECTED AS SHOWN FOR MANNED FLIGHTS ONLY. FOR UNMANNED FLIGHTS, DISCONNECT WIRES ABOVE AT PANEL SPLICE POINTS, CUT-OFF SPLICE ON LEADS TO LDW360-52507 AND SPLICE WIRES REFERENCED TO LDW360-52507 TO THOSE WIRES REFERENCED TO LDW360-52007 RESPECTIVELY. SHIELDS AND LEADS TO SWITCH AND METERS CAN BE CAPPED AND STOWED.

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L.I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-53000	F

SCALE NONE SHEET 3.02

THIS IS AN ORIGINAL DRAWING

NAS 9-1100

13 12 11 10 9

D C B A

GQ3435P (TELEMETRY)
TANK-PRESSURE HELIUM SUPPLY
LSC 270-821-65

HELIUM FILL COUPLING
LSC270-821-31 GQ9401

HELIUM FILL VENT COUPLING
LSC 270-821-41 GQ 9407

GQ3451T
LSC360-605-409

SEE NOTE 21
EXPLOSIVE VALVE
LSC270-714-3
LSC270-714-113 BOOSTER CARTRIDGE(2)

GQ9409

GQ9405

GQ3476T
NTN 510724-001

TEST POINT DISCONNECT
LSC 270-813-31 (2)

GQ3310X
SECONDARY LATCHING SOLENOID VALVE
NORM CLOSED
LSC 270-713-10-1

GQ3505P
RELIEF VALVE
VENT PRESSURE
NTN 510790-201

GQ3501P
ULLAGE PRESSURE
LSC360-624-107 OR
LSC360-601-107

GQ3010P
REGULATOR INLET PRESSURE
NTN 510790-203

GQ3018P
REGULATOR OUTLET PRESSURE
LSC360-601-107
OR
LSC 360-624-107

SEE NOTE
LSC270-8
EXPLOSIV
VALVE

BY-PASS
REMOVED BEFORE
FLIGHT

LSC 270-813-24
TEST POINT

GQ 9433

BRAZED
CAPS (2)

GQ9441

V5

GQ3025P
LSC360-624-107
OR
LSC360-601-107

LSC270-817-4
CHECK VALVE

GQ9432

GQ9445

LDW270-53311-2
PRESSURE
RELIEF VALVE
SEE NOTE 35

GQ 9447

GQ 9446

LSC270-813-23 DISCONNECT
TEST POINT GQ 9425

LDW270-53311-1
PRESSURE
RELIEF VALVE
SEE NOTE 35

GQ9444

GQ 9431

V7

GQ9440

GQ9430

BRAZED
CAPS (2)

LSC270-813-25
TEST POINT (4)

LSC270-817-3
CHECK VALVE

BY-PASS
REMOVED BEFORE
FLIGHT

LSC270-712-1 FILTER

LSC270-714-3 EXPLOSIVE
VALVE
LSC270-714-113 BOOSTER
CARTRIDGE(2)

VACUUM SENSING PORT
JQ 9410

LSC360-624-111
GQ3015P

VACUUM SENSING PORT
JQ 9412

GQ3541T
LSC450-10133-21 (G.S.E.)
TEMPERATURE
TRANSDUCER

LSC270-8143 FILTER

LSC 270-825-1
AMBIENT HELIUM TANK

LSC 270-827-1
PRESSURE REDUCER
SEE NOTE 32

PRIMARY LATCHING SOLENOID VALVE
GQ3309X NORM. OPEN
LSC270-713-9-1

LSC270-813-31 HELIUM FILL
GQ9415

NTN 510790-203
REGULATOR INLET PRESSURE
GQ3009P

NTN 510790-201
RELIEF VALVE
VENT PRESSURE
GQ4005P

ULLAGE PR
GQ4001P
LSC 360-
OR
LSC 360-

LSC270-821-29
PRESS. TRANSDUCER
GQ 3436P
(LEM DISPLAY)

VACUUM SEAL AND
PRESSURE RELIEF

GQ3455T
LSC360-605-407

GQ3459T
LSC360-605-407

THRUST NEUTRALIZER
GQ 9408

TEST POINT DISCONNECT
LSC270-813-31 GQ 9403

DUAL BURST
DISC ASSY
LSC270-821-87

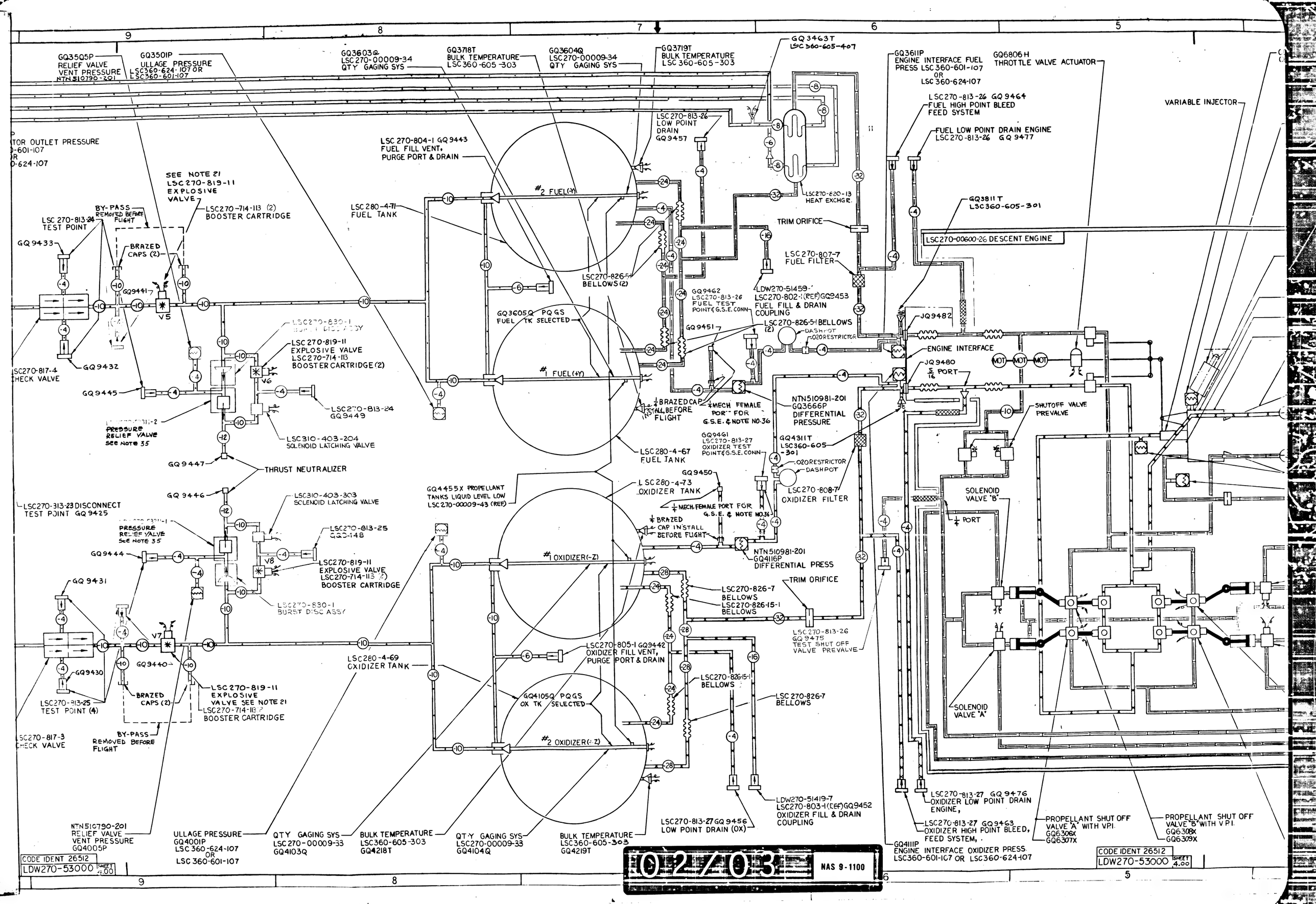
HELIUM TANK ASSY
LSC 270-821-53-1

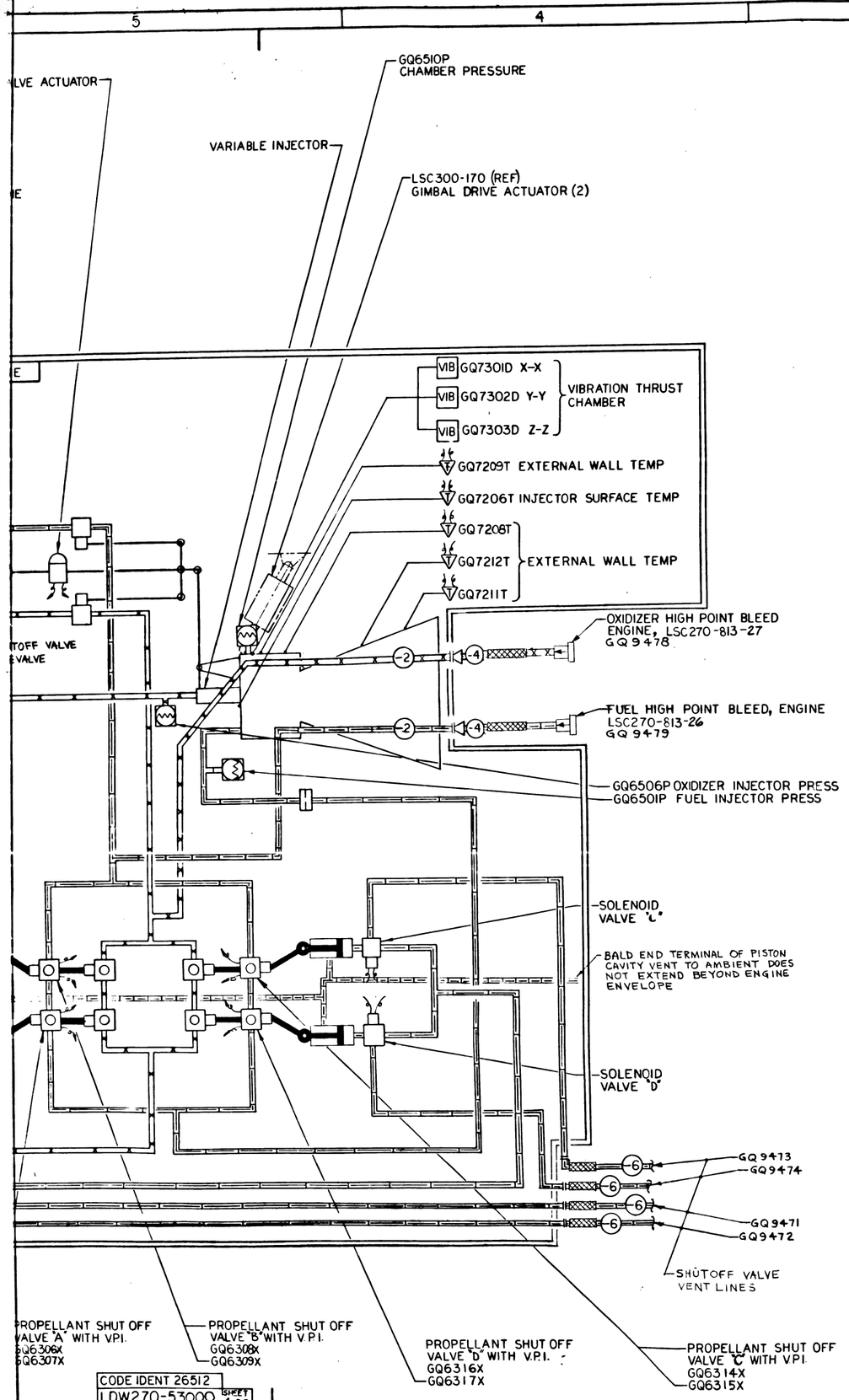
TEST POINT
DISCONNECT
LSC 270-813-31
GQ 9404

01/03

NAS 9-1100

CODE IDENT 26512
LDW270-53000 SHEET 4.00


GQ3505P RELIEF VALVE VENT PRESSURE NTN510790-201
GQ3501P ULLAGE PRESSURE LSC360-624-107 OR LSC360-601-107
GQ3603Q LSC270-00009-34 QTY GAGING SYS
GQ3718T BULK TEMPERATURE LSC360-605-303
GQ3604Q LSC270-00009-34 QTY GAGING SYS
GQ3719T BULK TEMPERATURE LSC360-605-303
GQ3463T LSC360-605-407
GQ3611P ENGINE INTERFACE FUEL PRESS LSC360-601-107 OR LSC360-624-107
GQ6806H THROTTLE VALVE ACTUATOR
VARIABLE INJECTOR
LSC270-813-26 GQ9464 FUEL HIGH POINT BLEED FEED SYSTEM
FUEL LOW POINT DRAIN ENGINE LSC270-813-26 GQ9477
LSC270-813-26 LOW POINT DRAIN GQ9457
LSC270-804-1 GQ9443 FUEL FILL VENT, PURGE PORT & DRAIN
SEE NOTE 21 LSC270-819-11 EXPLOSIVE VALVE
LSC270-714-113 (2) BOOSTER CARTRIDGE
BY-PASS REMOVED BEFORE FLIGHT
LSC270-813-24 TEST POINT
BRAZED CAPS (2)
GQ9433
GQ9441
V5
GQ9432
LSC270-817-4 CHECK VALVE
GQ9445
LSC270-830-1 BURST DISC ASSY
LSC270-819-11 EXPLOSIVE VALVE LSC270-714-113 BOOSTER CARTRIDGE (2)
V6
LSC270-813-24 GQ9449
LSC270-811-2 PRESSURE RELIEF VALVE SEE NOTE 35
LSC310-403-204 SOLENOID LATCHING VALVE
GQ9447
THRUST NEUTRALIZER
GQ9446
LSC270-313-23 DISCONNECT TEST POINT GQ9425
LSC310-403-303 SOLENOID LATCHING VALVE
LSC270-811-1 PRESSURE RELIEF VALVE SEE NOTE 35
LSC270-813-25 GQ9448
GQ9444
V8
LSC270-819-11 EXPLOSIVE VALVE LSC270-714-113 (2) BOOSTER CARTRIDGE
LSC270-830-1 BURST DISC ASSY
GQ9431
V7
GQ9430
LSC270-813-25 TEST POINT (4)
BRAZED CAPS (2)
LSC270-819-11 EXPLOSIVE VALVE SEE NOTE 21
LSC270-714-113 BOOSTER CARTRIDGE
BY-PASS REMOVED BEFORE FLIGHT
LSC270-817-3 CHECK VALVE
LSC280-4-71 FUEL TANK
#2 FUEL(+Y)
#1 FUEL(+Y)
LSC270-826-5 BELLOWS (2)
GQ3605Q PQGS FUEL TK SELECTED
GQ9462 LSC270-813-26 FUEL TEST POINT & G.S.E. CONN
LDW270-51459-1 LSC270-802-1 (REF) GQ9453 FUEL FILL & DRAIN COUPLING
GQ9451
LSC270-826-5 BELLOWS (2)
DASHPOT .020 RESTRICTOR
1/4 BRAZED CAP INSTALL BEFORE FLIGHT
1/4 MECH FEMALE PORT FOR G.S.E. & NOTE NO.36
NTN510981-201 GQ3666P DIFFERENTIAL PRESSURE
GQ9461 LSC270-813-27 OXIDIZER TEST POINT & G.S.E. CONN
GQ4311T LSC360-605-301
.020 RESTRICTOR
DASHPOT
LSC270-808-7 OXIDIZER FILTER
LSC280-4-67 FUEL TANK
GQ9450
LSC280-4-73 OXIDIZER TANK
GQ4455X PROPELLANT TANKS LIQUID LEVEL LOW LSC270-00009-43 (REF)
#1 OXIDIZER(-Z)
#2 OXIDIZER(-Z)
LSC270-826-7 BELLOWS
LSC270-826-15-1 BELLOWS
TRIM ORIFICE
LSC270-813-26 GQ9475 TEST SHUT OFF VALVE PREVALVE
LSC270-805-1 GQ9442 OXIDIZER FILL VENT, PURGE PORT & DRAIN
LSC280-4-69 OXIDIZER TANK
GQ4105Q PQGS OX TK SELECTED
LSC270-826-15-1 BELLOWS
LSC270-826-7 BELLOWS
LSC270-813-27 GQ9456 LOW POINT DRAIN (OX)
LDW270-51419-7 LSC270-803-1 (REF) GQ9452 OXIDIZER FILL & DRAIN COUPLING
LSC270-00600-26 DESCENT ENGINE
GQ3811T LSC360-605-301
LSC270-807-7 FUEL FILTER
JQ9482
ENGINE INTERFACE
JQ9480
5/16 PORT
MOT MOT MOT
SHUTOFF VALVE PREVALVE
SOLENOID VALVE "B"
1/4 PORT
SOLENOID VALVE "A"
LSC270-813-27 GQ9476 OXIDIZER LOW POINT DRAIN ENGINE,
LSC270-813-27 GQ9463 OXIDIZER HIGH POINT BLEED, FEED SYSTEM,
GQ4111P ENGINE INTERFACE OXIDIZER PRESS LSC360-601-107 OR LSC360-624-107
PROPELLANT SHUT OFF VALVE "A" WITH V.P.I. GQ6306X GQ6307X
PROPELLANT SHUT OFF VALVE "B" WITH V.P.I. GQ6308X GQ6309X
NTN510790-201 RELIEF VALVE VENT PRESSURE GQ4005P
ULLAGE PRESSURE GQ4001P LSC360-624-107 OR LSC360-601-107
QTY GAGING SYS LSC270-00009-33 GQ4103Q
BULK TEMPERATURE LSC360-605-303 GQ4218T
QTY GAGING SYS LSC270-00009-33 GQ4104Q
BULK TEMPERATURE LSC360-605-303 GQ4219T
CODE IDENT 26512
LDW270-53000 SHEET 4.00
02/03
NAS 9-1100
CODE IDENT 26512
LDW270-53000 SHEET 4.00



CODE IDENT 26512
LDW270-53000 SHEET 4.00

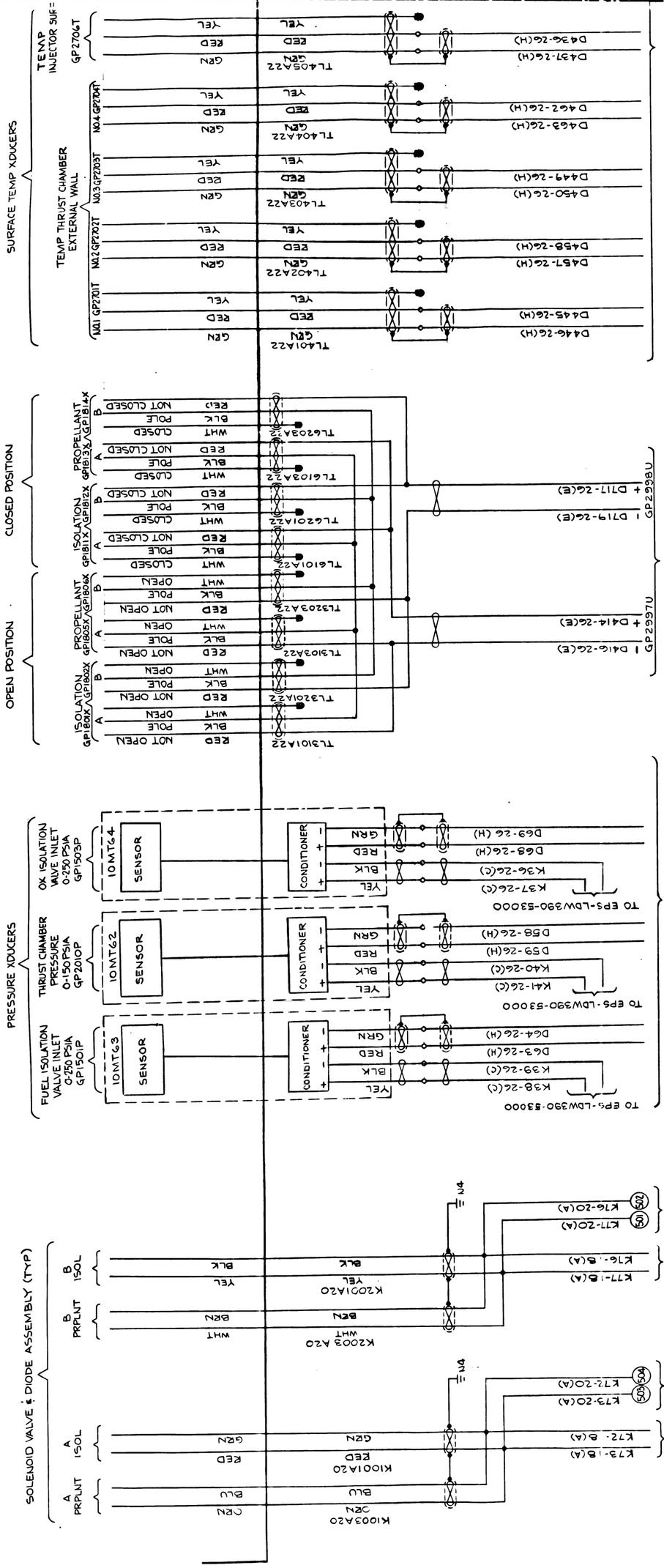
03703 NAS 9-1100

DESCENT FLUID LINES-BASIC
FOR ELECTRICAL LINES SEE SHEETS 6&8
SUPERCRITICAL PRESSURIZATION

FOR ENGINEERING INFO. ONLY

LEM	GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L.I., N.Y.			
	SIZE J	CODE IDENT NO 26512	LDW270-53000	F
MODEL OR END ITEM	SCALE NONE		SHEET 4.00	

LDW270-53000F


SURFACE TEMP XDUCERS
TEMP INJECTOR SURF
GP2704T
TEMP THRUST CHAMBER EXTERNAL WALL
NO4 GP2704T
NO3 GP2703T
NO2 GP2702T
NO1 GP2701T
YEL
RED
GRN
TL4054A22
TL4044A22
TL4034A22
TL4024A22
TL4014A22
D436-26(H)
D437-26(H)
D462-26(H)
D463-26(H)
D449-26(H)
D450-26(H)
D457-26(H)
D458-26(H)
D445-26(H)
D446-26(H)
TO INSTRUMENTATION LDW360-52507
VALVE POSITION INDICATING SWITCHES
CLOSED POSITION
OPEN POSITION
PROPELLANT GP1814X
PROPELLANT GP1813X
ISOLATION GP1812X
ISOLATION GP1811X
PROPELLANT GP1806X
PROPELLANT GP1805X
ISOLATION GP1802X
ISOLATION GP1801X
B
A
NOT CLOSED
CLOSED
BLK
POLE
WHT
RED
NOT OPEN
OPEN
TL6203A22
TL6103A22
TL6202A22
TL6102A22
TL6201A22
TL6101A22
TL3203A22
TL3103A22
TL3202A22
TL3102A22
TL3201A22
TL3101A22
+ D717-26(E)
- D719-26(E)
+ D414-26(E)
- D416-26(E)
GP2998U
GP2997U
TO INSTRUMENTATION LDW360-52007
SOLENOID VALVE & DIODE ASSEMBLY (TYP)
B ISOL
B PRPLNT
A ISOL
A PRPLNT
BLK
YEL
BRN
WHT
GRN
BLU
RED
K2003A20
K2001A20
K1003A20
K1001A20
N4
K77-18(A)
K76-18(A)
K73-18(A)
K72-18(A)
FROM CES LDW300-53003
K77-20(A)
K76-20(A)
K73-20(A)
K72-20(A)
SEE SHEET 7.00
501
502
503
504
PRESSURE XDUCERS
FUEL ISOLATION VALVE INLET 0-250 PSIA GP1501P
OX ISOLATION VALVE INLET 0-250 PSIA GP1503P
THRUST CHAMBER PRESSURE 0-150 PSIA GP2010P
10MT63
10MT62
10MT64
SENSOR
CONDITIONER
K38-26(C)
K39-26(C)
D63-26(H)
D64-26(H)
K40-26(C)
K41-26(C)
D58-26(H)
D59-26(H)
K36-26(C)
K37-26(C)
D68-26(H)
D69-26(H)
TO EPS-LDW390-53000
TO INSTRUMENTATION LDW360-52007 & LDW360-52507

SURFACE TEMP XDUCERS

TEMP THRUST CHAMBER EXTERNAL WALL

NO.2 GP2702T — NO.3 GP2703T — NO.4 GP2704T

TEMP INJECTOR SURF GP2706T

PRESSURE XDUCERS

OXIDIZER INJECTOR INLET 0-250 PSIA GP2006P — 10MT61 SENSOR

FUEL INJECTOR INLET 0-250 PSIA GP2001P — 10MT60 SENSOR

CONDITIONER (+ − + −)

TL401A22 GRN — TL403A22 GRN — TL404A22 GRN — TL405A22 GRN

GRN RED YEL

YEL BLK RED GRN

D457-26(H) D458-26(H) D450-26(H) D449-26(H) D463-26(H) D462-26(H) D437-26(H) D436-26(H) D442-26(C) D443-26(C) D443-26(H) D441-26(H) D455-26(C) D456-26(C) D453-26(H) D454-26(H)

TO INSTRUMENTATION LDW360-52507

VIBRATION, THRUST CHAMBER

GP2803D Z-Z AXIS — TL333A29 — J500 / P500 — 10W3 — P503 — GP2803D VIB AMPLIFIER — J512 / P512

GP2802D Y-Y AXIS — TL332A29 — J502 / P502 — 10W2 — P505 — GP2802D VIB AMPLIFIER — J510 / P510

GP2801D X-X AXIS — TL331A29 — J501 / P501 — 10W1 — P504 — GP2801D VIB AMPLIFIER — J511 / P511

ASCENT ENGINE 10A2

KP +D28 — KT POWER GND — KC OUTPUT — KD SIGNAL GND — KE INT CASE GND — KB SPARE

D1222-26(C) D1223-26(C) D1224-26(H) D1225-26(H) — D1232-26(C) D1233-26(C) D1234-26(H) D1235-26(H) — D1228-26(C) D1227-26(C) D1229-26(H) D1230-26(H)

TO INSTRUMENTATION LDW360-52507

TO C.E.S. LDW300-53003

S551-20(A)CS2A S556-20(A)CS2A S554-20(A)CS2A S558-22(F) S559-22(F) — S553-20(A)CS2B S557-20(A)CS2B S555-20(A)CS2B S560-22(F) S561-22(F)

P518 / J517 — P517 / J518 — D F A K H G — SIG + −

GSE STIMULI

ROUGH COMBUSTION CUT-OFF CONTROL ASSY

NETWORK & AMPLIFIER

B A — 10A8

ACCEL B — ACCEL A

ASCENT

FOR NOTES SEE SH 3.00

FOR ENGINEERING INFORMATION ONLY

02/02 NAS 9-1100

GRUMMAN AIRCRAFT ENG'G BETHPAGE, L.I. N.Y.

SIZE J | CODE IDENT NO 26512 | LDW270-53000 | REV G

SCALE NONE | SHEET 5.00

CODE IDENT 26512 | LDW270-53000 | SHEET 5.00

LDW270-53000G — LDW270-53000G — A

SYS ENGR'S CIRCUIT BREAKER PANEL XVI

LDW 390-53114 (REF)

-D BUS

+D28 BUS

4CB53 5A

ASC He REG

4CB103 2A

TEMP/PRESS DISP

+D28 BUS

TO PNL VIII SHEET 8.00 ZONE B52

MAIN PROPULSION PANEL NO. I

LDW390-53101

ASC. He REG. SWITCH 1

ASC. He REG. SWITCH 2

OPEN

CLOSED

1053

1054

SEE SHEET 6 & 7

0-75V 400~

1OFL1

ASC REG NO.1 STATUS FLAG (SEE NOTE 23)

1OFL2

ASC REG NO.2 STATUS FLAG (SEE NOTE 23)

TO INTERNAL LIGHTING LDW 340-53000 0-75V, 400~

J55 BHD CONN

P55A

P55B

GP0318X FROM INST. LDW360-52007

GP0320X FROM INST LDW360-52007

LATCHING HELIUM SOLENOID VALVE NO.1 (PRI) LSC270-713-31

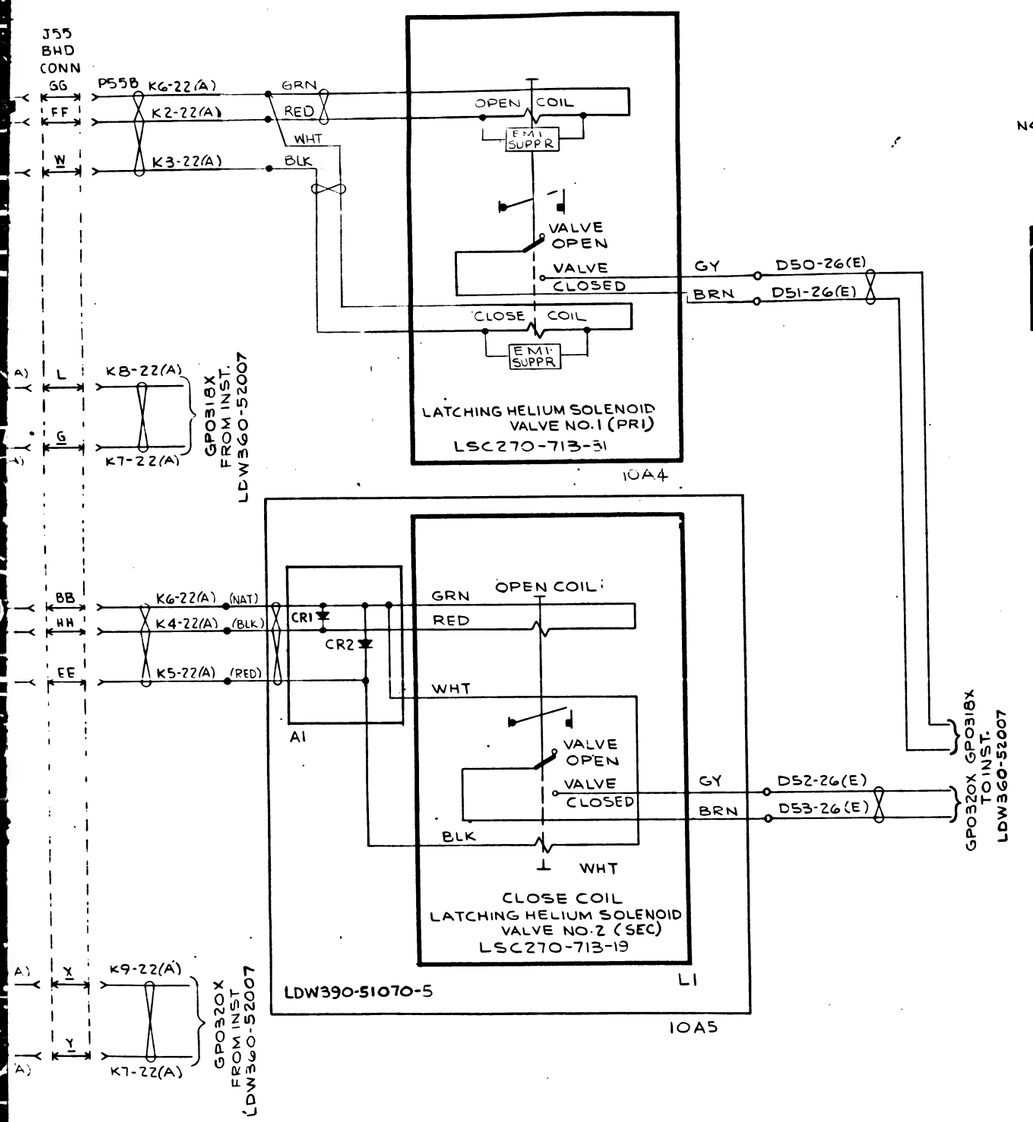
10A4

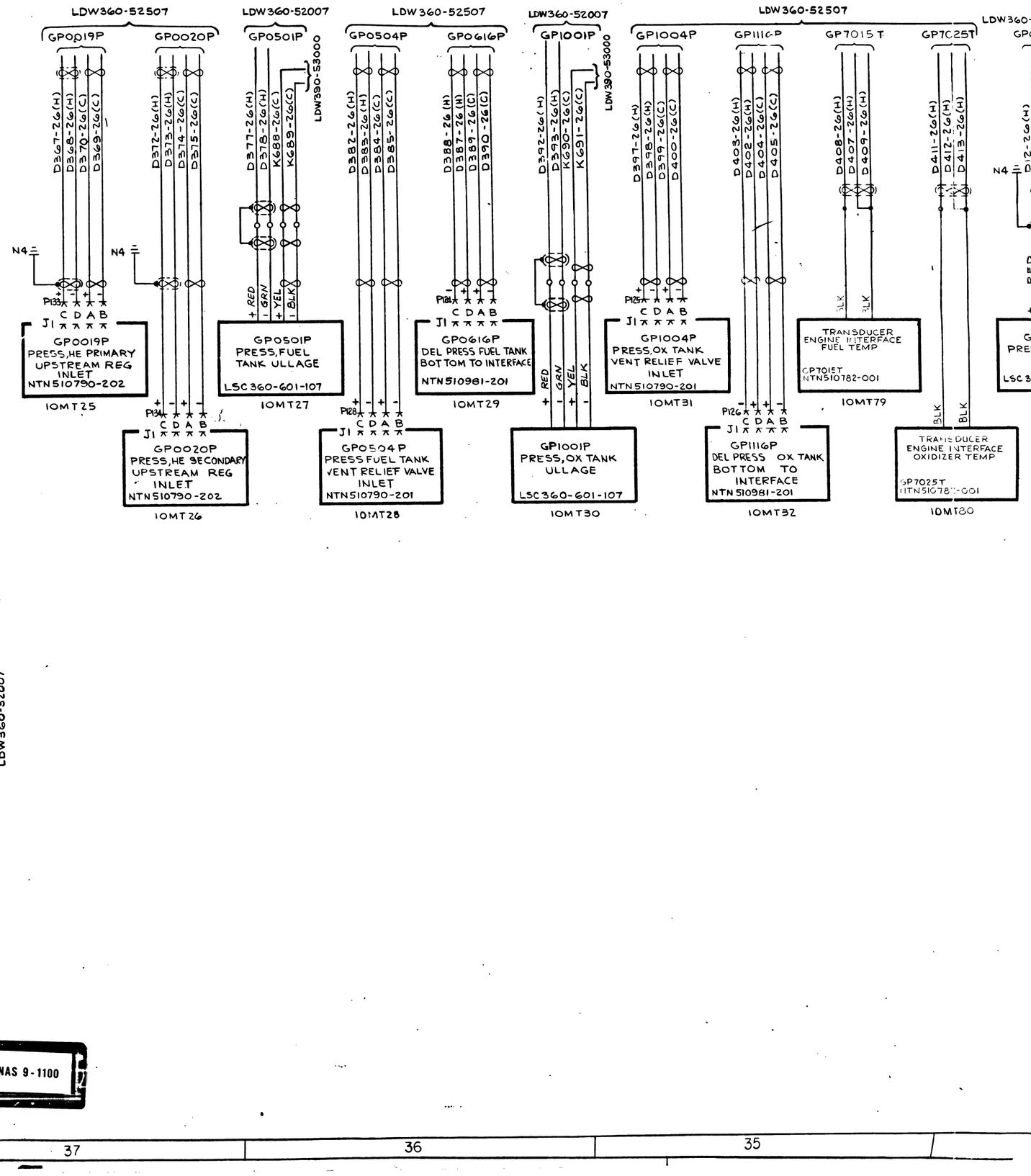
CLOSE COIL LATCHING HELIUM SOLENOID VALVE NO.2 (SEC) LSC270-713-19

LDW390-51070-5

10A5

01/04 NAS 9-1100


J55
BHD
CONN
GG
FF
W
P558
K6-22(A)
K2-22(A)
K3-22(A)
GRN
RED
WHT
BLK
OPEN COIL
EMI SUPPR
VALVE OPEN
VALVE CLOSED
CLOSE COIL
EMI SUPPR
GY
BRN
D50-26(E)
D51-26(E)
LATCHING HELIUM SOLENOID VALVE NO.1 (PRI)
LSC270-713-31
10A4
D
L
G
K8-22(A)
K7-22(A)
GP0318X FROM INST. LDW360-52007
BB
HH
EE
K6-22(A) (NAT)
K4-22(A) (BLK)
K5-22(A) (RED)
CR1
CR2
A1
GRN
RED
WHT
BLK
OPEN COIL
VALVE OPEN
VALVE CLOSED
GY
BRN
D52-26(E)
D53-26(E)
GP0320X GP0318X TO INST. LDW360-52007
CLOSE COIL
LATCHING HELIUM SOLENOID VALVE NO.2 (SEC)
LSC270-713-19
L1
LDW390-51070-5
10A5
A)
X
Y
K9-22(A)
K7-22(A)
GP0320X FROM INST LDW360-52007


LDW360-52507
GP0019P
GP0020P
D367-26(H)
D368-26(H)
D370-26(C)
D369-26(C)
D372-26(H)
D373-26(H)
D374-26(C)
D375-26(C)
N4
P133
C D A B
J1
GP0019P
PRESS,HE PRIMARY UPSTREAM REG INLET
NTN510790-202
10MT25
GP0020P
PRESS,HE SECONDARY UPSTREAM REG INLET
NTN510790-202
10MT26
LDW360-52007
GP0501P
LDW390-53000
D377-26(H)
D378-26(H)
K688-26(C)
K689-26(C)
+ RED
- GRN
+ YEL
- BLK
GP0501P
PRESS,FUEL TANK ULLAGE
LSC360-601-107
10MT27
LDW360-52507
GP0504P
GP0616P
D382-26(H)
D383-26(H)
D384-26(C)
D385-26(C)
D388-26(H)
D387-26(H)
D389-26(C)
D390-26(C)
P128
GP0504P
PRESS FUEL TANK VENT RELIEF VALVE INLET
NTN510790-201
10MT28
GP0616P
DEL PRESS FUEL TANK BOTTOM TO INTERFACE
NTN510981-201
10MT29
LDW360-52007
GP1001P
LDW390-53000
D392-26(H)
D393-26(H)
K690-26(C)
K691-26(C)
+ RED
- GRN
+ YEL
- BLK
GP1001P
PRESS,OX TANK ULLAGE
LSC360-601-107
10MT30
LDW360-52507
GP1004P
GP1116P
GP7015T
GP7025T
D397-26(H)
D398-26(H)
D399-26(C)
D400-26(C)
D403-26(H)
D402-26(H)
D404-26(C)
D405-26(C)
D408-26(H)
D407-26(H)
D409-26(H)
D411-26(H)
D412-26(H)
D413-26(H)
P125
P126
GP1004P
PRESS,OX TANK VENT RELIEF VALVE INLET
NTN510790-201
10MT31
GP1116P
DEL PRESS OX TANK BOTTOM TO INTERFACE
NTN510981-201
10MT32
TRANSDUCER ENGINE INTERFACE FUEL TEMP
GP7015T
NTN510782-001
10MT79
TRANSDUCER ENGINE INTERFACE OXIDIZER TEMP
GP7025T
NTN510782-001
10MT80
BLK
BLK

LDW360-52507

GP7018T

GP7025T

LDW360-52007 GP0001P

LDW360-52007 GP0002P

LDW360-52007

GP0201T GP0202T GP0718T GP1218T GP0908X

LDW360-52007 GP0025P

LDW360-52007 GP1408X

TO INST LDW360-52007 GP0018P

TO EPS

LDW390-53000

D408-26(H) D407-26(H) D409-26(H)

D411-26(H) D412-26(H) D413-26(H)

N4

D12-26(H) D13-26(H) K14-26(C) K15-26(C)

RED GRN YEL BLK

D17-26(H) D18-26(H) K22-26(C) K23-26(C)

D24-26(H) D23-26(H) D22-26(H)

GRN RED YEL

D26-26(H) D27-26(H) D28-26(H)

D30-26(H) D31-26(H) D32-26(H)

D34-26(H) D35-26(H) D36-26(H)

D31-26(E) D38-26(E) K24-26(C) K25-26(C)

3-YEL 4-BLK 1-YEL 2-BLK

D47-26(H) D46-26(H) K32-26(C) K33-26(C)

D41-26(E) D42-26(E) K34-26(C) K35-26(C)

3-YEL 4-BLK 1-YEL 2-BLK

D6010-26(H) D6011-26(H) K692-26(C) K693-26(C)

RED GRN YEL BLK

SEE SH 5.00

503 K73-20(A) BLK

504 K72-20(A) WHT

501 K77-20(A) BLK

502 K76-20(A) WHT

SOLENOID VALVE PRE-VALVE LSC-270-008227-2

TRANSDUCER ENGINE INTERFACE OXIDIZER TEMP

GP7025T

NTN510782-001

10MT80

GP0001P PRESS, HE SUPPLY TANK #1

LSC360-601-101

10MT35

GP0002P PRESS, HE SUPPLY TANK #2

LSC360-601-101

10MT36

GP0201T TEMP HE SUPPLY TANK #1

LSC360-605-405

10MT37

GP0202T TEMP HE SUPPLY TANK #2

LSC360-605-405

10MT38

GP0718T TEMP FUEL TANK FUEL BULK

LSC360-605-303

10MT39

GP1218T TEMP OX TANK OX BULK

LSC360-605-303

10MT40

GP0908X FUEL TANK LEVEL LOW

LSC270-801-11

10MT41

GP0025P PRESS. REG OUT MANIFOLD

LSC360-601-107

10MT42

GP1408X OX TANK LEVEL LOW

LSC270-801-12

10MT43

GP0018P PRESS, REG OUT MANIFOLD REDUNDANT

LSC360-601-107

10MT58

VEHICLE OUTER SURFACE GP2910T GSE (SEE NOTE 42)

VEHICLE OUTER SURFACE GP2911T GSE (SEE NOTE 42)

J1822 9 10 11 12 13 14 15 16

K8000D22 K8000F22

K41C26(H) K42C26(H) K43C26(H)

K44E26(H) K45F26(H) K46D26(H)

BLK WHT RED

K8000E22 K8000G22

TRANSDUCER TEMP HE TANK #1

LSC450-10133-23

10MT81

TRANSDUCER TEMP HE TANK #2

LSC450-10133-23

10MT82

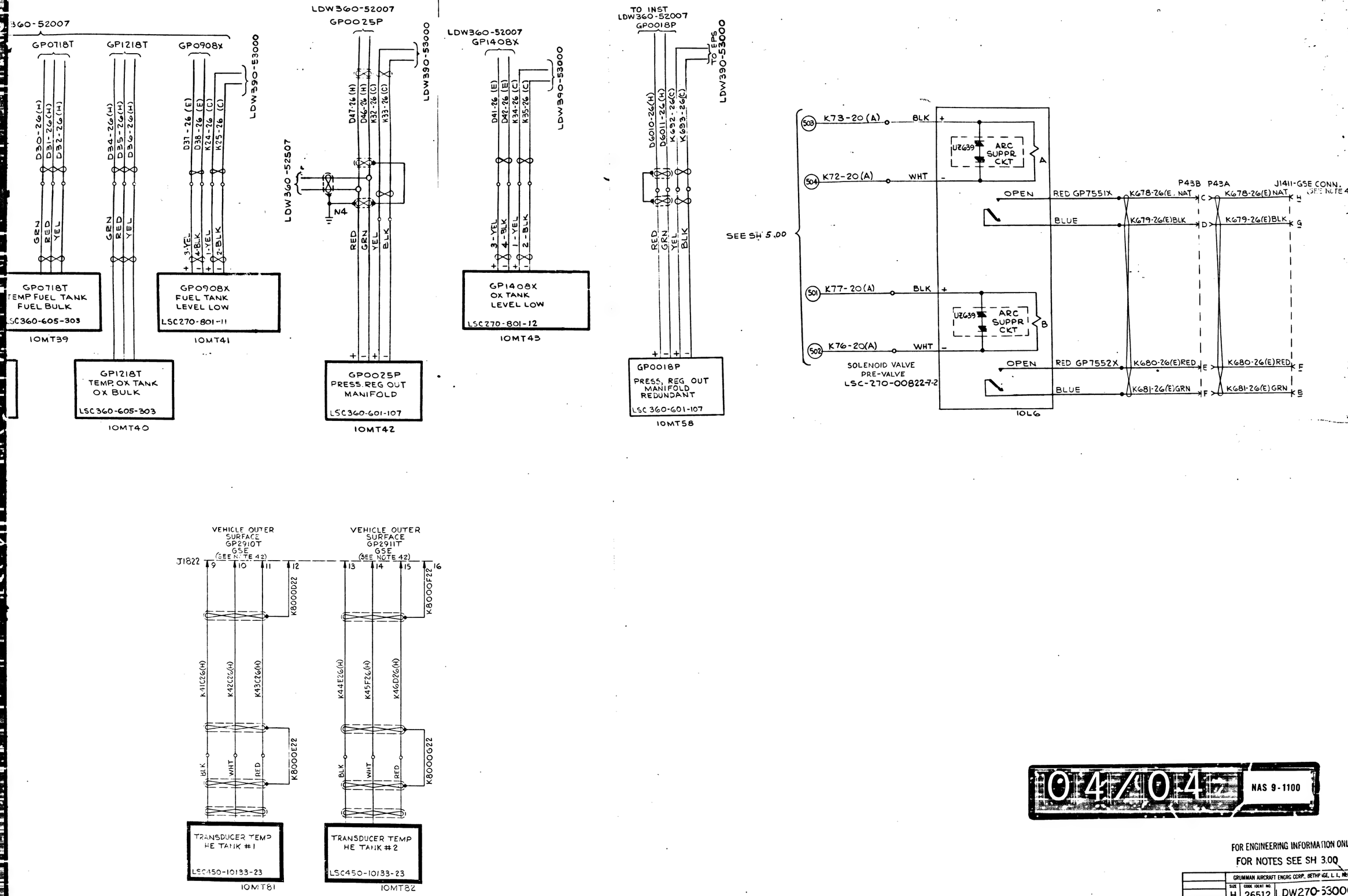
CODE IDENT 26512

LDW270-53000

SHEET 7.00

03704

NAS 9-1100



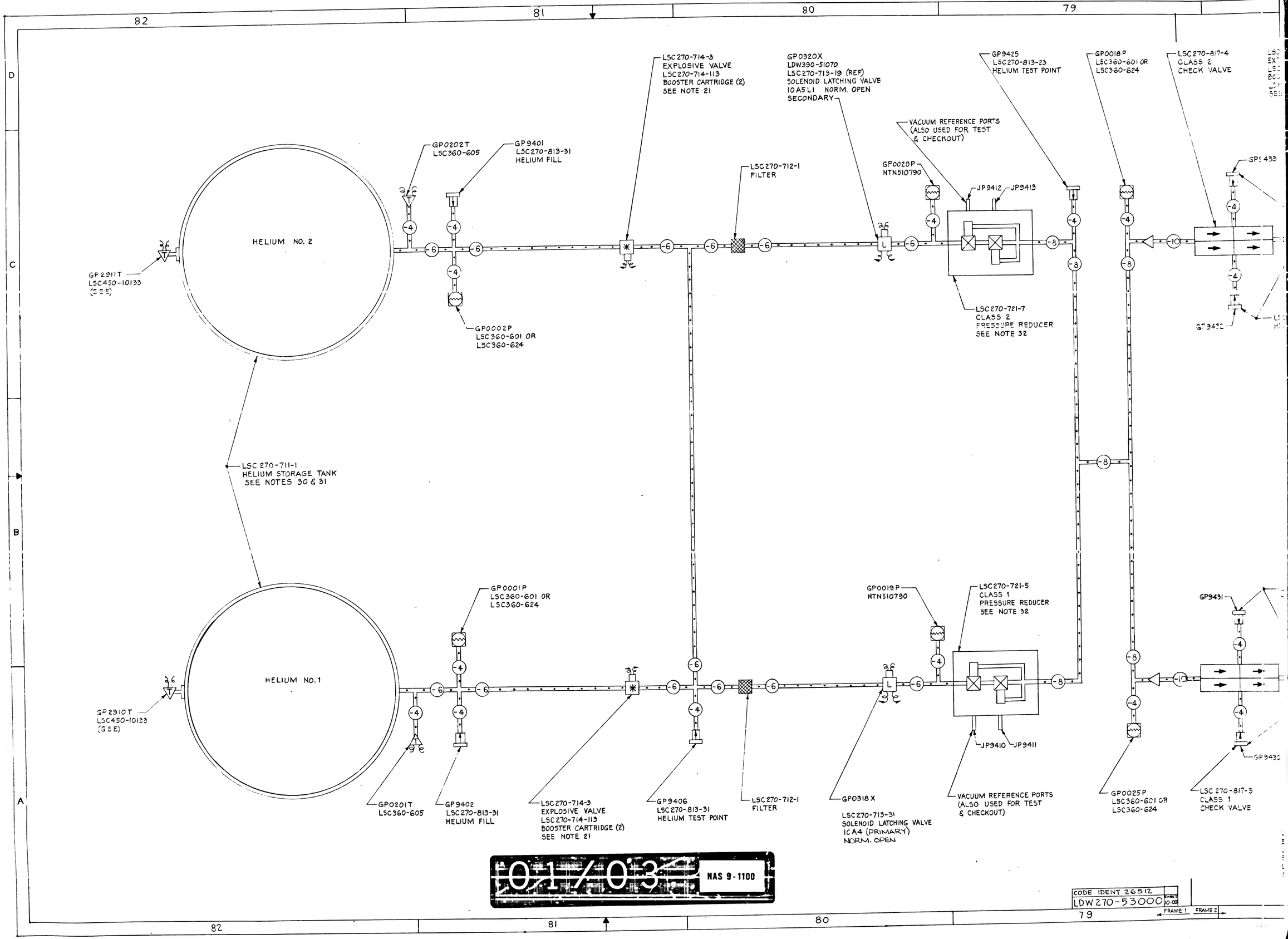
CODE IDENT 26512
LDW270-53000 SHEET 7.00

04/04 NAS 9-1100

FOR ENGINEERING INFORMATION ONLY
FOR NOTES SEE SH 3.00

	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L. I., NEW YORK		
LEM	SIZE H	CODE IDENT NO 26512	LDW270-53000 G
MODEL OR END ITEM	SCALE NONE		SHEET 7.00

LDW270-53000G A LDW270-52000G



01/03 NAS 9-1100

CODE IDENT 26512
LDW270-53000 SHEET 10.00

FRAME 1 FRAME 2

GP0908X
LSC270-801-11
LOW LEVEL
SENSOR

GP9453
LSC270-701-1
FUEL FILL &
DRAIN

TO R.C.S. SEE DWG
LDW310-53000

GP9459
LSC270-813-26
FUEL TEST POINT

GP9455
LSC270-813-26
FUEL TEST POINT

GP9472
SEE NOTE 34

LSC 270-00500-10-3
ASCENT ENGINE
MODIFIED BY LDW270-53020

GP 7552X

GP7551X

LSC270-00822-7-2
PREVALVE

RCS (REF)

ENGINE
FILTER

GP1501P
LSC360-624

GP7015T
NTN 510-782

TRIM ORIFICE

BALL JOINT (6)
LSC270-722

JP9482

3/8 PORT

.020 RESTRICTOR

DASHPOT

GP 9464
LSC270-813-26 FUEL
HIGH POINT BLEED

GP 9476 ENGINE VALVE
SEAL DRAIN OVERBOARD

ENGINE
INTERFACE

GP 9477 ENGINE VALVE
SEAL DRAIN OVERBOARD

GP9433

GP9441

GP9432

LSC270-813-24
HELIUM TEST POINT

LSC270-813-8
EXPLOSIVE VALVE (2)
LSC270-714-113
BOOSTER CARTRIDGE (3)
LDW270M10027 PLUG
SEE NOTE 21

BRAZED CAP (2)

BYPASS
REMOVE BEFORE
FLIGHT

GP9443
LSC270-804-2
FUEL FILL-VENT

GP0501P
LSC360-601 OR
LSC360-624

V1

V2

LSC280-7-57-1
FUEL PROPELLANT TANK

INSTALL
BRAZED
CAP BEFORE
FLIGHT

GP0718T
LSC360-605

GP9451
MECH. FEMALE
PORT FOR GSE
SEE NOTE 36

GP0616P
NTN510981
DIFFERENTIAL
PRESSURE

GP9462
LSC270-813-26
FUEL TEST POINT
& GSE CONN

GP0504P
NTN510790
PRESSURE TRANSDUCER

GP9447

LSC 270-717-12
TYPE 2 PRESSURE
RELIEF VALVE
SEE NOTE 35

GP1004P
NTN510790
PRESSURE TRANSDUCER

GP9446

LSC 270-717-13
TYPE 1 PRESSURE
RELIEF VALVE
SEE NOTE 35

GP9444

GP9431

LSC270-813-25
HELIUM TEST POINT

V3

V4

GP9440

GP9430

LSC 270-817-3
CLASS 1
CHECK VALVE

BYPASS
REMOVE BEFORE
FLIGHT

GP1001P
LSC360-601 OR
LSC360-624

LSC270-813-8
EXPLOSIVE VALVE (2)
LSC270-714-113
BOOSTER CARTRIDGE (3)
LDW270M10027 PLUG
SEE NOTE 21

BRAZED CAP (2)

GP9442
LSC270-805-2
OXIDIZER FILL-VENT

LSC280-7-58-1
OXIDIZER PROPELLANT TANK

GP1218T
LSC360-605

GP1408X
LSC270-801-12
LOW LEVEL SENSOR

GP9452
LSC270-702-1
OXIDIZER FILL & DRAIN

GP9450
MECH. FEMALE
PORT FOR GSE
SEE NOTE 36

GP1116P
NTN510981
DIFFERENTIAL
PRESSURE

INSTALL
BRAZED
CAP BEFORE
FLIGHT

GP9461
LSC270-813-27
OXIDIZER TEST POINT
& GSE CONN

GP9463
LSC270-813-27 OXID
HIGH POINT BLEED

DASHPOT

.020 RESTRICTOR

JP9480

3/8 PORT

ENGINE
FILTER

BALL JOINT (5)
LSC270-722

TRIM ORIFICE

GP7025T
NTN 510-782-001

GP 1503P
LSC360-624

TO R.C.S. SEE DWG
LDW310-53000

RCS (REF)

GP9458
LSC270-813-27
OXID TEST POINT

FOR REFERENCE ONLY

GP9471 SEE NOTE 34

NAS 9-1100

CODE IDENT 26512
LDW270-53000
SHEET 10.00

GP9455
LSC270-813-26
FUEL TEST POINT

LSC270-00500-10-3
ASCENT ENGINE
MODIFIED BY LDW270-53020

GP9472
SEE NOTE 34

ISOLATION VALVE CONTROL
GP1802X GP1812X

GP9474
SEE NOTE 34

BIPROPELLANT VALVE CONTROL
GP1814X GP1806X

ENGINE
FILTER

GP1501P
LSC360-624

ISOLATION VALVE "B"

BIPROPELLANT VALVE "B"

JP9482

3/8 PORT

GP9464
LSC270-813-26 FUEL
HIGH POINT BLEED

GP9476 ENGINE VALVE
SEAL DRAIN OVERBOARD

ENGINE
INTERFACE

GP9477 ENGINE VALVE
SEAL DRAIN OVERBOARD

GP9463
LSC270-813-27 OXID
HIGH POINT BLEED

JP9480

3/8 PORT

ENGINE
FILTER

GP 503P
LSC360-624

GP2006P LSC360-624
GP2706T
GP2701T
GP2702T
GP2703T
GP2704T

GP2001P LSC360-624
VIB GP2801D "X-X"
VIB GP2802D "Y-Y"
VIB GP2803D "Z-Z"

CHAMBER PRESSURE
GP2010P LSC360-624
ACC GP7723A RCCA "A"
ACC GP7724A RCCA "B"

LSC270-00723 ROUGH COMBUSTION CUTOFF
RELAY ASSY. (REF) JP9021"A" GSE (REF)
JP9022"B" GSE(REF) LOCATED ON LDW280-11932 (REF)

ISOLATION VALVE "A"

BIPROPELLANT VALVE "A"

FOR REFERENCE ONLY

GP9471 SEE NOTE 34

ISOLATION VALVE CONTROL
GP1811X GP1801X

BIPROPELLANT VALVE CONTROL
GP1813X GP1805X

GP9473 SEE NOTE 34

CODE IDENT 26512
LDW270-53000
SHEET 10.00

03/03

NAS 9-1100

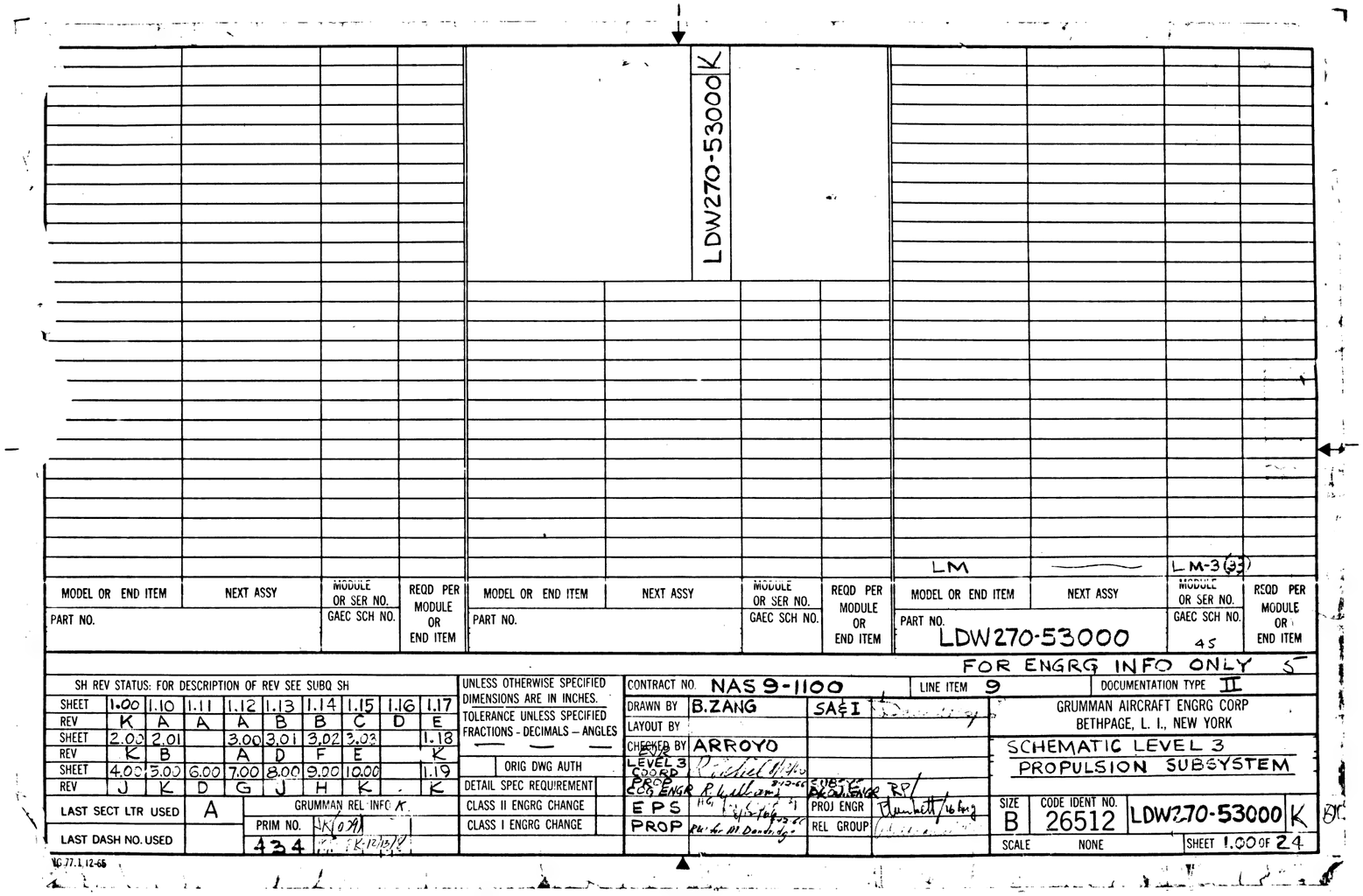
ASCENT FLUID LINES - BASIC
FOR ELECTRICAL SEE SH 5 & 7
(BELL ENGINE)

FOR ENGRG. INFO

	GRUMMAN AIRCRAFT ENGRG CORP. BETHPAGE, L.I., N.Y.		
LM-1	SIZE J	CODE IDENT NO 26512	LDW270-53000 G
MODEL OR END ITEM	SCALE NONE		SHEET 10.00

7 | SUPERSEDES LDW270-53000-D, 10-16-67

LDW270-53000-G
B
C
A



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		LM	—	LM-3(3)	
								PART NO. LDW270-53000		GAEC SCH NO. 45	

FOR ENGRG INFO ONLY

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH

SHEET	1.00	1.10	1.11	1.12	1.13	1.14	1.15	1.16	1.17
REV	K	A	A	A	B	B	C	D	E
SHEET	2.00	2.01		3.00	3.01	3.02	3.03		1.18
REV	K	B		A	D	F	E		K
SHEET	4.00	5.00	6.00	7.00	8.00	9.00	10.00		1.19
REV	J	K	D	G	J	H	K		K

LAST SECT LTR USED	A
LAST DASH NO. USED	

GRUMMAN REL INFO K
PRIM NO. K-079A
434 K-12/13/67

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.
TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS — ANGLES

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS 9-1100		LINE ITEM 9	DOCUMENTATION TYPE II
DRAWN BY B.ZANG	SA&I	GRUMMAN AIRCRAFT ENGRG CORP BETHPAGE, L. I., NEW YORK	
LAYOUT BY			
CHECKED BY ARROYO		SCHEMATIC LEVEL 3 PROPULSION SUBSYSTEM	
LEVEL 3 COORD			
PROG COG ENGR		SUBSYS ENGR	
EPS		PROJ ENGR	
PROP		REL GROUP	

SIZE	CODE IDENT NO.		
B	26512	LDW270-53000	K
SCALE NONE		SHEET 1.00 OF 24	

VG 77.1.12-65

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	APPD
F	1	4.00 3.02	9B 9C			✓		EO F1 LCD2721 CCA959	REVISED NOTE 35 & F/D: ADDED LSC270-830-1(2) & LDW270-53311-2 WAS LSC270-818-6. LDW270-53311-1 WAS LSC270-818-5 IN NOTE 35. "LDW270-53311-1 &-2 WAS LSC270-818-3 &-4". "LSC270-830-1, 260PSIG TO 275PSIG" WAS "268PSIG TO 308PSIG". IN F/D, DELETED BURST DISC SYMBOL 2PLACES. ADDED SHEET 1.18. SHEET 1.000 OF 23 WAS 1.000 OF 22. (E)	LM-3(33)	NOT	REQD	C. FLEISCHMANN 5-29-68		
G	1	2.00 7.00 10.00 1.18	39C 30A	LFM199		✓		EO G1 LCD3268	IN F/D & B/M REMOVED 10A4 LDW390-51070-5, 10A4 L1 LSC270-713-19 & 10A4A1CR1 & CR2 REPLACED WITH 10A4 LSC 270-713-31. TWISTED PAIR GRN & RED WAS TWISTED THREE NAT, BLK, RED.	LM-3(33)	NOT	REQD	T. RATTO 7-23-68		
	2	5.00	14C			✓		EO G2 LCD1109A	CONNECTOR P518 WAS MATED TO J518 AND CONNECTOR P517 WAS MATED TO J517.						
H	1	1.00 1.18 9.00	GGA	LFM217		✓		EO H1 LCD3055C CCA#1314 (E)	ADDED DETAIL "A" & NOTE BY 10M3 "SEE DETAIL A"	LM-3(33)	NOT	REQD	J. RECCARDI 9/13/68		
J	1	4.00 4.00 8.00 2.00	11C 11A DSC			✓		EO J1 LCD 2904	LSC 270-713-10-3 (WAS) LSC 270-713-10-1 ON 10A7 LSC 270-713-9-2 (WAS) LSC 270-713-9-1 & 9-3 ON 10A6	LM-3 (33)	NOT	REQ'D	R. S. IASCAICHELLI 10-2-68		
	2	2.00 10.00	75D			✓		LCD 3180 (E)	IN F/D & B/M ASC. ENG. 10A2 WAS LSC270-00500 (BELL); NO WIRING CHANGE	LM-3 (33)	NOT	REQ'D			
K	1	5.00	20C	LFM K139		✓		EO K1 LCD11220	ON SH. 5.00: REVERSED WIRES K36-26(C) AND K37-26(C) AT 10MT64.	LM-3 (33)	NOT	REQ'D	ZANG 15 NOV 1968		

FOR CONTINUATION OF REVISIONS SEE SHEET _____

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-53000	K

SCALE NONE — SHEET 1.18

ENG 77.3 5-66

01

NAS 9-1100

REVISIONS

CHANGE LTR	ITEM NO.	SHEET NO.	ZONE	GRUMMAN INFO ONLY	DET SPEC	CLASS I	CLASS II	ENGRG ORDER	DESCRIPTION	EFFECTIVITY	DISPOSITION OF EXISTING PARTS: REWORK	DISPOSITION OF EXISTING PARTS: SCRAP	CHANGED BY AND DATE	ENGRG APPD	QUALITY APPD
K	2	5.00 10.00	14B 74B	LFM K132		✓		EO K2 LCD 11227	SHT. 5.00 ZONE 14B: DELETED ACCELS A & B AT 10A8 FROM F/D. SHT 10. ZONE 74B: DELETED GP7723A, GP7724A FROM F/D.	LM-3(33)	NOT	REQ'D	T. RATTO 12-2-68		
	3	10.00 2.00 1.00 1.19	74B 75A & D				✓		ON ASCENT ENGINE ADDED FILTER (2). SEPARATED INSTRUMENTATION FROM ENGINE PACKAGE. DELETED LSC270-00723 RCCA. SHOW GP1503P, GP1501P & GP2010P OUTSIDE ASCENT ENGINE PACKAGE. ADDED FILTER SYMBOL AT ENGINE ON FUEL & ON OXIDIZER LINES AT HEAD END ASSEMBLY. SHEET 1.00 OF 24 WAS SHEET 1.00 OF 23. ADDED SHEET 1.19. DWG. CORRECTION (P) 305						

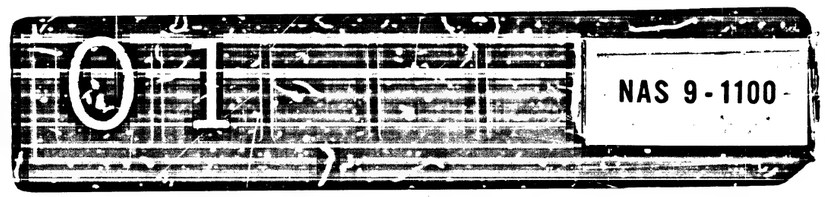
FOR CONTINUATION OF REVISIONS SEE SHEET _____

ENG 77.3 5-66

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-53000	K

SCALE NONE — SHEET 1.19



REF DESIGNATION	PART NUMBER	DESCRIPTION	SHEET	ZONE	
10MT83	LSC450-10133-21	TEMP TRANSDUCER START TANK	8		GQ3541T
10MT82	LSC450-10133-23	TEMP TRANSDUCER HE TANK #2	7		GP2911T
10MT13	LSC360-605-301	TEMP ENGINE INTERFACE INLET OX	8	51B	GQ4311T
10MT12	MIN510790-203	PRESS REG INLET	8	47B	GQ3010P
10MT11	MIN510790-203	PRESS REG INLET	8	47B	GQ3009P
10MT10	LSC360-605-303	TEMP. TRANSDUCER	8	51B	GQ4219T
10MT9	"	"	8	51B	GQ4218T
10MT8	"	"	8	50B	GQ3719T
10MT7	LSC360-605-303	TEMP TRANSDUCER	8	50B	GQ3718T
10MT81	LSC450-10133-23	TEMP TRANSDUCER HE TANK #1	7		GP2910T
10MT1	LSC350-605-301	TEMP ENGINE INTERFACE FUEL	8	48B	GQ3811T
10M5	LSC350-00401-03	PROPELLANT QTY INDICATOR	9	64B	
10M4	LSC350-80179-13	DUAL VERT METER TEMP	9	68A	
10M3	LSC350-80125-14	DUAL VERT METER PRESS	9	68A	
10M1	LSC350-20100-02-1	HE TEMP/PRESS READOUT	9	68C	
10L6	LSC270-00822-72	SOLENOID VALVE PRE-VALVE	7	30B	
10FL4	LSC350-80402-05	DESCENT STATUS REG FLAG NO. 2	8	51A	
10FL3	LSC350-80401-05	DESCENT STATUS REG FLAG NO. 1	8	56B	
10FL2	LSC350-80401-05	ASCENT STATUS REG FLAG NO. 2	7	40A	
10FL1	LSC350-80401-05	ASCENT STATUS REG FLAG NO. 1	7	40B	
10A7	LSC270-713-10-3	LATCHING He SOLENOID VALVE #2	8	53B	
10A6	LSC270-713-9-2	LATCHING He SOLENOID VALVE #1	8	53C	
10A5L1	LSC270-713-19	LATCHING He SOLENOID VALVE #2	7	38A	

REF DESIGNATION	PART NUMBER	DESCRIPTION	SHEET	ZONE	
10W3	GC875BA-3	CABLE	5	16B	
10W2	GC875BA-2	CABLE	5	16B	
10W1	GC675BA-1	CABLE	5	15B	
10A5A1CR2	UZ 5840	ZENER DIODE	7	38B	ARC SUPPR
10A5A1CR1	UZ 5840	ZENER DIODE	7	38B	ARC SUPPR
10S10	LSC350-82-05212	TOGGLE SWITCH	8	50A	
10S9	LSC350-82-05212	TOGGLE SWITCH	8	50B	
10L8	LSC310-403-204	LATCHING SOLENOID VALVE	8	48B	FUEL VENT
10L7	LSC310-403-303	LATCHING SOLENOID VALVE	8	48A	OXID VENT
10FL6	LSC350-80402-05	OXID VENT STATUS FLAG	8	51B	GQ4000X
10FL5	LSC350-80402-05	FUEL VENT STATUS FLAG	8	51B	GQ3500X
10A5	LDW370-51070-5	VALVE ASSY	7	38B	
10A4	LSC270-713-31	VALVE ASSY	7	38C	
10A3	LSC270-00009-43	GAGING CONTROL UNIT PROPELLANT QUANTITY	9	62C	
10A2	ROCKETDYNE RS000320-001-00	ASCENT ENGINE(GFE)	5	15C	
10A1	LSC270-00600-26	DESCENT ENGINE ~~ESTES~~	6	23C	
REF DESIGNATION	PART NUMBER	DESCRIPTION	SHEET	ZONE	

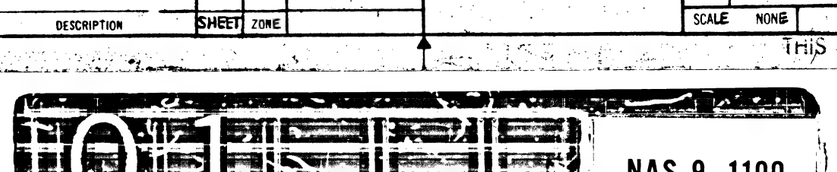
GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.		
B	26512	LDW270-53000	K

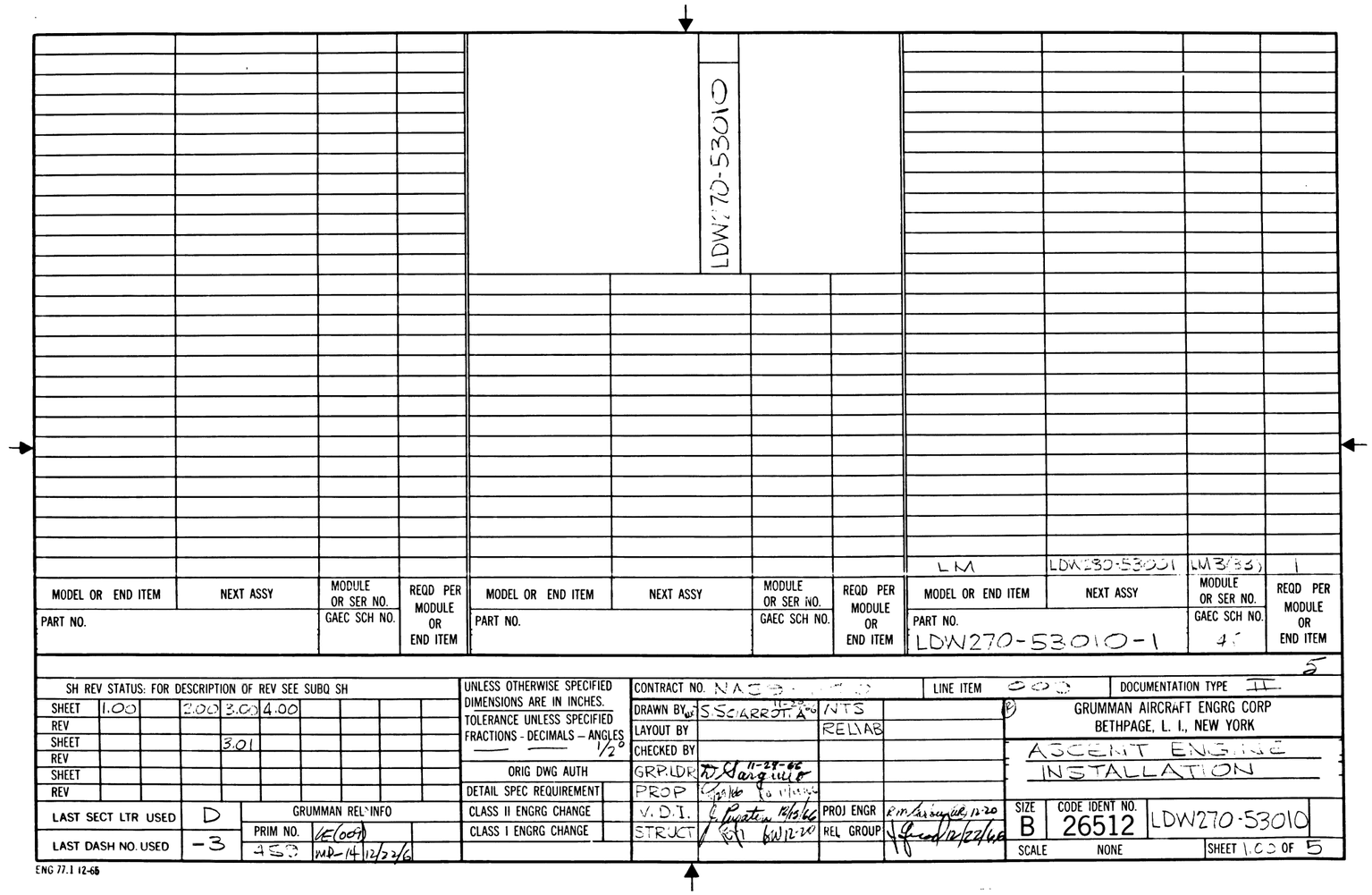
SCALE NONE SHEET 2.00

ENG 77.10 7-66

THIS IS AN ORIGINAL DRAWING



NAS 9-1100



MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM	MODEL OR END ITEM	NEXT ASSY	MODULE OR SER NO.	REQD PER MODULE OR END ITEM
PART NO.		GAEC SCH NO.		PART NO.		GAEC SCH NO.		LM PART NO. LDW270-53010-1	LDW270-53001	(M3/33) GAEC SCH NO. 4	1

SH REV STATUS: FOR DESCRIPTION OF REV SEE SUBQ SH										
SHEET	1.00		2.00	3.00	4.00					
REV										
SHEET				3.01						
REV										
SHEET										
REV										

LAST SECT LTR USED	D
LAST DASH NO. USED	-3

GRUMMAN REL INFO: PRIM NO. VE(001) 453 MD-14 12/22/66

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. TOLERANCE UNLESS SPECIFIED FRACTIONS - DECIMALS - ANGLES 1/2°

ORIG DWG AUTH	
DETAIL SPEC REQUIREMENT	
CLASS II ENGRG CHANGE	
CLASS I ENGRG CHANGE	

CONTRACT NO. NAS9-[illegible] LINE ITEM 0001 DOCUMENTATION TYPE II

DRAWN BY	S. SCIARROTTA 11-29-66	NTS	
LAYOUT BY		RELIAB	
CHECKED BY			
GRP LDR	W. Gargiulo 11-29-66		
PROP	[illegible]		
V. D. I.	E. Lipatow 12/13/66	PROJ ENGR	R. M. Sarsynski 12-20
STRUCT	[illegible] 12-20	REL GROUP	[illegible] 12/22/66

GRUMMAN AIRCRAFT ENGRG CORP
BETHPAGE, L. I., NEW YORK

ASCENT ENGINE INSTALLATION

SIZE	CODE IDENT NO.	
B	26512	LDW270-53010

SCALE NONE SHEET 1.00 OF 5

ENG 77.1 12-66

01

NAS 9-1100

QTY PER ASSEMBLY	CODE IDENT	PART NO.	I&T	NOMENCLATURE OR DESCRIPTION	MATERIAL	GOVT SPEC	COML SPEC	STOCK SIZE	PROCESS SYM	FINISH NO.	ZONE
3		MS24665-502	E	COTTER PIN	STD. PART						
3		AN310C6	E	NUT	↑						
12		NAS653V4	E	BOLT	↕						
4		AN960C8L	E	WASHER							
12		AN960C10L	E	WASHER	↓						
2		AN819-6D	E	REDUCER	STD. PART						
1		AN960C616	E	WASHER	STD PART						
20		GB511J-06-4	E	BOLT	GRUM. STD.						
4		GB511J-08-4	E	BOLT	GRUM STD						
2		GS13AJ-506	E	GASKET	GRUM. STD.						
3		GW502F-6C	E	WASHER	GRUM. STD.						
1		GW502F-6P	E	WASHER	GRUM. STD.						
2		AN821-6D	E	ELBOW	STD. PART						
1		LDW270-53203-7	E	HOSE ASSY	SEE DWG						
1		LDW270-53203-5	E	HOSE ASSY	SEE DWG						
A/R		NAR MC07843	E	ADHESIVE							
10		GB511J-08-5	E	BOLT	GRUM STD						
1		LDW280M11154-3	E	BOLT	SEE DWG						
2		LDW280M11154-1	E	BOLT	SEE DWG						
2		LDW280M11155-1	E	WASHER	SEE DWG						
2		LDW280M11085-1	E	SPHERE	SEE DWG						
2		LDW280M11054-1	E	WASHER	SEE DWG						
2		LDW280M11083-1	E	WASHER	SEE DWG						
B 1		LSC270-00501-1	S	ACCELEROMETER	SEE NOTE # 4 # 10						
1		LSC270-00502-1	C	ASCENT ENGINE	SEE NOTE #						
1		LDW270-29002-1	E	THERMAL SHIELD	SEE DWG						
1		LDW270-10024-1	E	WASHER	SEE DWG						
1		LDW270-53203-3	E	HOSE ASSY	SEE DWG						
		LDW270-53203-1	E	HOSE ASSY	SEE DWG						
J 1		LDW270-53010-2	E	ASCENT ENGINE ASSY							
J		LDW270-53010-1	E	ASCENT ENGINE INSTL							
-3	-										

CLEANLINESS TEST LEVEL 14-5011

SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC	SYM OR NO.	PROCESS OR FINISH	GRUMMAN SPEC OR MILITARY SPEC

I & T: IDENTIFICATION AND TRACEABILITY IN ACCORDANCE WITH : NONE

GRUMMAN AIRCRAFT ENGRG CORP, BETHPAGE, L. I., NEW YORK

SIZE	CODE IDENT NO.	
B	26512	LDW270-53010

SCALE NONE SHEET

ENG 77.2 7-65

NAS 9-1100

NOTES:

1. FOR HANDLING OF ENGINE SEE DRAWING LDW420-63200 & LDW420-63300.
2. FROM LSC270-00500-10, THE OX HI-POINT BLEED PORT, REMOVE & RETAIN BAC PARTS AN814-6S, 4G2-6, 8258-472331-1 & 4G2-2 (REF BAC DRAWING 8258-472225).
3. FROM LSC270-00500-10, THE FUEL HI-POINT BLEED PORT, REMOVE & RETAIN BAC PARTS 8258-473204-1, 8258-472082-6, 8258-473205-1 & 8258-472082-2 (REF BAC DRAWING 8258-472225).
4. COMMERCIAL PART - SEE SPECIFICATION CONTROL DRAWING BEFORE ORDERING.
5. PRIOR TO INSTALLING -3 ENGINE ASSY INTO ITS RESPECTIVE LOCATION REMOVE FEED ELBOWS LDW280-16000-547 & -552, UPON ENGINE INSTALLATION RE-INSTALL FEED ELBOWS. NOTE: O-RINGS ARE NOT TO BE RE-USED.
6. FOR ELECTRICAL HOOK-UP OF LSC270-00500-10 TO THE VEHICLE SEE DWG LDW280-53359.
7. PROGRESSIVELY TORQUE BOLTS IN ROTATION TO INDICATED LEVEL.
8. BRUSH COAT NUT & BOLT SURFACES AFTER INSTALLATION USING (EPON 919) LSM 14-4103 MIX PER LSP 14-14102.
9. FROM LSC270-00500-10 REMOVE & RETAIN BAC PART 8258-472285-3, REPLACE WITH LSC270-00501-1 (SEE BAC DRAWING 8258-475213.
10. LSC360-624-1 (4) & LSC360-624-3 ARE A PART OF LSC270-00500-10 ASCENT ENGINE
11. REMOVE EXCESS ELECTRICAL WIRE FROM THE LSC360-624 TRANSDUCERS (QTY 5), BETWEEN THE SENSOR & SIGNAL CONDITIONER & SPLICE IN AREA SHOWN IN SIDE ELEVATION (ZONE 5D)

(FOR CONT. SEE SHT. 3.01)

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-53010	
SCALE —		SHEET 3.00	

ENG 73.1 6-64

NAS 9-1100

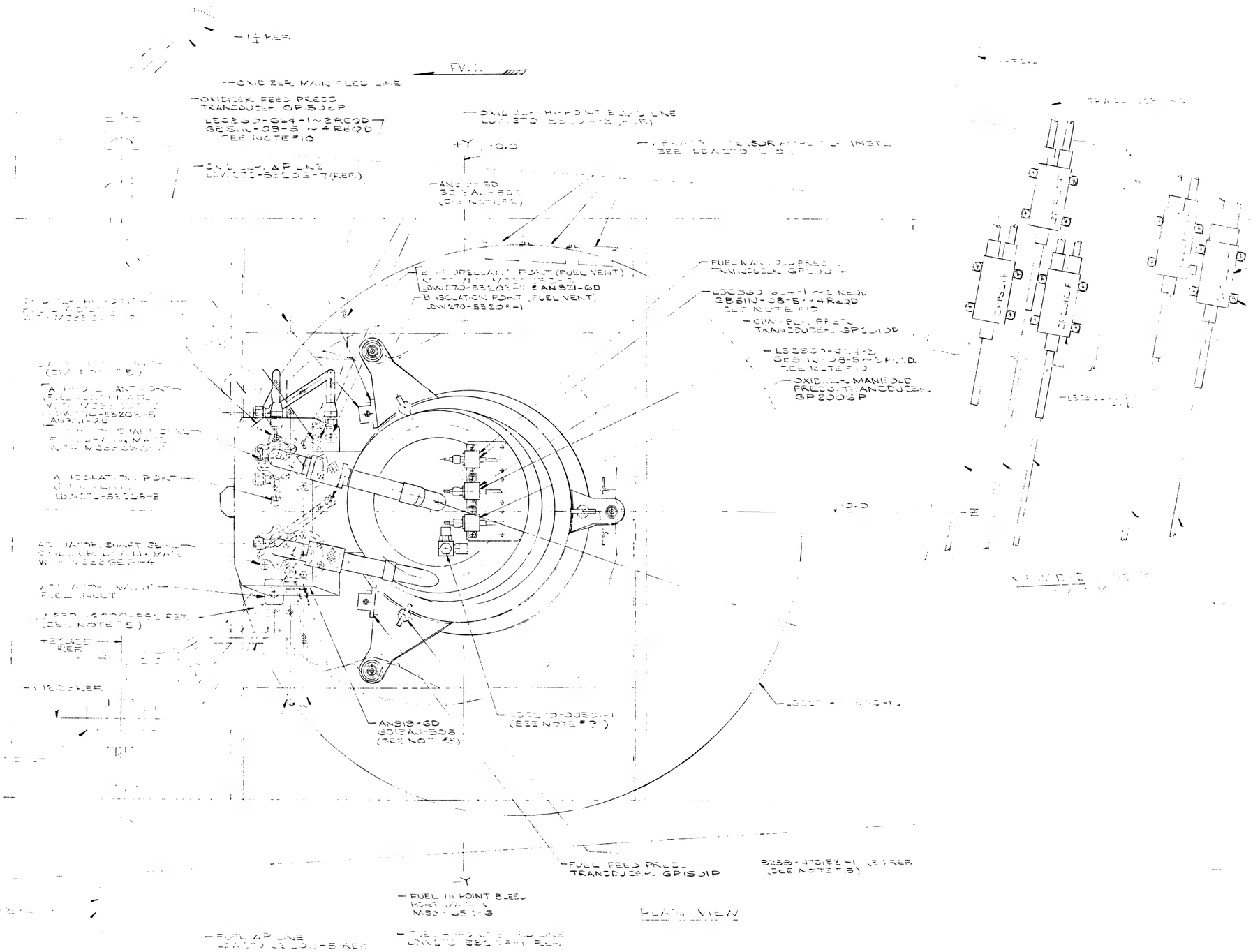
NOTES: (CONT.)

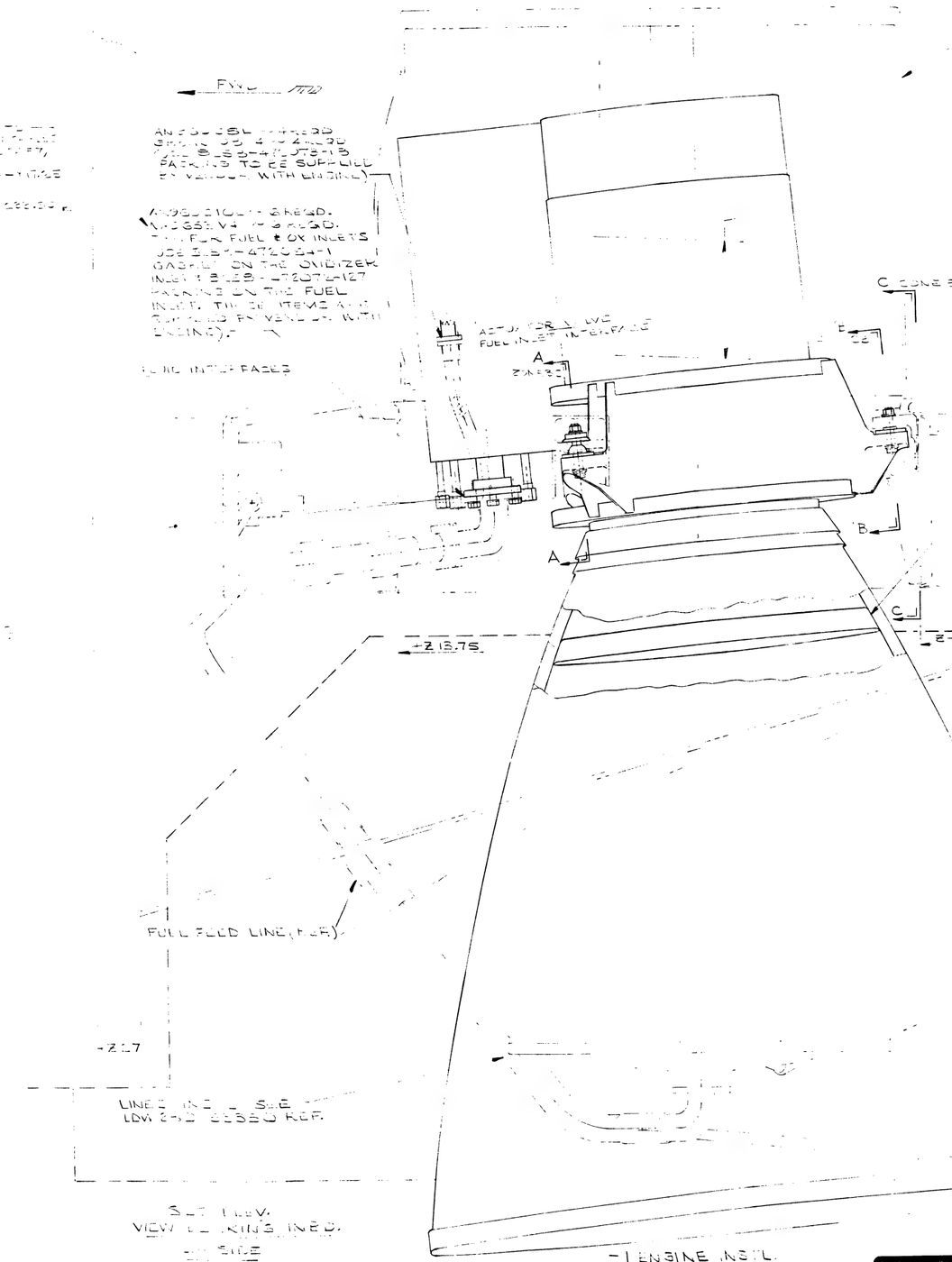
12. AFTER ALL ENGINE ASSY TESTS (PIT etc) HAVE BEEN COMPLETED & JUST PRIOR TO ENGINE INSTL. REMOVE THE FOLLOWING CONNECTORS FROM ENGINE ASSY HARNESS: J3011, J3012, J3013, J4011, J4012, J506, J507, J508 & J509. REMOVE CONNECTORS P3011, P3012, P3013, P4011, P4012 & THEIR CONNECTING HARNESS TO J508 & J509 RESPECTIVELY. ALL ELECTRICAL WIRES TO BE SPLICED IN AREA SHOWN IN AREA SHOWN IN SIDE ELEVATION (ZONE 5D).
13. TORQUE FITTINGS IN ACCORDANCE WITH AND10064 EXCEPT 1/8 FITTINGS.
14. THE 8258-475133-1 EYEBOLTS ARE GROUND HANDLING EQUIPMENT AND ARE TO BE REMOVED UPON ENGINE INSTALLATION (REF BAC DWG 8258-475213).
15. THE LDW270-28013-1 SHIELD IS TO BE INSTALLED AT KENNEDY SPACE CENTER AFTER LEAK CHECK HAS BEEN COMPLETED.

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE B	CODE IDENT NO. 26512	LDW270-53010	
SCALE ——		SHEET 3.01	

ENG 73.1 6-64

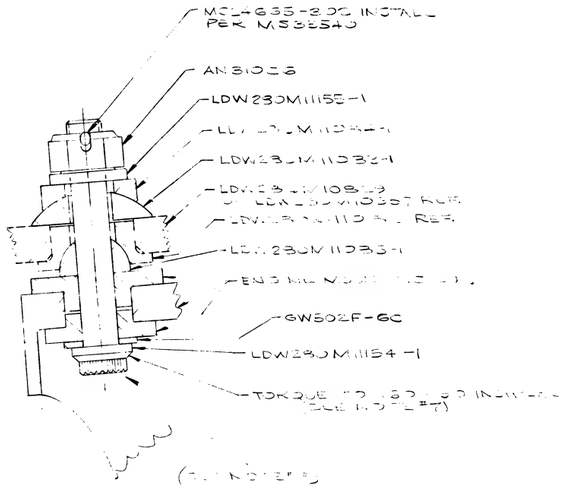
NAS 9-1100


OXIDIZER MAIN FEED LINE
OXIDIZER FEED PRESS TRANSDUCER GP5302P
OXIDIZER MAIN POINT B FEED LINE
FUEL MAIN POINT B FEED LINE
FUEL PRESS TRANSDUCER GP5303P
CHAMBER PRESS TRANSDUCER GP5305P
OXIDIZER MANIFOLD PRESS TRANSDUCER GP2006P
FUEL MAIN POINT (FUEL VENT)
INSULATION POINT (FUEL VENT)
FUEL FEED PRESS TRANSDUCER GP5303P
FUEL MAIN POINT B FEED PORT
FUEL MAIN POINT B FEED LINE
FUEL VENT LINE
PLAN VIEW

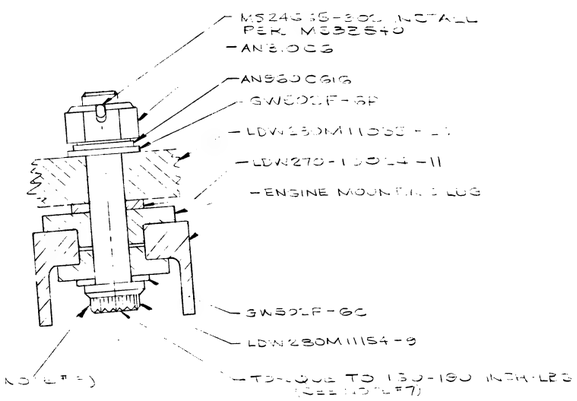


02703

NAS 9-1100



SECT A-A (TYP 2PLCS)
SCALE 3/1 ZONE 3C



SECT B-B
SCALE 3/1 ZONE 5C

THERMAL SHIELD
LDW280-52152 (REF)

STRUCTURAL ASSY
LDW280-52000 (REF)

MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED USE BOTH SIDES IF NECESSARY.	
FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010 .063R TO .250R ± .015 OVER .250R ± .030	
DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.	
EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.	
DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.	
MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.	
DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING	
HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.	
ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES	
125 SURFACE ROUGHNESS INCLUDING REAMED HOLES PER MIL-STD-10	
200 FOR ALL DRILLED HOLES	
REMOVE ALL BURRS, BREAK ALL EDGES .015-.031	
INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS	
SYMBOL DENOTES SURFACE TO BE MACHINED	
UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32	
LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.	
TOLERANCE ON LOFTED DELINEATIONS IS	

DWG SIZE 34 X
PRINTING INTO ONLY
FULL SIZE SHEET AREA (36 X) = SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL) = SQ. FT.
PRINT TRIM LINE

CODE IDENT No. 26512
LDW270-38010 SHT 1

03/038 NAS 9-1100

GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE J	CODE IDENT NO. 26512		
MODEL OR END ITEM	SCALE	SHEET	

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

DWG. NO. LEO 270		EO NO. 53
CONTROL INFO NO. LM270-1004		

ENG 32.2 REV 3-65 B

ADD NOTE ✱ "BOND IN ACCORDANCE WITH FIGURE 7C OF LSP-14-13334" TO THE FOLLOWING DWG

DRAWING NUMBER	TITLE	EFFECTIVITY	CHANGE NO
LDW270-52100	SEE DWG	LM-2(32)	A8
-53100		LM-3(33)	A5
-54100		LM-4(34) THRU LM-15(45)	A4
-53010		LM-3(33)	A3
-54010		LM-4(34) THRU LM-15(45)	A2
LDW270-52306	SEE DWG	LM-2(32) THRU LM-15(45)	A4

ADD NOTE ✱✱ "BOND IN ACCORDANCE WITH FIGURE 7G OF LSP-14-13334" TO THE FOLLOWING DWG.

LDW270-52304	SEE DWG	LM-2(32)	A5
-53304		LM-3(33)	C4
-54304		LM-4(34) THRU LM-15(45)	A8
-52305		LM-2(32)	A1
-53305		LM-3(33)	A1
-54305		LM-4(34) THRU LM-15(45)	A1
LDW270-52309	SEE DWG	LM-2(32) THRU LM-15(45)	E3

ADD NOTE ✱✱✱ "BOND IN ACCORDANCE WITH FIGURE 7A & 7G OF LSP-14-13334" TO THE FOLLOWING DWG

LDW270-52200	SEE DWG	LM-2(32)	A1
LDW270-53200	SEE DWG	LM-3(33)	A2
LDW270-54200	SEE DWG	LM-4(34) THRU LM-15(45)	A2

ADD NOTE ⊗ "BOND IN ACCORDANCE WITH FIGURE 7C & 7G OF LSP-14-13334" TO THE FOLLOWING DWG

-52201	SEE DWG	LM-2(32)	B3
-53201		LM-3(33)	B3
-54201		LM-4(34) THRU LM-15(45)	B1
-52310		LM-2(32) & LM-3(33)	A6
LDW270-54310	SEE DWG	LM-4(34) THRU LM-15(45)	A1

ADD NOTE ◆ "BOND IN ACCORDANCE WITH FIGURE 7F OF LSP-14-13334" TO THE FOLLOWING DWG

LDW270-52302	SEE DWG	LM-2(32) THRU LM-15(45)	A3

ADD NOTE ⊡ "BOND IN ACCORDANCE WITH FIGURE 12 OF LSP-14-13334" TO THE FOLLOWING DWG

LDW270-53202	SEE DWG	LM-3(33) THRU LM-15(45	A2

	DWG NO	CHG NO
ADD NOTE △ "BOND IN ACCORDANCE WITH FIGURE 12 OF LSP-14-13334, EFF LM-2".	LDW270-51202	A2
ADD NOTE ▽ "BOND IN ACCORDANCE WITH FIGURE 12 OF LSP-14-13334, EFF LM-2 THRU LM-15".	LDW270-23308	B3
ADD NOTE ▼ "BOND IN ACCORDANCE WITH FIGURE 7C OF LSP-14-13334, EFF LM-2".	LDW270-51010	C9
ADD NOTE ▲ "BOND IN ACCORDANCE WITH FIGURE 7C & 7G OF LSP-14-13334, EFF LM-2 THRU LM-15".	LDW270-51453	E1

(MANUFACTURING NOTE) REWORK OF LM2 WILL NOT BE REQUIRED PROVIDED THE REQUIREMENTS OF PARAGRAPH 4.2 OF LSP-14-13334 ARE COMPLIED WITH.

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGR. CHG	✓ LCD 1961

REASON FOR EO: UPDATE DRAWINGS TO CURRENT BONDING REQUIREMENTS

DESCRIPTION OF EO: ADDED NOTES ✱, ✱✱, ✱✱✱, ⊗, ◆, ⊡, △, ▽, ▼, ▲. (NEXT AVAILABLE NO)

GAEC EO RELEASE: JK 8/2/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		NOTED	

DRAWING CHANGE REQD: ✓ REVISE DWG; RECORD EO
DISPOSITION OF PARTS: ✓ REWORK; SCRAP

APPROVED BY	SUPPORT	RELIAB. GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
DATE			8/3/67			8/3/67

PRIORITY: C
DRAWING TITLE: NOTED ABOVE
DRAWING NO.: LEO 270
EO NO.: 53

ISSUED BY W KUTNER X1611 8/2/67 SECTION PROPULSION GROUP NO. 345 PL. 25

NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENG 32.1 REV 3-65

ENGINEERING ORDER

DWG. NO. LDW270-53010 | EO NO. A/

CONTROL INFO NO. LM270-787

* IN THE F/D & B/M DELETE LDW270-53203-1,-3,-5 & -7, AN821-6D (2) & CHG ART WORK ACCORDINGLY. IN THE F/D SHT 4.00, ZONE 11 A CHG. CALLOUT TO "ACTUATOR VALVE LINE LDW270-53207-3 REF." WAS: "ACTUATOR VALVE LINE LDW270-53207-1 REF."

5

DETAIL SPEC REQ	CL II ENGRG CHG	CL I ENGRG CHG

REASON FOR EO: LDW270-53203-1,-3,-5 & -7 ARE NOT REQD. DUE TO REDESIGN OF VEHICLE & UPDATE OF INFORMATION

DESCRIPTION OF EO: SEE ABOVE *

GAEC EO RELEASE: 1/6/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.
LM		LM3 (33)	

DRAWING CHANGE REQD: REVISE DWG ✓ | RECORD EO

DISPOSITION OF PARTS: REWORK ✓ | SCRAP

APPROVED BY: RO | DATE: 1/11/67 | 5 | PROP | SUPPORT | RELIAB GROUP

DG 1/13/67 | CW 1/11/67 | GROUP LEADER | STRESS GROUP | LIAISON ENGRG | PROJ ENGRG 1/13/67

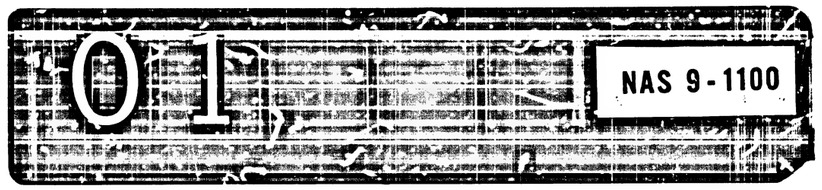
PRIORITY: C

DRAWING TITLE: ASCENT ENGINE INSTL

DRAWING NO.: LDW270-53010

EO NO.: A1

ISSUED BY S. SCIARROTTA x1471 SECTION PROPULSION GROUP NO. 345 PL 35



GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512
ENGINEERING ORDER

ENG 32.2 REV 3-65

DWG. NO. LDW270-53010		EO NO. A2
CONTROL INFO NO. LM270-856		

* IN THE B/M TO -3 ENGINE ASSY ADD "LSC360-624-1 QTY (4), LSC360-624-3" I&T "S" NOMENCLATURE "PRESS. TRANSDUCER" MATL "SEE NOTE 4".
IN THE NOTES ADD NOTE ** (** USE NEXT AVAILABLE NOTE NUMBER) & DELETE NOTE #10.
IN THE F/D CHG CALLOUT (3PLCS) TO "SEE NOTE **' WAS "SEE NOTE #10"
IN THE F/D & B/M FROM -3 DELETE LSC270-00500-10 REPLACE WITH LSC270-00500-10-2.
IN THE B/M ON -3 CHG I&T TO "S" WAS "E"

** PRIOR TO P.I.T. THE PRESSURE SENSOR PORTION OF LSC360-624 PRESS. TRANSDUCERS (5) ARE TO BE INSTALLED ON THE MOUNTING SURFACES PROVIDED ON THE LSC270-00500 ENGINE ASSY. HOOK UP THE BAC SUPPLIED 1/8 INSTRUMENT LINES BETWEEN THE MALE FITTING ON THE SENSOR PORTION OF THE TRANSDUCERS (5) & THEIR RESPECTIVE ENGINE PORTS (5). THE END FITTINGS OF THE BAC INSTRUMENT LINES ARE TO BE TORQUED TO THE FOLLOWING SCHEDULE: 40-50 INCH-LBS ON THE ENDS ATTACHED TO THE PRESS SENSORS (5), OXIDIZER FEED PORT & CHAMBER PRESS PORT, & 25-30 INCH-LBS ON THE ENDS ATTACHED TO THE FUEL FEED PORT, THE FUEL & OXIDIZER MANIFOLD PORTS, LEAK CHECK CONNECTIONS DURING P.I.T. PER LTP-270-4.

DETAIL SPEC REQ		CL II ENGRG CHG		CL I ENGRG CHG	✓	LCD19-1358, LVC275-005-190A & -191	5

REASON FOR EO	DESCRIPTION OF EO	© GAEC EO RELEASE
CHG. ENGINE IDENT & INSTALL XDUCERS AT GAEC	SEE ABOVE *	JK 6/7/67

MODEL	EFFECTIVITY: PROCURING ACTIVITY NO.	EFFECTIVITY: GAEC UNIT NO.	EFFECTIVITY: SUB CONTR UNIT NO.	DRAWING CHANGE REQD: REVISE DWG	DRAWING CHANGE REQD: RECORD EO	DISPOSITION OF PARTS: REWORK	DISPOSITION OF PARTS: SCRAP	APPROVED BY							
LM		LM3(33)		✓		✓		DATE	6/7/67						
									PROJ	SUPPORT	RELIAB GROUP	PROJ LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG
				PRIORITY		DRAWING TITLE						DRAWING NO.			EO NO.
				C		ASCENT ENGINE INSTL						LDW270-53010			A2

ISSUED BY S. SCIARROTTA x1471 SECTION PROPULSION GROUP NO. 345 PL 25

TO NAS 9-1100

GRUMMAN AIRCRAFT ENGINEERING CORP.
CODE IDENT NO. 26512

ENGINEERING ORDER

DWG. NO. LEO 270 | EO NO. 53
CONTROL INFO NO. LM270-1004

ENG 32.2 REV 3-65

B

ADD NOTE ✱ "BOND IN ACCORDANCE WITH FIGURE 7C OF LSP-14-13334" TO THE FOLLOWING DWG

DRAWING NUMBER	TITLE	EFFECTIVITY	CHANGE NO
LDW270-52100	SEE DWG	LM-2(32)	A8
-53100		LM-3(33)	A5
-54100		LM-4(34) THRU LM-15(45)	A4
-53010		LM-3(33)	A3
-54010		LM-4(34) THRU LM-15(45)	A2
LDW270-52306	SEE DWG	LM-2(32) THRU LM-15(45)	A4

ADD NOTE ✱✱ BOND IN ACCORDANCE WITH FIGURE 7G OF LSP-14-13334" TO THE FOLLOWING DWG.

LDW270-52304	SEE DWG	LM-2(32)	A5
-53304		LM-3(33)	C4
-54304		LM-4(34) THRU LM-15(45)	A8
-52305		LM-2(32)	A1
-53305		LM-3(33)	A1
-54305		LM-4(34) THRU LM-15(45)	A1
LDW270-52309	SEE DWG	LM-2(32) THRU LM-15(45)	E3

ADD NOTE ✱✱✱ BOND IN ACCORDANCE WITH FIGURE 7A & 7G OF LSP-14-13334" TO THE FOLLOWING DWG

LDW270-52200	SEE DWG	LM-2(32)	A1
LDW270-53200	SEE DWG	LM-3(33)	A2
LDW270-54200	SEE DWG	LM-4(34) THRU LM-15(45)	A2

ADD NOTE ⊗ "BOND IN ACCORDANCE WITH FIGURE 7C & 7G OF LSP-14-13334" TO THE FOLLOWING DWG

-52201	SEE DWG	LM-2(32)	B3
-53201		LM-3(33)	B3
-54201		LM-4(34) THRU LM-15(45)	B1
-52310		LM-2(32) & LM-3(33)	A6
LDW270-54310	SEE DWG	LM-4(34) THRU LM-15(45)	A1

ADD NOTE ◉ "BOND IN ACCORDANCE WITH FIGURE 7F OF LSP-14-13334" TO THE FOLLOWING DWG

LDW270-52302	SEE DWG	LM-2(32) THRU LM-15(45)	A3

ADD NOTE ⊡ "BOND IN ACCORDANCE WITH FIGURE 12 OF LSP-14-13334" TO THE FOLLOWING DWG

LDW270-53202	SEE DWG	LM-3(33) THRU LM-15(45	A2

	DWG NO	CHG NO
ADD NOTE △ "BOND IN ACCORDANCE WITH FIGURE 12 OF LSP-14-13334, EFF LM-2".	LDW270-51202	A2
ADD NOTE ▽ "BOND IN ACCORDANCE WITH FIGURE 12 OF LSP-14-13334, EFF LM-2 THRU LM-15".	LDW270-23308	B3
ADD NOTE ▼ "BOND IN ACCORDANCE WITH FIGURE 7C OF LSP-14-13334, EFF LM-2".	LDW270-51010	C9
ADD NOTE ▲ "BOND IN ACCORDANCE WITH FIGURE 7C & 7G OF LSP-14-13334, EFF LM-2 THRU LM-15."	LDW270-51453	E1

(MANUFACTURING NOTE) REWORK OF LM2 WILL NOT BE REQUIRED PROVIDED THE REQUIREMENTS OF PARAGRAPH 4.2 OF LSP-14-13334 ARE COMPLIED WITH.

DETAIL SPEC REQ | CL II ENGRG CHG | CL I ENGRG CHG | ✓ LCD 1961

REASON FOR EO: UPDATE DRAWINGS TO CURRENT BONDING REQUIREMENTS

DESCRIPTION OF EO: ADDED NOTES ✱, ✱✱, ✱✱✱, ⊗, ◉, ⊡, △, ▽, ▼, ▲. (NEXT AVAILABLE NO)

GAEC EO RELEASE: JK 8/2/67

EFFECTIVITY				DRAWING CHANGE REQD		DISPOSITION OF PARTS		APPROVED BY							
MODEL	PROCURING ACTIVITY NO.	GAEC UNIT NO.	SUB CONTR UNIT NO.	REVISE DWG	RECORD EO	REWORK	SCRAP	DATE							
											SUPPORT	RELIAB GROUP	GROUP LEADER	STRESS GROUP	LIAISON ENGRG	PROJ ENGRG	
LM		NOTED		✓		✓							8/1/67		8/2/67	8/4/67	

PRIORITY: C

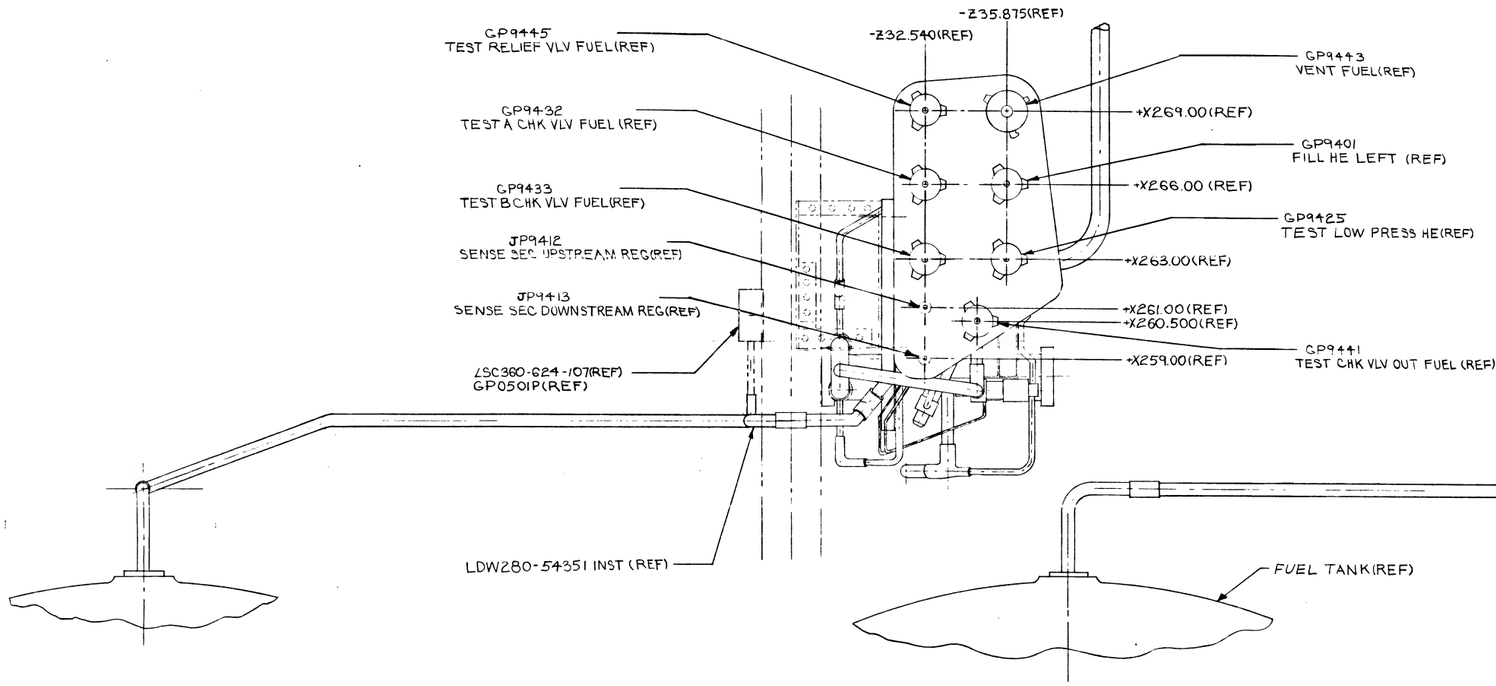
DRAWING TITLE: NOTED ABOVE

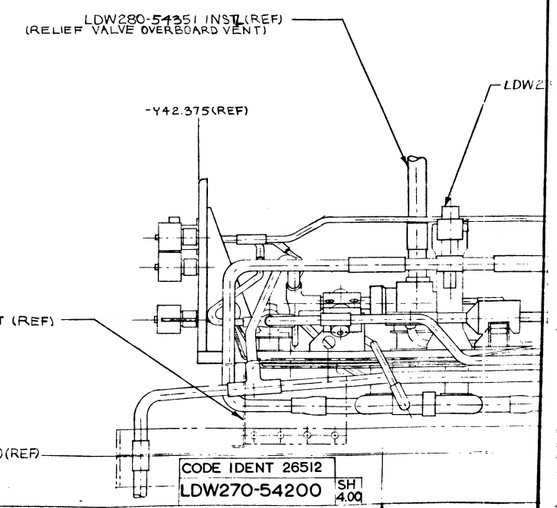
DRAWING NO.: LEO 270

EO NO.: 53

ISSUED BY W KUTNER X1611 8/2/67 SECTION PROPULSION GROUP NO. 345 PL 25

NAS 9-1100

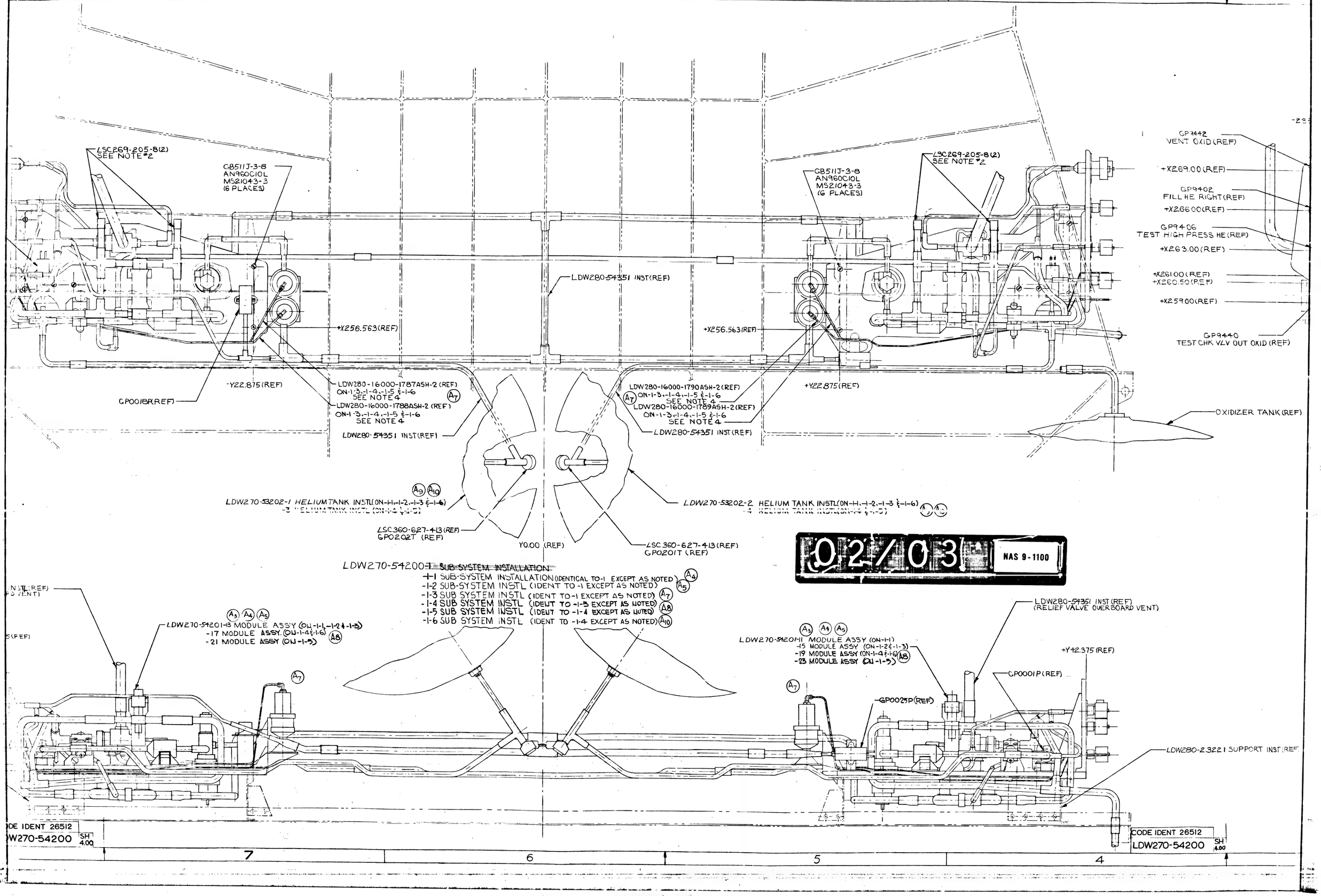




CODE IDENT 26512	SH
LDW270-54200	4.00

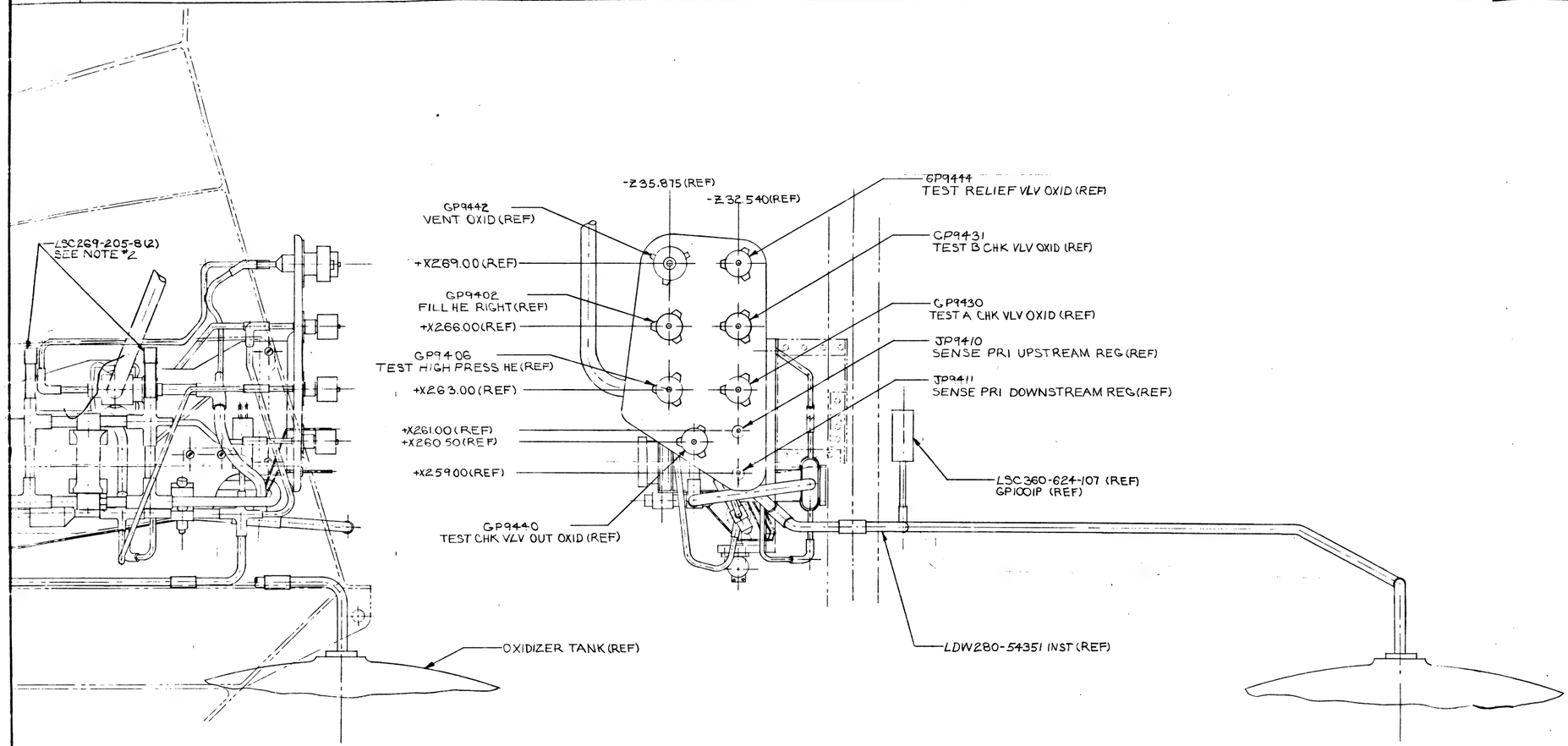
01/03 NAS 9-1100

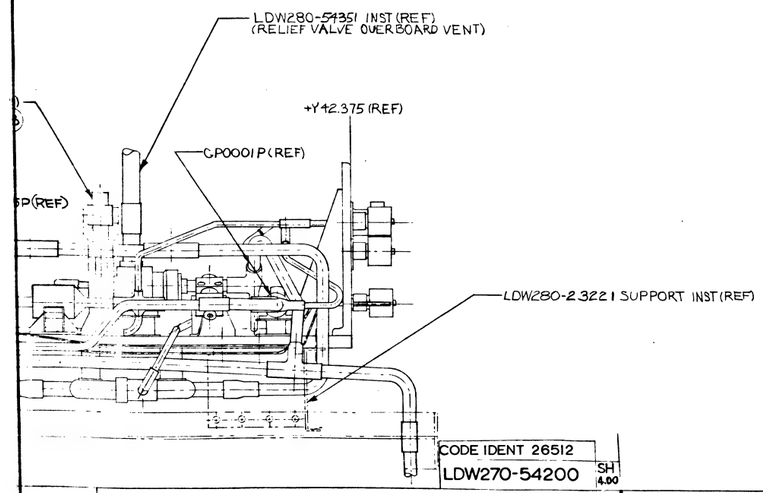
3/3



02/03 NAS 9-1100

CODE IDENT 26512 LDW270-54200 SH 4.00





MANUFACTURING OPERATIONS
UNLESS OTHERWISE SPECIFIED
NOTES CHECKED √ APPLY TO THIS DWG.

- PART NUMBER AND ALL OTHER MARKINGS IN REGION MARKED ▭ USE BOTH SIDES IF NECESSARY.
- FILLET AND INSIDE CORNER RADII TOLERANCES .016R TO .062R ± .010; .063R TO .250R ± .015; OVER .250R ± .030
- DEPTH SHOWN FOR TAPPED HOLES IS FULL THDS. 2-3 IMP THDS. BEYOND PERMISSIBLE.
- EXTERNAL THREAD LENGTH SHOWN INCLUDES 2 IMPERFECT THREADS MAX.
- DO NOT CADMIUM PLATE & PAINT HOLES OR SURFACES MARKED WITH DOUBLE ASTERISK.
- MISMATCH STEP OF ± .005 PERMISSIBLE DUE TO CHANGE OF CUTTERS AT INSIDE INTERSECTING SURFACES.
- DIAMETERS MARKED MUST BE CONCENTRIC WITHIN FULL INDICATOR READING
- HOLES MUST BE KEPT FREE OF CHROME PLATING SOLUTION.
- ALL DIMENSIONS SHOWN TO BE MET AFTER CADMIUM PLATING. THICKNESS OF PLATE .0003 MIN. TO .0005 MAX. MIN. THICKNESS TO BE .0002 ON THREADED AREAS. NO ALLOWANCE FOR PLATING IN HOLES
- SURFACE ROUGHNESS 125 √ INCLUDING REAMED HOLES PER MIL-STD-10
- 250 √ FOR ALL DRILLED HOLES
- REMOVE ALL BURRS. BREAK ALL EDGES .015-.031
- INSPECTION INFORMATION MINIMUM PERMISSIBLE AVERAGE EDGE DISTANCE MARKED IS
- SYMBOL ↑ DENOTES SURFACE TO BE MACHINED
- UNLESS OTHERWISE SPECIFIED TOLERANCE ON FLANGES IS ± 1/32
- LENGTHS OF AN, NAS & MS AL ALY RIVETS SHORTER THAN 1 INCH ARE NOT SPECIFIED.
- TOLERANCE ON LOFTED DELINEATIONS IS

DWG SIZE 34 X 121
PRINTING INTO ONLY
FULL SIZE SHEET AREA (36 X 135)= 34 SQ. FT.
1/2 SIZE SHEET AREA (1/4 OF FULL)= 8½ SQ. FT.
PRINT TRIM LINE

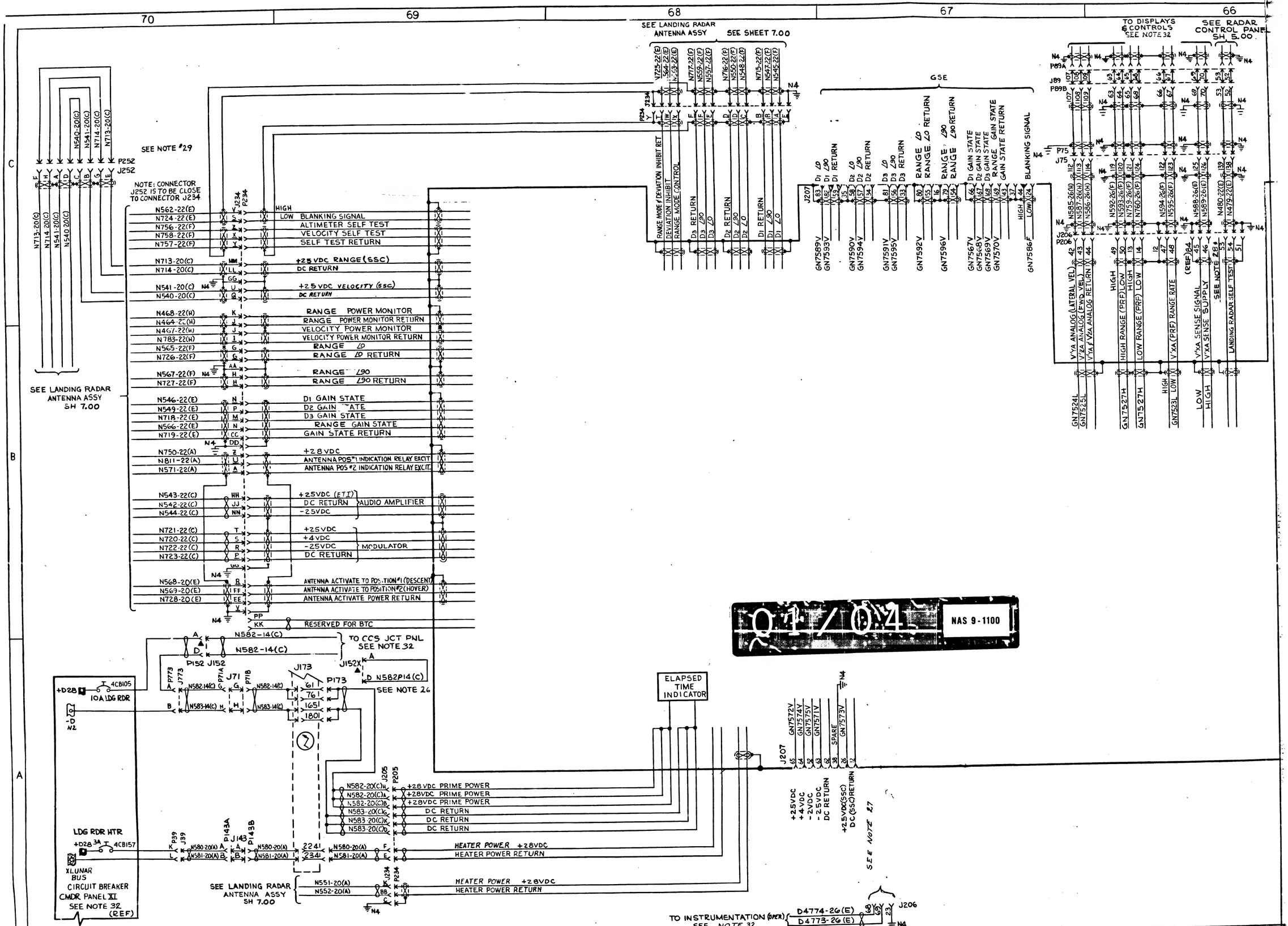
CODE IDENT 26512
LDW270-54200 SH 4.00

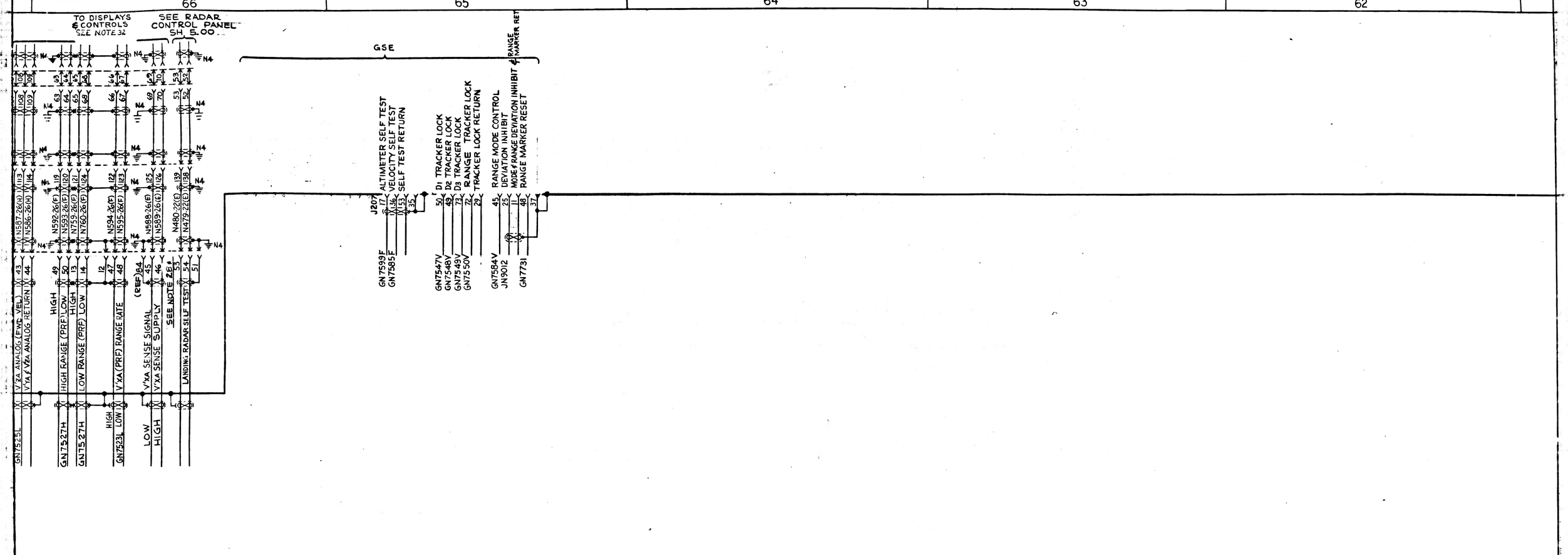
03/03 NAS 9-1100

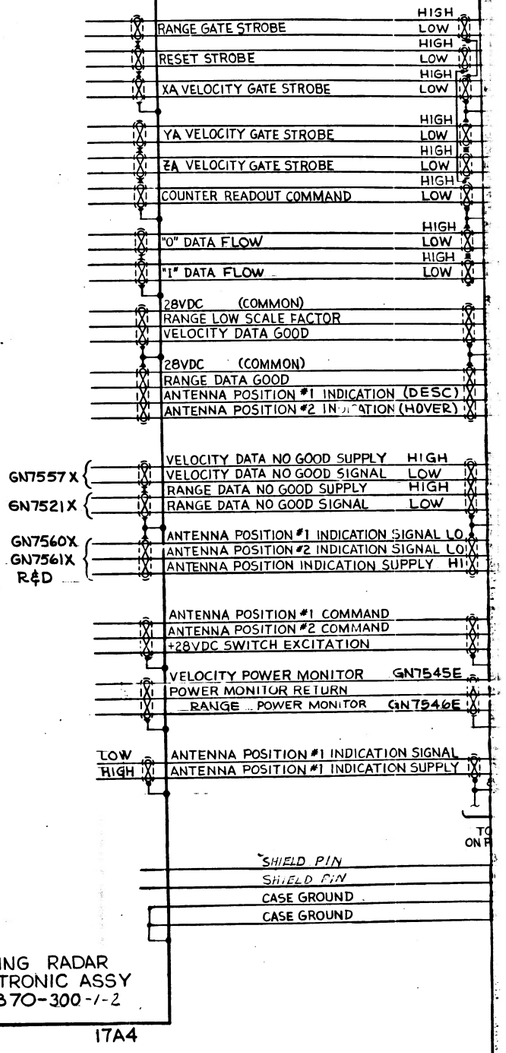
GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L. I., NEW YORK			
SIZE J	CODE IDENT NO. 26512	LDW270-54200	A
LM MODEL OR END ITEM	SCALE 1/2	SHEET 4.00	

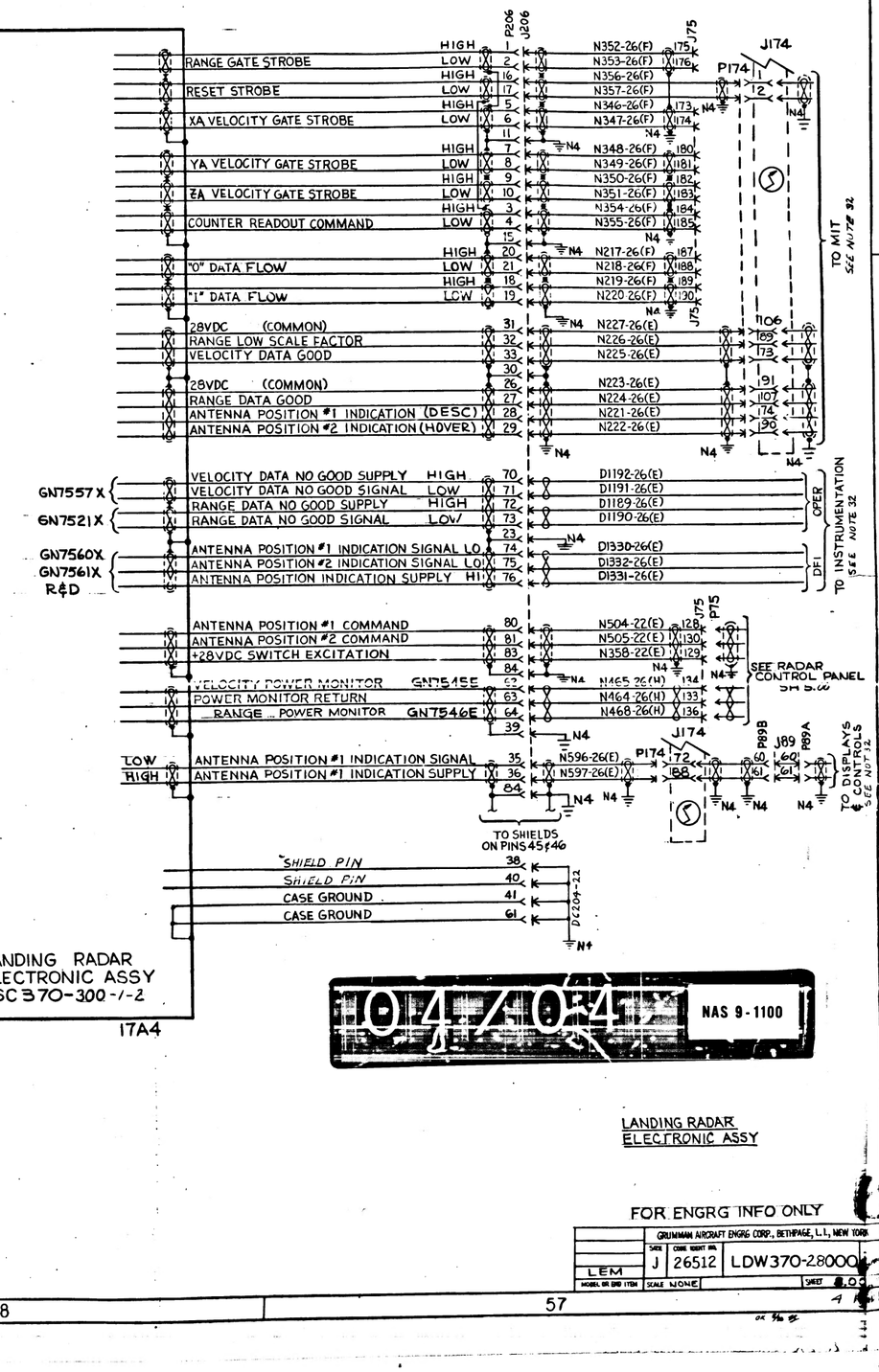
LDW270-54200 A
LDW270-54200 A
LDW270-54200 A

3FR

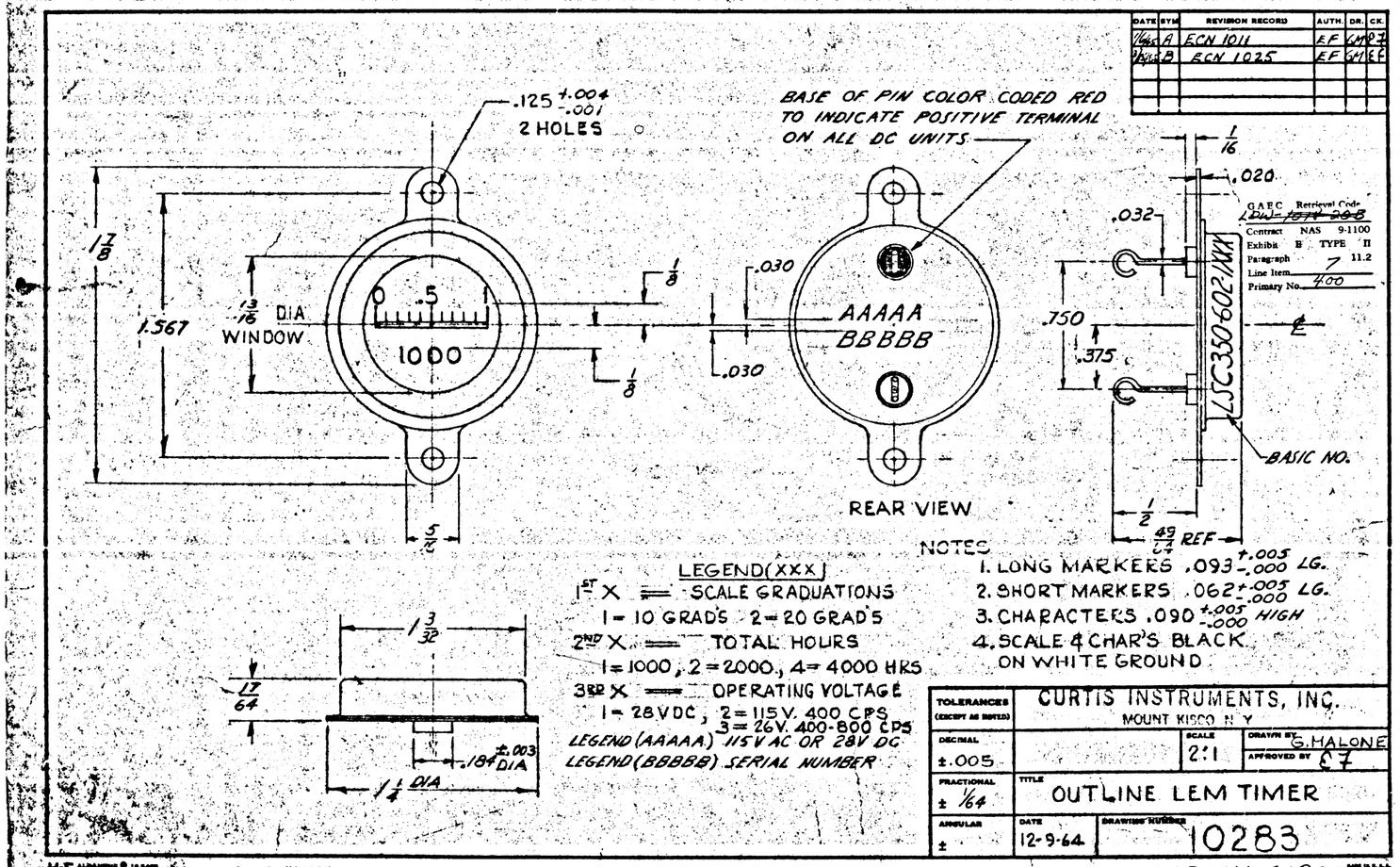

70
69
68
67
66
C
B
A
SEE LANDING RADAR ANTENNA ASSY SEE SHEET 7.00
V725-22(E)
564-22(E)
N563-22(E)
N717-22(F)
N559-22(F)
N557-22(F)
N716-22(F)
N550-22(F)
N548-22(F)
N715-22(F)
N547-22(F)
N545-22(F)
J234
P234
N4
RANGE MODE & DEVIATION INHIBIT RET
DEVIATION INHIBIT
RANGE MODE CONTROL
D3 RETURN
D3 L90
D3 L0
D2 RETURN
D2 L90
D2 L0
D1 RETURN
D1 L90
D1 L0
GSE
J207
GN7589V
GN7593V
GN7590V
GN7594V
GN7591V
GN7595V
GN7592V
GN7596V
GN7567V
GN7568V
GN7569V
GN7570V
GN7586F
D1 L0
D1 L90
D1 RETURN
D2 L0
D2 L90
D2 RETURN
D3 L0
D3 L90
D3 RETURN
RANGE L0
RANGE L0 RETURN
RANGE L90
RANGE L90 RETURN
D1 GAIN STATE
D2 GAIN STATE
D3 GAIN STATE
RANGE GAIN STATE
GAIN STATE RETURN
BLANKING SIGNAL
HIGH
LOW
TO DISPLAYS & CONTROLS SEE NOTE 32
SEE RADAR CONTROL PANEL SH 5.00
P89A
J89
P89B
P75
J75
J206
P206
V'YA ANALOG (LATERAL VEL)
V'ZA ANALOG (LONG VEL)
V'YA V'ZA ANALOG RETURN
HIGH RANGE (PRF) LOW
HIGH RANGE (PRF) HIGH
LOW RANGE (PRF) LOW
V'YA (PRF) RANGE RATE
V'YA SENSE SIGNAL
V'YA SENSE SUPPLY
LANDING RADAR SELF TEST
SEE NOTE 28
GN7524L
GN7525L
GN7527H
GN7527H
GN7523L
LOW
HIGH
SEE NOTE #29
P252
J252
N713-20(C)
N714-20(C)
N541-20(C)
N540-20(C)
N542-20(C)
N541-20(C)
N714-20(C)
N713-20(C)
NOTE: CONNECTOR J252 IS TO BE CLOSE TO CONNECTOR J234
SEE LANDING RADAR ANTENNA ASSY SH 7.00
N562-22(E) HIGH
N724-22(E) LOW BLANKING SIGNAL
N756-22(F) ALTIMETER SELF TEST
N758-22(F) VELOCITY SELF TEST
N757-22(F) SELF TEST RETURN
N713-20(C) +25 VDC RANGE (SSC)
N714-20(C) DC RETURN
N541-20(C) +25 VDC VELOCITY (SSC)
N540-20(C) DC RETURN
N468-22(H) RANGE POWER MONITOR
N464-22(H) RANGE POWER MONITOR RETURN
N467-22(H) VELOCITY POWER MONITOR
N783-22(H) VELOCITY POWER MONITOR RETURN
N565-22(F) RANGE L0
N726-22(F) RANGE L0 RETURN
N567-22(F) RANGE L90
N727-22(F) RANGE L90 RETURN
N546-22(E) D1 GAIN STATE
N549-22(E) D2 GAIN STATE
N718-22(E) D3 GAIN STATE
N566-22(E) RANGE GAIN STATE
N719-22(E) GAIN STATE RETURN
N750-22(A) +28 VDC
N811-22(A) ANTENNA POS #1 INDICATION RELAY EXCIT
N571-22(A) ANTENNA POS #2 INDICATION RELAY EXCIT
N543-22(C) +25VDC (ETI)
N542-22(C) DC RETURN
N544-22(C) -25VDC
AUDIO AMPLIFIER
N721-22(C) +25VDC
N720-22(C) +4VDC
N722-22(C) -25VDC
N723-22(C) DC RETURN
MODULATOR
N568-20(E) ANTENNA ACTIVATE TO POSITION #1 (DESCENT)
N569-20(E) ANTENNA ACTIVATE TO POSITION #2 (HOVER)
N728-20(E) ANTENNA ACTIVATE POWER RETURN
PP
KK RESERVED FOR BTC
N582-14(C)
N582-14(C)
TO CCS JCT PNL SEE NOTE 32
J152X
D N582P14(C)
SEE NOTE 26
P152 J152
J173
P173
J71
P71A
P71B
P173
J173
N582-14(C)
N583-14(C)
61
76
165
180
+D28
4CB105
10A LDG RDR
-D
N2
LDG RDR HTR
+D28
3A
4CB157
XLUNAR BUS CIRCUIT BREAKER CMDR PANEL XI SEE NOTE 32 (REF)
P39
J39
P143A
J143
P143B
N580-20(A)
N581-20(A)
224
234
SEE LANDING RADAR ANTENNA ASSY SH 7.00
N551-20(A)
N552-20(A)
J234
P234
HEATER POWER +28VDC
HEATER POWER RETURN
HEATER POWER +28VDC
HEATER POWER RETURN
ELAPSED TIME INDICATOR
J207
GN7572V
GN7574V
GN7575V
GN7571V
SPARE
GN7573V
+2.5VDC
+4VDC
-2VDC
-2.5VDC
DC RETURN
+2.5VDC(SSC) DC(SSC)RETURN
SEE NOTE 27
N582-20(C)H
N582-20(C)A
N582-20(C)B
N583-20(C)G
N583-20(C)K
N583-20(C)D
J205
P205
+28 VDC PRIME POWER
+28VDC PRIME POWER
+28VDC PRIME POWER
DC RETURN
DC RETURN
DC RETURN
TO INSTRUMENTATION (OPER) SEE NOTE 32
D4774-26(E)
D4773-26(E)
J206
N4
Q-41/Q-4
NAS 9-1100


TO DISPLAYS & CONTROLS SEE NOTE 32
SEE RADAR CONTROL PANEL SH 5.00
GSE
J207
ALTIMETER SELF TEST
VELOCITY SELF TEST
SELF TEST RETURN
D1 TRACKER LOCK
D2 TRACKER LOCK
D3 TRACKER LOCK
RANGE TRACKER LOCK
TRACKER LOCK RETURN
RANGE MODE CONTROL
DEVIATION INHIBIT
MODE & RANGE DEVIATION INHIBIT & RANGE MARKER RET
RANGE MARKER RESET
V*ZA ANALOG (FWD VEL)
V*YA & V*ZA ANALOG RETURN
HIGH RANGE (PRF) LOW
LOW RANGE (PRF) LOW
V*XA (PRF) RANGE RATE
V*XA SENSE SIGNAL
V*XA SENSE SUPPLY
SEE NOTE 26
LANDING RADAR SELF TEST
HIGH
LOW
(REF)
N4


HIGH
RANGE GATE STROBE LOW
HIGH
RESET STROBE LOW
HIGH
XA VELOCITY GATE STROBE LOW
HIGH
YA VELOCITY GATE STROBE LOW
HIGH
ZA VELOCITY GATE STROBE LOW
HIGH
COUNTER READOUT COMMAND LOW
HIGH
"0" DATA FLOW LOW
HIGH
"1" DATA FLOW LOW
28VDC (COMMON)
RANGE LOW SCALE FACTOR
VELOCITY DATA GOOD
28VDC (COMMON)
RANGE DATA GOOD
ANTENNA POSITION #1 INDICATION (DESC)
ANTENNA POSITION #2 INDICATION (HOVER)
VELOCITY DATA NO GOOD SUPPLY HIGH
GN7557X VELOCITY DATA NO GOOD SIGNAL LOW
RANGE DATA NO GOOD SUPPLY HIGH
GN7521X RANGE DATA NO GOOD SIGNAL LOW
ANTENNA POSITION #1 INDICATION SIGNAL LO
GN7560X ANTENNA POSITION #2 INDICATION SIGNAL LO
GN7561X ANTENNA POSITION INDICATION SUPPLY HI
R&D
ANTENNA POSITION #1 COMMAND
ANTENNA POSITION #2 COMMAND
+28VDC SWITCH EXCITATION
VELOCITY POWER MONITOR GN7545E
POWER MONITOR RETURN
RANGE POWER MONITOR GN7546E
LOW ANTENNA POSITION #1 INDICATION SIGNAL
HIGH ANTENNA POSITION #1 INDICATION SUPPLY
SHIELD PIN
SHIELD PIN
CASE GROUND
CASE GROUND
J207
85 GN7583E RANGE POWER MONITOR
84 GN7582E VELOCITY POWER MONITOR
61 RANGE & VELOCITY POWER MONITOR RETURN
8 HIGH
20 LOW GN7537V "1" DATA FLOW
21 HIGH
9 LOW GN7536V "0" DATA FLOW
40 HIGH
39 LOW GN7535Y COUNTER READOUT COMMAND
3 HIGH
4 LOW GN7534V RESET STROBE
78 HIGH
14 LOW GN7532V ZA VELOCITY GATE STROBE
15 HIGH
5 LOW GN7531V YA VELOCITY GATE STROBE
6 HIGH
1 LOW XA VELOCITY GATE STROBE
2 HIGH
19 LOW GN7530V RANGE GATE STROBE
7 HIGH
18 LOW GN7529V ANTENNA POSITION #1 INDICATION (RELAY)
23 GN7576V ANTENNA POSITION #2 INDICATION (RELAY)
42 GN7577V RELAY EXCITATION RETURN
10
32 SPARE
71 GN7552 ANTENNA ACTIVATE TO POSITION #1 (5MA)
47 GN7553X ANTENNA ACTIVATE TO POSITION #2 (5MA)
27 ANTENNA ACTIVATE POWER RETURN
13 GN7533V ANTENNA POSITION #2 COMMAND
GSE
LANDING RADAR
ELECTRONIC ASSY
LSC370-300-1-2
17A4


P206 J206
J175
J174
P174
RANGE GATE STROBE
RESET STROBE
XA VELOCITY GATE STROBE
YA VELOCITY GATE STROBE
ZA VELOCITY GATE STROBE
COUNTER READOUT COMMAND
"0" DATA FLOW
"1" DATA FLOW
28VDC (COMMON)
RANGE LOW SCALE FACTOR
VELOCITY DATA GOOD
RANGE DATA GOOD
ANTENNA POSITION #1 INDICATION (DESC)
ANTENNA POSITION #2 INDICATION (HOVER)
TO MIT SEE NOTE 32
VELOCITY DATA NO GOOD SUPPLY
VELOCITY DATA NO GOOD SIGNAL
RANGE DATA NO GOOD SUPPLY
RANGE DATA NO GOOD SIGNAL
GN7557X
GN7521X
ANTENNA POSITION #1 INDICATION SIGNAL LO
ANTENNA POSITION #2 INDICATION SIGNAL LO
ANTENNA POSITION INDICATION SUPPLY HI
GN7560X
GN7561X
R&D
TO INSTRUMENTATION SEE NOTE 32
OPER
DFI
ANTENNA POSITION #1 COMMAND
ANTENNA POSITION #2 COMMAND
+28VDC SWITCH EXCITATION
VELOCITY POWER MONITOR GN7545E
POWER MONITOR RETURN
RANGE POWER MONITOR GN7546E
P75 J75
SEE RADAR CONTROL PANEL SH 5.00
ANTENNA POSITION #1 INDICATION SIGNAL
ANTENNA POSITION #1 INDICATION SUPPLY
LOW
HIGH
P89B J89 P89A
TO DISPLAYS & CONTROLS SEE NOTE 32
TO SHIELDS ON PINS 45 & 46
SHIELD PIN
SHIELD PIN
CASE GROUND
CASE GROUND
DC2104-22
J207
GN7543E
GN7542E
RANGE POWER MONITOR
VELOCITY POWER MONITOR
RANGE & VELOCITY POWER MONITOR RETURN
"1" DATA FLOW
"0" DATA FLOW
COUNTER READOUT COMMAND
RESET STROBE
ZA VELOCITY GATE STROBE
YA VELOCITY GATE STROBE
XA VELOCITY GATE STROBE
RANGE GATE STROBE
ANTENNA POSITION #1 INDICATION (RELAY)
ANTENNA POSITION #2 INDICATION (RELAY)
RELAY EXCITATION RETURN
ANTENNA ACTIVATE TO POSITION #1 (5MA)
ANTENNA ACTIVATE TO POSITION #2 (5MA)
ANTENNA ACTIVATE POWER RETURN
ANTENNA POSITION #2 COMMAND
GSE
LANDING RADAR ELECTRONIC ASSY LSC 370-300-1-2
17A4
LANDING RADAR ELECTRONIC ASSY
FOR ENGRG INFO ONLY
GRUMMAN AIRCRAFT ENGRG CORP., BETHPAGE, L.I., NEW YORK
LEM
J
26512
LDW370-28000
SCALE NONE
SHEET 8.00
A
LDW370-28000C
LDW370-28000C
10470-1084
NAS 9-1100

DATE	SYM	REVISION RECORD	AUTH.	DR.	CK.
1/66	A	ECN 1011	EF	GM	RF
7/66	B	ECN 1025	EF	GM	RF



GAEC Retrieval Code
LDW-~~1074~~ 298
Contract NAS 9-1100
Exhibit B TYPE II
Paragraph 7 11.2
Line Item
Primary No. 400

LEGEND(XXX)
1ST X = SCALE GRADUATIONS
1 = 10 GRAD'S 2 = 20 GRAD'S
2ND X = TOTAL HOURS
1 = 1000, 2 = 2000, 4 = 4000 HRS
3RD X = OPERATING VOLTAGE
1 = 28 VDC, 2 = 115 V. 400 CPS
3 = 26 V. 400-800 CPS
LEGEND(AAAAA) 115 V AC OR 28 V DC
LEGEND(BBBBB) SERIAL NUMBER

NOTES
1. LONG MARKERS .093 +.005 -.000 LG.
2. SHORT MARKERS .062 +.005 -.000 LG.
3. CHARACTERS .090 +.005 -.000 HIGH
4. SCALE & CHAR'S BLACK ON WHITE GROUND

TOLERANCES (EXCEPT AS NOTED)	CURTIS INSTRUMENTS, INC. MOUNT KISCO N.Y.		
DECIMAL ±.005		SCALE 2:1	DRAWN BY G.HALONE
FRACTIONAL ± 1/64	TITLE OUTLINE LEM TIMER		APPROVED BY CT
ANGULAR ±	DATE 12-9-64	DRAWING NUMBER 10283	

LDW1018-208

NAS 9-1100